

Aircraft *interiors* INTERNATIONAL

FEBRUARY 2010

THE INTERNATIONAL REVIEW OF AIRCRAFT INTERIOR DESIGN AND COMPLETION

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KOREAN AIR IS MARKING ITS 40TH ANNIVERSARY WITH LUXURIOUS NEW SEATS AND IFE ACROSS BOTH ITS MID- AND LONG-HAUL FLEETS



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It's been a tough few weeks for Japan. First, Toyota was forced to recall millions of cars after identifying an accelerator pedal problem on certain models – it has since had to recall hundreds of thousands of its popular hybrid Prius because of brake concerns. Honda then announced its own product recall over faulty airbags. Meanwhile, Japan Airlines has filed the country's largest-ever bankruptcy petition (by a non-financial company), marking the beginning of a painful, three-year restructuring programme, including the sacking of over 15,000 employees – a third of its workforce.

But in a story less well reported, Japanese seat manufacturer Koito admitted on 8 February that it had falsified fire resistance test data for seats; and made design modifications that weren't approved by regulators. According to Japan's transport ministry, Koito omitted part of a test process and used figures from past tests instead. It also manipulated computers so normal figures would appear on monitors when officials from the ministry observed the testing procedures. The data falsification began in the mid-1990s and only came to light after a whistle-blower inside the company informed the ministry about the situation in June 2009.

Koito will now have to fix 150,000 seats in about 1,000 aircraft. The repairs affect 32 airline operators in the USA, Japan, China, Singapore, and other countries. All Nippon Airways (ANA), Japan's second-biggest carrier, is one of those directly affected. The first aircraft to feature its new, international 'Inspiration of Japan' service (see page 26) will have to fly without its planned premium-economy section, after Koito encountered problems manufacturing a new fixed-shell seat design. Koito spokesperson, Yoichiro Kuroiwa, said the seat's shell had cracked during stress testing, and that a redesigned version probably wouldn't be ready until August.

As for the OEMs, Airbus says 130 of its aircraft are currently equipped with Koito seats – which leaves Boeing with the lion's share. At the time of writing, Koito seats were still included in the 787 catalogue – both Boeing and launch customer ANA will be hoping the fallout from this mess doesn't push the delivery of the first 787 back even further.

Everyone in the industry knows how tough – and expensive – certification testing can be. Whether the Koito story calls for a fresh look at procedures remains to be seen – but the fact that it took a whistleblower to reveal the truth is a serious concern. One wonders whether it also calls into question the FAA's ODA programme – can organisations really be trusted to 'self-certify'? As a Japanese company, Koito is ineligible for ODA status, but theoretically, had it of been so, the FAA would have placed greater emphasis on the strength of its organisational systems, rather than checking the accuracy of the actual test data. Whatever the fallout, you can be sure of one thing: rather like Toyota and Honda, Airbus and Boeing will be keeping a much closer eye on their key suppliers.

Anthony James, editor

WHETHER THE KOITO STORY CALLS FOR A FRESH LOOK AT PROCEDURES
REMAINS TO BE SEEN, BUT THE FACT THAT IT TOOK A WHISTLEBLOWER TO
REVEAL THE TRUTH IS A SERIOUS CONCERN

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birthday suite 044

Korean Air has embarked on a major fleet overhaul, with new Kosmo Suites from Contour spearheading a package of seating and IFE improvements to mark its 40th anniversary

ANTHONY JAMES,
AIRCRAFT INTERIORS INTERNATIONAL



features



026 inspired choice


ANA's new 'Inspiration of Japan' brand sees the launch of a new inflight product and service concept on its 777-300ERs
KENJI HALL,
AIRCRAFT INTERIORS INTERNATIONAL



034 hot fusion

Once upon a time, IFE was IFE and seats were seats and never the twain should meet – but Panasonic's 'fusion' project heralds a new era of closer integration and cooperation between the two sectors
BRENDAN GALLAGHER,
AIRCRAFT INTERIORS INTERNATIONAL





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level best 052

Flat beds are de rigueur in today's most sought-after business-class cabins, but the problem for airlines is how to square recumbence with revenue and extend sleeping space without eroding seat density

BERNARD FITZSIMONS,
AIRCRAFT INTERIORS INTERNATIONAL



different class 062

Gulf-based carriers have redefined premium-class air travel in recent years, as their buying power has even enabled them to persuade the manufacturers to modify their airframes to accommodate new amenities

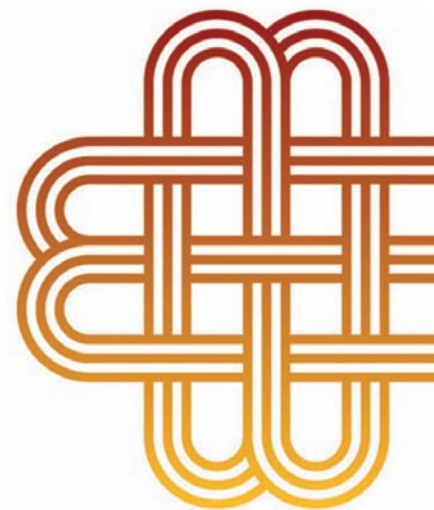
BERNARD FITZSIMONS,
AIRCRAFT INTERIORS INTERNATIONAL



full service 074

Beyond investing in new 'hard' onboard products, airlines also need to ensure their inflight catering and service remain compelling for frequent fliers

LIZ MOSCROP,
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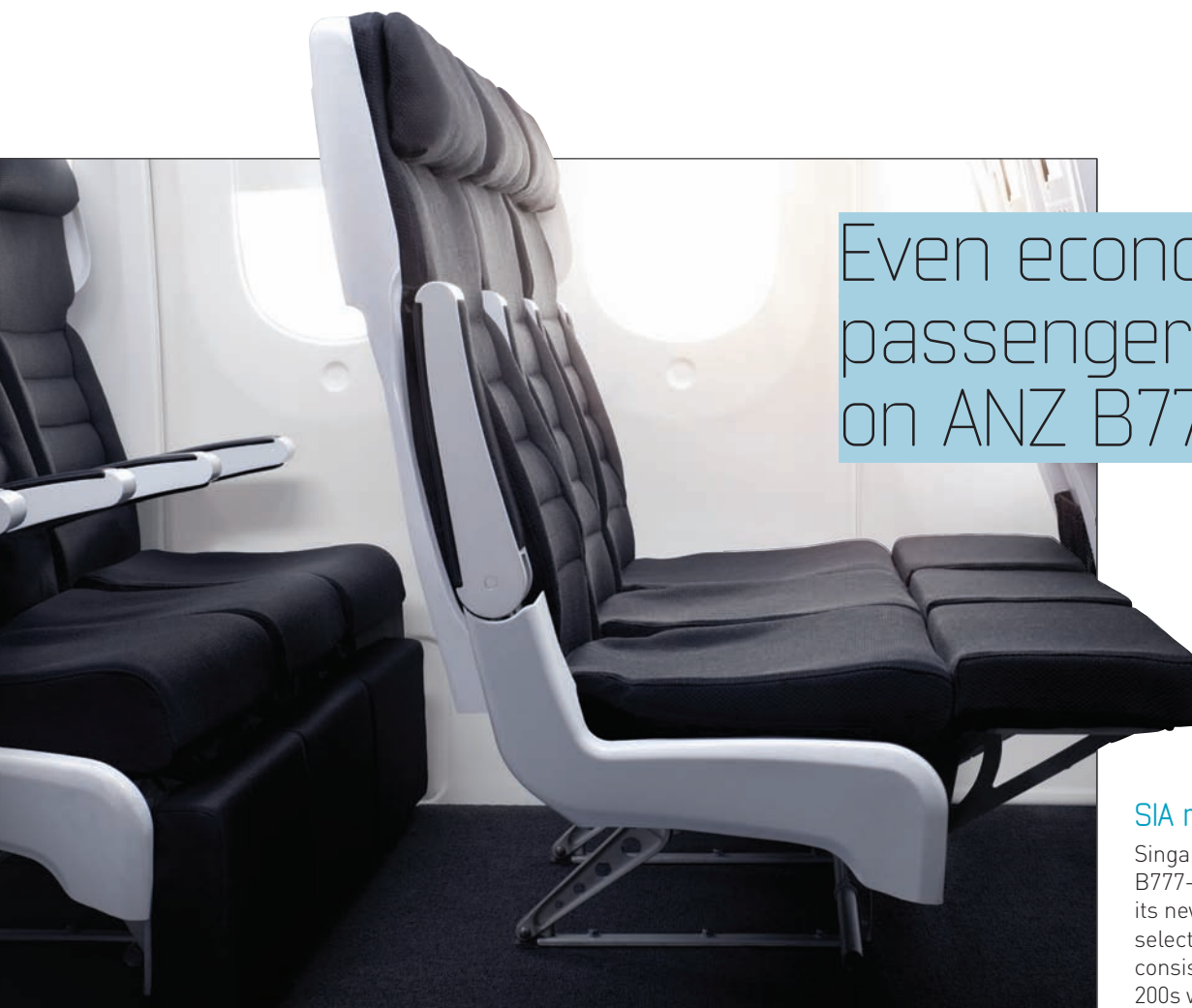
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Even economy-class passengers will lie flat on ANZ B777-300s

Air New Zealand (ANZ) has created a new lie-flat economy-class seat (Skycouch), and a new premium-economy seat (Spaceseat) for its B777-300ER, the first of which is due for delivery in November. The 340-seat aircraft will have 246 seats in economy (including 66 seats creating 22 Skycouch combinations), 50 in premium economy and 44 in business.

Skycouch is a row of three seats, which uses all the space up to the seatback in front to enable travellers to lie flat. The idea is based on two adults buying two seats, with the third seat at around half price. Economy class will be set in a 3-4-3 layout, with 22 sets of Skycouch seats occupying the first 11 window rows. Seats will offer 33in pitch, with a 17in width.

Premium economy features 50 new Spaceseats in a 2-2-2 herringbone layout. The 20in-wide seats feature hardback shells, with seat recline created by a base that slides forward and angles up. The centre seats angle outwards from each other for privacy, or can be combined for couples, while window seats are angled for individual privacy.

In business class, the current seat has been updated with a new structure under

the bed surface, a new mattress, and more luxurious bedding. The 44 lie-flat beds are 79.5in long, with a width of 22in (33in at the shoulder in bed mode), and are set in a 1-2-1 herringbone layout, with aisle access at every seat.

A new interior design scheme includes chalk-coloured leather seating, deep ink colours and mood lighting in all cabins. The aircraft will feature Panasonic's eX2 IFEC system, including food and beverage ordering on demand. Food will be cooked from scratch in the air. Passengers will access the IFE via touchscreens, which are 12.1in in business class and 10.6in in premium-economy and economy.

"For three years, a dedicated group of Air New Zealanders [led by Kerry Reeves], with the assistance of leading industrial designers, international design company IDEO, some of our top Kiwi boat builders, Boeing, and seat manufacturers, have been focused on creating a new experience that will influence cabin design for the next decade," said Ed Sims, ANZ Group's general manager. Skycouch and Spaceseat have been licensed to Recaro and Contour respectively, potentially generating licence fees for ANZ in the future.

SIA revamps B777-200s

Singapore Airlines (SIA) is retrofitting 11 B777-200s with the same seating featured on its new medium-haul A330-300s and selected B777-300s, to improve comfort and consistency across its fleet. The 11 B777-200s will now feature 38 business-class and 228 economy-class seats. Developed by Weber Aircraft, the lie-flat-at-an-angle business-class seats feature a smart leather finish and 15.4in IFE screens. Economy seating from Weber includes a 9in IFE screen and seat covers designed by Givenchy, and are similar to those found on the airline's new A380 and B777-300ER aircraft.

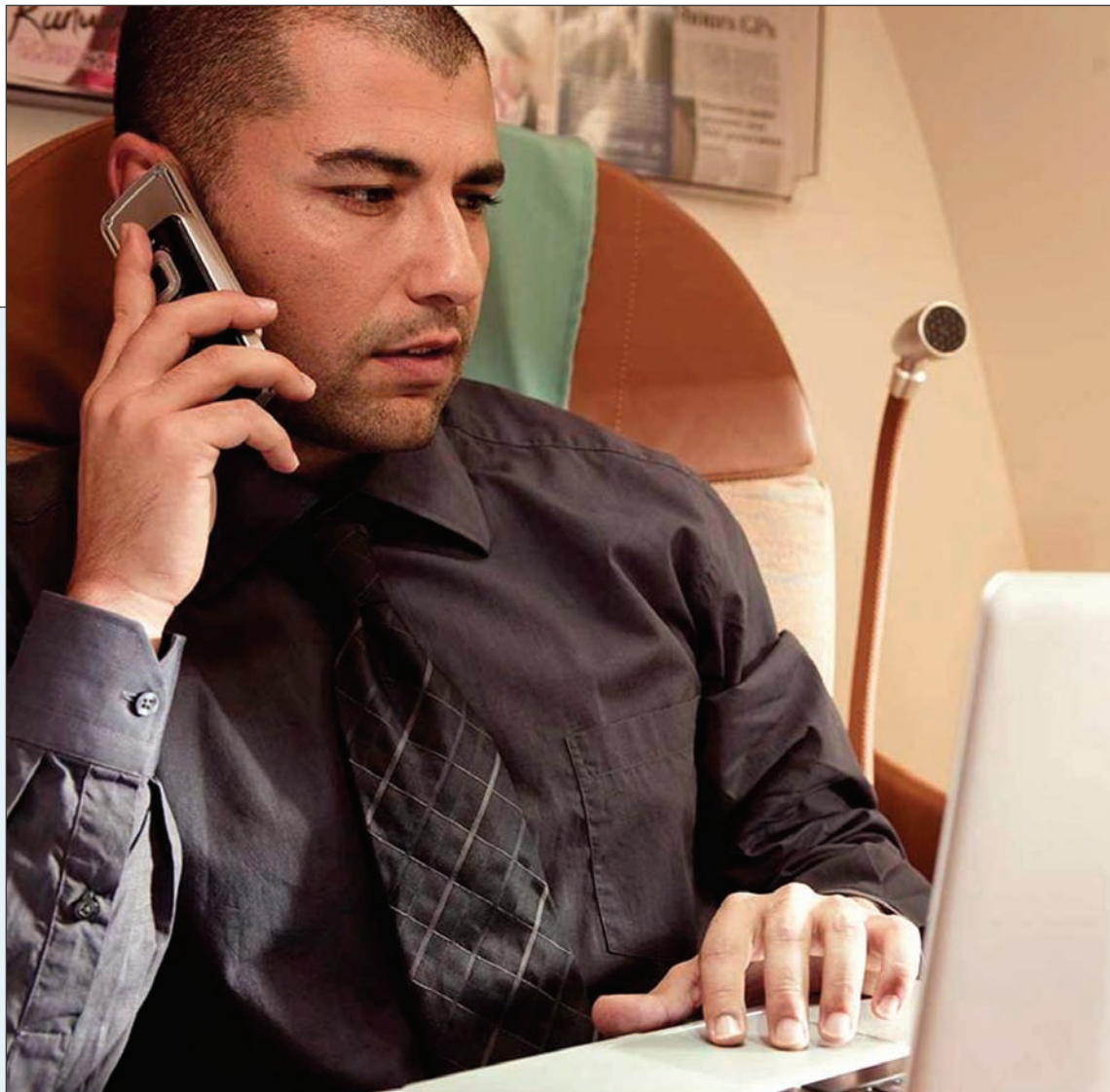
Delta splashes the cash

Delta is investing US\$1 billion (US\$300 million per year through to mid-2013) to improve the customer experience in the air and on the ground. Inflight plans include adding full-flat bed seats in BusinessElite on 90 long-haul aircraft: 14 B767-400ERs and 52 B767-300ERs will feature Vantage seats from Contour; while 16 B747-400s and eight B777-200ERs will be equipped with Contour's Solar Elite units. The airline will add AVOD IFE throughout economy class on 16 B747-400 and 52 B767-300ER aircraft, allowing business and economy passengers to enjoy personal, in-seat entertainment across its wide-body fleet. Delta will also add first-class cabins (nine seats in a 1-2 layout) to 66 CRJ-700 aircraft operated by Delta Connection carriers ASA, Comair and SkyWest, bringing to 219 the number of regional aircraft with first-class seating. Finally, it will retrofit 269 pre-merger Northwest aircraft with blue leather seats and updated lighting.

Oman Air has become the first airline in the world to offer a full mobile phone and WiFi connectivity service on its commercial wide-body aircraft, since it started to unroll Mobile OnAir and Internet OnAir services across its new A330 fleet in the middle of February. The move enables passengers in all classes to make and receive mobile phone calls and SMS messages, use email and the internet, and keep up to date with social networking media such as Facebook and Twitter. The roll-out is due for completion in the summer.

Service availability is controlled by the crew, to ensure the minimum of disturbance to passengers during, for example, the quietest periods of overnight flights. Oman Air's A330 fleet has been fitted with the Airbus ALNA V2 system, using Honeywell's SwiftBroadband (SBB) solution. This supports both mobile phone and internet inflight communication.

Oman Air's SBB connectivity follows the introduction to its A330 fleet of new IFE systems, which offer four channels of live TV, as well as audio/video on demand, iPod connection, and USB ports for different usage. The IFE systems are installed within new first-, business- and economy-class cabins. The airline has also introduced new menus and Balenciaga-designed staff uniforms.



Oman Air's A330s feature full mobile phone and WiFi service

Air France introduces new short-haul seat from Recaro

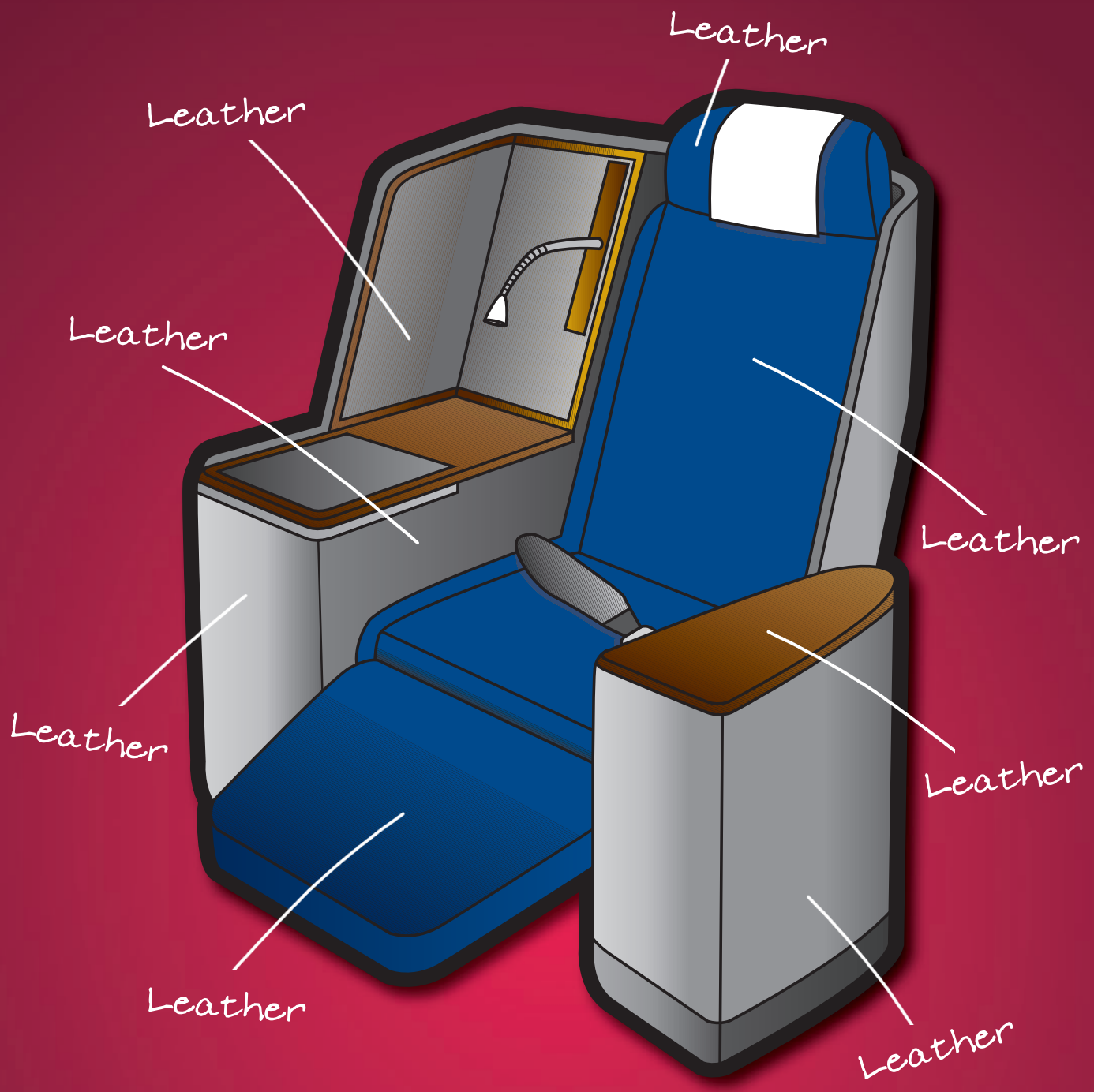
Air France is installing new seats on its A319, A320 and A321 fleets serving short-haul domestic flights. The SL3510 seat, designed jointly by Air France and Recaro, won a Crystal Cabin Award in 2009, and features 2-3in (5-7.5cm) more legroom than Air France's previous seat, and an enhanced seatback with 15° recline. Recaro will initially supply 6,000 seats to the airline. Weighing just 9.1 kg, Air France says its new short-haul seat is 40% lighter than a 'conventional' seat, and represents a reduction of 5,200 tonnes of CO₂ per year.

TAM hires Priestmangoode for design overhaul

Brazilian airline TAM has hired Priestmangoode to redesign its fleet. The three-year contract will see Priestmangoode redesign and detail cabin interiors across TAM's fleet, including new B777s and A350s. All the airline's existing aircraft will be retrofitted in parallel. The design process will include a redesign of all seats in all classes, galleys, stowages, and lavatories, and cabin architecture where possible. Priestmangoode will also be involved in the redesign of TAM's staff uniforms and all inflight service provision, including the meal service.

Turkish Airlines opts for Global Communications Suite

Turkish Airlines has selected Panasonic and Aeromobile's Global Communications Suite for installation on its fleet of 12 Boeing 777-300ERs and 10 Airbus A330-300 aircraft. The first aircraft to feature the new system will enter service in the fourth quarter of 2010. System features include Ku-band satellite-based 'exConnect' high-speed internet, mobile phone (voice, text and data) connectivity and live television via a proprietary broadcast TV distribution network. The carrier is also fitting the same aircraft with Panasonic's eX2 IFEC system.



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Finnair's fifth A330-300 aircraft, which was delivered before Christmas and serves shorter long-haul routes, features a new full-flat seat in business class, and a new layout.

The new Contour Vantage seats recline to a fully horizontal position, and are designed to offer passengers more privacy and personal space. There are four or five seats on each row, so nearly 90% of passengers have direct access to the aisle. The cabin also has more storage space.

The new layout allows more seats to fit into the same space. This, along with removing the business-class snack bar, means that the A330 has room for 45 seats in business class, instead of the 42 seats of previous A330s. A third of business-class passengers can choose a full-flat seat that sits on its own, without another seat beside it. The latest A330 aircraft also has 218 seats in economy class, a reduction compared to the 229 on previous versions.

The new business-class seating requires the use of airbags at all seats, except on the first row, where the bulkhead is further away than the seat in front. The airbag is situated in the seatbelt and is activated when the seatbelt is fastened. Extension belts can't be used at seats with airbags and therefore infants can't be seated there.



Vantage lie-flat seat for Finnair's latest A330

Malmo Aviation makes fleet-wide WEPPS order

Swedish airline Malmo Aviation has ordered STG Aerospace's Wireless Emergency Primary Power System (WEPPS) for its entire fleet of AVRO RJ 100 jet aircraft. WEPPS integrates new operating protocols with wireless communication, real-time MEL diagnostics, and solid-state electronics for managing emergency lighting systems, and uses 'fit-for-life' non-rechargeable batteries to replace conventional NiCad battery/charger packs. STG says WEPPS eliminates the emergency lighting system's entire maintenance schedule. "The maintenance-free aspects of WEPPS make it an ideal solution at a time when we're trying to reduce operating costs," said Anders Hansson, vice president of technical operation at Malmo Aviation.

bmi cuts short-haul business class on UK and Ireland flights

bmi has relaunched its short-haul product across all UK and Ireland flights to and from London Heathrow. The airline has cut business class, and now offers a single economy-class cabin, with an enhanced service for customers travelling on flexible economy fares. Benefits of the flexible economy ticket include no change fees, use of business lounges, seating at the front of the aircraft, and complimentary food and drink on board. The new inflight offering includes locally sourced British produce (including roast British beef and horseradish sandwiches or West Country cheese and pickle sandwiches) throughout the day, as well as a full bar and a hot breakfast in the morning. Flexible economy customers will also pay lower air passenger duty.

Afriqiyah Airways chooses OnAir for Airbus fleet

Afriqiyah Airways has selected OnAir's full connectivity suite (Mobile OnAir and Internet OnAir) for its Airbus fleet (A330/A320/A319s), enabling passengers to use their own mobile phones or PDAs to make and receive phone calls, send and receive emails and text messages, and access the internet. OnAir is also now offering airlines the chance to communicate directly with their passengers onboard through personalised text messages. OnAir has chosen telecommunications specialist Halys to provide the short message service (SMS) system that allows airlines to communicate with individual passengers during the flight – perhaps to re-book a missed connection, issue a new boarding pass and gate number, or offer inflight promotions.

British Airways has finally – after months of anticipation – launched its new 'First' cabin on a B777-200 bound for Chicago on 10 February. The airline, which worked with UK design firms Tangerine and Forpeople on the project, has spent £100 million reinventing its flagship brand.

The new cabin is inspired by premium British automotive brands and features a smart quink blue and cream colour scheme. A redesigned suite, manufactured by B/E Aerospace, takes pride of place, and features an enhanced bed – 32in wide when flat, the 78in-long bed is 60% wider at the shoulders than its predecessor with a new 'intelligent' mattress and the finest 400-thread Egyptian cotton bed linen.

Each suite has its own personal wardrobe, a leather-bound writing desk that converts into a dining table, a 15in IFEC screen, and a buddy seat to enable customers to dine together. There are also personal electronic blinds – both the lighting and electronic blinds can be modified to reflect mood and time of day.

An innovative seat control unit allows passengers to activate the bed position and pneumatic panels to support the head and lumbar positions.

The First cabin features 14 suites at 78in pitch in a 1-2-1/1-1 herringbone layout. The airline says all long-haul aircraft currently offering First (73 in total) will be retrofitted with the new product.



British Airways' First finally takes to the skies

Airbus selects IFEC partners for A350 XWB

Panasonic and OnAir have both been chosen by Airbus as service providers for the A350 XWB. Panasonic's IFEC solutions include full-cabin AVOD, mobile phone service, broadband internet, and a live news and sports TV network. Meanwhile, OnAir (owned by Airbus and SITA) offers inflight communication services based on Inmarsat's SwiftBroadband technology, providing GSM and GPRS for voice, data and internet. OnAir is already available for line-fit or retrofit on the other Airbus families.

Asiana and Sichuan choose Panasonic IFEC

South Korean airline Asiana Airlines has chosen Panasonic's fully digital eFX AVOD IFE system for two A321 aircraft. Business-class seats feature premium handsets, as well as Panasonic's eXport solution for integration with passengers' iPods. Meanwhile, Sichuan Airlines has selected Panasonic's eX2 IFEC system for its new A330 aircraft. The system provides AVOD at every seat, a first for the airline. Sichuan Airlines is the first Panasonic customer in mainland China to adopt the eX2 system cabin-wide.

Ryanair launches boarding card advertising

Ryanair has begun displaying third-party advertising on its boarding cards, following the introduction of its 100% online check-in service – allowing advertisers to reach an estimated 66 million Ryanair passengers in 2010. "Our online advertising has proven extremely successful and the introduction of this boarding card advertising allows a highly valuable, targeted, integrated advertising campaign," said Michael Cawley, COO of Ryanair. "The revenue from online advertising will help Ryanair to continue to lower fares."

wheels up!



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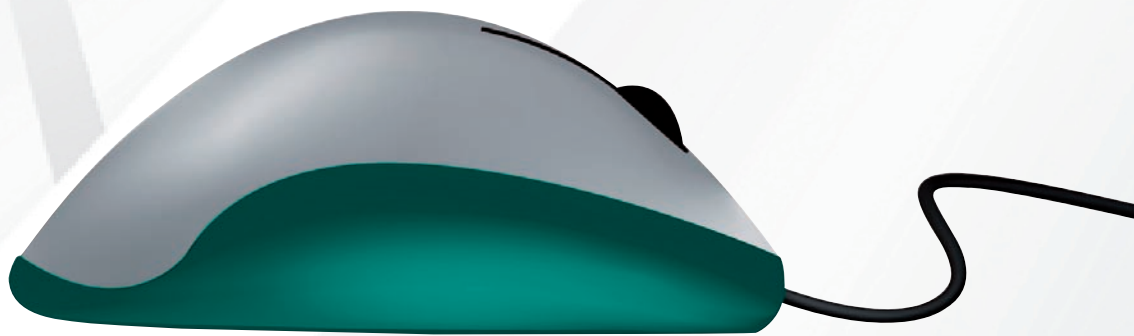
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Airlines suffer as Koito admits falsifying seat test results

Koito Industries admitted on 8 February that it had falsified test results for seats and made design modifications that weren't approved by regulators. Koito now plans to fix 150,000 seats in about 1,000 aircraft. Japan's transport ministry issued a warning to Koito, noting that the company might have been misleading regulators since the mid-1990s. The ministry said aircraft equipped with Koito seats were safe enough to continue flying, but ordered Koito to submit a reform plan.

The revelations come less than a week after two airlines announced that their new aircraft were being delayed because Koito hadn't delivered seats on time. All

Nippon Airways said its Inspiration of Japan service between Tokyo and New York would start two months late (on 19 May) and initially lack the premium-economy section, because of delays in the development of the fixed-back seats, which Koito is in charge of. Koito said the redesigned version probably wouldn't be ready until August. Singapore Airlines (SIA) also said that Koito had failed to deliver two types of seats on time. Koito is making business-class seats (pictured) for SIA's A380 aircraft and first-class seats for B777-300 aircraft, which are being retro-fitted. "We expect the issues to be resolved soon," said a Singapore Airlines official.

gategroup benefits as Delta and Northwest integrate catering

gategroup has renewed major contracts with Delta Air Lines and its Northwest Airlines subsidiary as part of the carriers' continuing move to integrate supply contracts. The multi-year deal, encompassing more than US\$1 billion in revenue over several years, involves core gategroup brand Gate Gourmet, as well as sister companies Gate Safe, eGate Solutions, Pourshins, and deSter. Under the new agreement, Gate Gourmet retained over 40 business markets worldwide and expanded catering business with Northwest at Amsterdam Schiphol Airport, Fort Lauderdale/Hollywood International Airport, Los Angeles International Airport, and Newark Liberty International Airport, where both airlines have service. Gate Safe will perform catering screening and security processes for Delta, Northwest and Delta Connection at all US locations served by Gate Gourmet, following a phased transition. eGate Solutions (inflight catering management) and Pourshins (food, beverage and equipment sourcing and logistics), will continue to serve Delta for a number of years through an extension of existing agreements. Delta also awarded new business and extended existing agreements with deSter to supply certain inflight equipment and products, including the BusinessElite line of inflight service products, which were developed by deSter for Delta in collaboration with gategroup's design centre potmstudios.

Alitalia offers real-time news in the air, updated every 10 minutes

Alitalia has launched two new services on selected aircraft – World News and Connecting Flights. Through the World News service, a daily newscast, produced by Agenzia Giornalistica Italia, is transmitted on the IFE system. The newscast includes lifestyle, business, current events and sports, in Italian and English, and is updated every 10 minutes, keeping passengers in touch with the main news worldwide while in flight, in real time. The Connecting Flights service provides information on Group Alitalia connecting flights at Rome Fiumicino, Milan Malpensa and Milan Linate airports.

AFI KLM E&M modifies A320 for Juneyao Airlines

Air France Industries and KLM Engineering & Maintenance (AFI KLM E&M) has completed engineering and cabin modification work on an A320 owned by Juneyao Airlines, commissioned by aircraft lessor Dragon Aviation Leasing. AFI KLM E&M oversaw the contract end-to-end, including the Part 21 engineering, and Part 145 cabin modifications under both Civil Aviation Administration of China and EASA regulations. The A320 was changed from a single-class to a two-class configuration with business and economy cabins, a task that included installing new fittings and partitions.

AMAC Aerospace completes VVIP A320

AMAC Aerospace has completed its first A320, for a head-of-state in the Middle East. The VIP configuration includes 48 seats, a bedroom, shower, and a cabin entertainment system including AVOD, wireless LAN, and satcom.

With a design by Francis Munch of Studio E/motions, and project management by Altair Aero Projects of Cyprus, the aircraft was delivered on time and within budget in nine months.

The client has also signed a flight support agreement with AMAC's dedicated operation team. AMAC's next completion project is an A319.



BizJet International completes its first A318 Elite

BizJet International, Lufthansa Technik's US subsidiary in Tulsa, Oklahoma, has delivered its first A318 Elite, following completion on schedule at the end of 2009. The A318 Elite, which is provided with FAA and EASA Supplemental Type Certificates, has been equipped with a VIP interior during its seven-month completion. Work has already started on the second of eight A318 Elites that BizJet has contracted, with handover scheduled for mid-2010. Lufthansa Technik is transferring its A318 Elite programme to BizJet so its site in Hamburg can focus on outfitting narrow- and wide-body VIP corporate jets.

First installation of Aircell ATG 5000 high-speed internet system

Aircell's ATG 5000 high-speed internet unit has been installed for the first time, on a California-based Gulfstream G200 operated by FlightWorks. The ATG 5000 began shipping in December 2009, and the first installation was performed by Gulfstream Aerospace Corp's Dallas Service Center. The ATG 5000 provides standalone Aircell high-speed internet capabilities for customers that don't require the integrated voice and narrow-band data features of Aircell Axxess. The Aircell high-speed internet system operates over continental USA, with both wired or WiFi in-cabin connection options available.

Gore Design Completions delivers green A340 to head of state

Gore Design Completions (GDC) has finished work on its first green A340-500 completion. The head-of-state aircraft was delivered to an African customer at the end of November 2009. GDC designers and engineers created an interior complete with VIP stateroom, lavatory, and office suite, as well as a conference room, lounge and high-density seating areas. All engineering and design was completed at GDC. Earlier in 2009, the company delivered a partial refurbishment of an A340-300, and currently has another A340 in its hangar, with two more on the way in 2010 and 2011.

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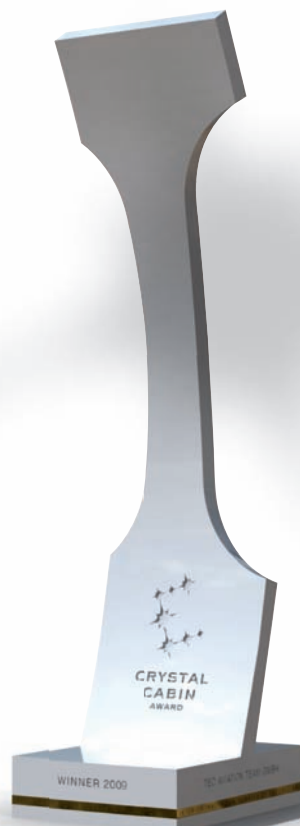
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guestcolumn

BRIEF: Priestmangoode, a UK-based design consultancy, was asked to “create a new perception of the Etap brand” – Etap being a French budget hotel chain with nearly 300 properties on its books. Specifically, the brief asked that the bedroom had “a modern, clean, welcoming character, stressing the quality of the light, design, colours and materials, increasing the efficiency and the relevance of various functions, aiming for flexibility and duality,” explains Priestmangoode’s Luke Hawes. The resulting design will be rolled out across 50,000 rooms (31,550 of which are being refurbished) across Europe. The first hotel to sport the new look was the Etap in Toulouse, which opened in April 2008.

DESCRIPTION: To optimise the use of space, each 12.5m² room is organised around a central column, or totem, that delivers services – power for the main light, water pipes, internet/phone cabling, etc. One side of the totem has a desk and mirror, the other has a sink and mirror. The totem also acts as a subtle room divider. It is manufactured off-site, and dropped in during construction. All the furniture is loose fitted so that it can be lifted off the floor as easily as possible for easy cleaning. Circular mirrors are used as they are quicker to clean and so cut down on the time the cleaners spend in each room, thereby cutting maintenance costs. A horizontal, waist-high ‘crash-bar’ runs around the room to stop damage to the walls, as well as housing a mood lighting strip. The occasional furniture in the rooms was designed by Priestmangoode, as were the reception areas, allowing a “coherent, modern, design-led customer journey through the hotel”.



VERDICT: Priestmangoode was well placed to deliver this project – it has built a strong reputation as a designer of first- and business-class airline cabin schemes, where “every component has to do five jobs and where design, durability and quick turnaround times between customers are essential”, believes Hawes. The agency’s experience of transforming small spaces saw it pick up the Best Interior Design (standard branded guestroom) award at the European Hotel Design Awards, in recognition of its work for Etap.



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Priestmangoode
Tel: +44 20 7935 6665
Email: ideas@priestmangoode.com
Web: www.priestmangoode.com

factfile:korean air

AIRCRAFT TYPE	B747-400 (TYPE 1)	B747-400 (TYPE 2)	B777-200 (TYPE 1)	B777-200 (TYPE 2)	
No. of aircraft	6	11	9	9	
Refurbishment/entered service	2005-2007	2005-2007	2008	Refurb from Sep 2009/2010	
Total seats	333	335	261	248	
	Number of seats	10 (Kosmo Sleeper)	12 (Kosmo Sleeper)	8 (Kosmo Sleeper)	8 (Kosmo Suite)
	Configuration	1-2-1	2-2	1-2-1	1-2-1
	Seat pitch	83in (210.8cm)	83in (210.8cm)	83in (210.8cm)	83in (210.8cm)
	Seat width	21in (53.3cm)	21in (53.3cm)	21in (53.3cm)	26.5in (67.3cm)
	Seat recline	180°	180°	180°	180°
	Bed length	78in (198.1cm)	76in (193cm)	78in (198.1cm)	79in (200.7cm)
	Seat supplier	EADS Sogerma	EADS Sogerma	EADS Sogerma	Contour
	IFE system	3000i	3000i	3000i/eX2	i5000
First class	IFE supplier	Panasonic	Panasonic	Panasonic	Thales
	Number of seats	61 (Prestige Plus)	61 (Prestige Plus)	28 (Prestige Sleeper)	28 (Prestige Sleeper)
	Configuration	2-3-2/2-2	2-3-2/2-2	2-3-2	2-3-2
	Seat pitch	60in (152.4cm)	60in (152.4cm)	60in (152.4cm)	74in (188cm)
	Seat width	21in (53.3cm)	21in (53.3cm)	20in (50.8cm)	21.6in (54.9cm)
	Seat recline	170°	170°	170°	180°
	Bed length	76in (193cm)	76in (193cm)	74in (188cm)	74in (188cm)
	Seat supplier	B/E Aerospace	B/E Aerospace	B/E Aerospace	B/E Aerospace
	IFE system	3000i	3000i	3000i/eX2	i5000
Business class	IFE supplier	Panasonic	Panasonic	Panasonic	Thales
	Number of seats	262	262	225	212
	Configuration	3-4-3/2-4-2	3-4-3/2-4-2	3-3-3	3-3-3
	Seat pitch	33-34in (83.8-86.4cm)	33-34in(83.8-86.4cm)	33-34in (83.8-86.4cm)	33-34in (83.8-86.4cm)
	Seat width	18in (45.7cm)	18in (45.7cm)	18in (45.7cm)	18in (45.7cm)
	Seat recline	120°	120°	120°	120°
	Seat supplier	Weber	Weber	Weber	Weber
	IFE system	3000i	3000i	3000i/eX2	i5000
Economy class	IFE supplier	Panasonic	Panasonic	Panasonic	Thales

* Information shown represents Korean Air's mid- and long-haul fleets

01. The business-class Prestige Sleeper



AIRCRAFT TYPE	B777-300 (TYPE 1)	B777-300 (TYPE 2)	A330-200	A330-300	
No. of aircraft	4	3	3	16	
Refurbishment/entered service	Refurb from Feb 2010	2009	Refurb from Apr 2010	Refurb from Apr 2010	
Total seats	342	291	226	282	
	Number of seats	6 (Kosmo Sleeper)	8 (Kosmo Suite)	6 (Kosmo Sleeper)	8 (Kosmo Sleeper)
	Configuration	2-2-2	1-2-1	2-2-2	2-2-2
	Seat pitch	83in (210.8cm)	83in (210.8cm)	83in (210.8cm)	83in (210.8cm)
	Seat width	20in (50.8cm)	26.5in (67.3cm)	20in (50.8cm)	20in (50.8cm)
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	Bed length	76in (193cm)	79in (200.7cm)	76in (193cm)	76in (193cm)
	Seat supplier	EADS Sogerma	Contour	EADS Sogerma	EADS Sogerma
	IFE system	i5000	i5000	i5000	i5000
First class	IFE supplier	Thales	Thales	Thales	Thales
	Number of seats	35 (Prestige Plus)	56 (Prestige Sleeper)	24 (Prestige Plus)	22 (Prestige Plus)
	Configuration	2-3-2	2-3-2	2-2-2	2-2-2
	Seat pitch	64-65in(162.6-165.1cm)	74in (188cm)	60in (152.4cm)	60in (152.4cm)
	Seat width	20in (50.8cm)	21in (53.3cm)	20in (50.8cm)	20in (50.8cm)
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	IFE system	i5000	i5000	i5000	i5000
Business class	IFE supplier	Thales	Thales	Thales	Thales
	Number of seats	301	227	196	252
	Configuration	3-3-3	3-3-3/2-3-2	2-4-2/2-2-2	2-4-2/2-2-2
	Seat pitch	33-34in (83.8-86.4cm)	33-34in (83.8-86.4cm)	32-33in(81.3-83.8cm)	32-34in (81.3-86.4cm)
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	IFE system	i5000	i5000	i5000	i5000
Economy class	IFE supplier	Thales	Thales	Thales	Thales



02. Korean Air's new economy-class cabin
03. The first-class Kosmo Suite

HEADQUARTERS: Seoul, South Korea

PASSENGERS CARRIED IN 2008: 21.64 million

CONTACTS:

Seong-Soo Ma, GM and team manager, CPM, maintenance and engineering sourcing team, ssma@koreanair.com

J. E. Lim, deputy general manager, maintenance and engineering sourcing team, limjongeok@koreanair.com

Chan Il Park, deputy general manager, marketing development team, chanil.park@koreanair.com

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Number of seats	35 (Prestige Plus)	56 (Prestige Sleeper)	24 (Prestige Plus)	22 (Prestige Plus)
Configuration	2-3-2	2-3-2	2-2-2	2-2-2
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IFE supplier	Thales	Thales	Thales	Thales
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Seat pitch	33-34in (83.8-86.4cm)	33-34in (83.8-86.4cm)	32-33in(81.3-83.8cm)	32-34in (81.3-86.4cm)
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IFE system	i5000	i5000	i5000	i5000
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02



03

02. Korean Air's new economy-class cabin

03. The first-class Kosmo Suite

HEADQUARTERS: Seoul, South Korea

PASSENGERS CARRIED IN 2008: 21.64 million

CONTACTS:

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inspiredchoice

ANA's new 'Inspiration of Japan' brand sees the launch of a new inflight product and service concept on its 777-300ERs

KENJI HALL, AIRCRAFT INTERIORS INTERNATIONAL



More than two years ago, All Nippon Airways (ANA) made an unusual request to seat supplier Sicma. The Japanese airline asked the French seat manufacturer to develop a compartment for a new business-class seat where passengers could stash their shoes. Sicma's designers were baffled. They had made compartments for things like bottles and brochures, but nobody had ever asked them for a shoe box. Sicma didn't get why it was needed and urged ANA to drop it.

But ANA officials stood their ground. It would seem like a small thing but the shoe compartment was part of a three-year, £120 million rebrand for ANA's key international flights. With the revamp, ANA is betting that it can raise the bar on services, leapfrog domestic leader Japan Airlines, and burnish its reputation globally. ANA started off with a couple of basic questions: can you design an aircraft to make passengers feel like they're sitting at home or in the office? And can you give passengers more control over how they can choose services?

01. ANA's new First Square suite



CONSUMERS HAVE SO MANY CHOICES
THESE DAYS THAT AIRLINES HAVE TO
THINK WHAT CONSUMERS WILL FIND
VALUE IN ”



02

02. First and business-class passengers can select and create their own menu from selections of more than 30 à la carte items, and can order using their IFE touchscreens
03. Business-class seating converts into a 74in-long and 25in-wide bed, including the armrests

On 19 April, ANA will give passengers their first glimpse of its new 'Inspiration of Japan' brand on a Boeing 777-300ER flying between Tokyo and New York. Originally scheduled to begin in February, a delay in the development of a new premium-economy seat from Koito has pushed the programme back. In the coming months, ANA plans to add more aircraft and more routes, including flights to London and Frankfurt. By March 2012, the airline expects to have 12 aircraft – half of them new, the other half retrofitted – shuttling passengers between Tokyo and major cities in the USA and Europe. "This new service will not just be for long-haul routes," says Koichi Tsuzuki, a senior director for product strategy at ANA who led the project. "It will serve as the basis for shorter international flights and domestic flights in the future."

SMALL WONDER Despite sticking to its existing four-class set up (Sicma is supplying first, business and economy seating), the redesign team tinkered with nearly every interior and service element. No detail was too small – Tsuzuki's group worked on the seats and cabin layout but also chose the fonts for signs, the colours of the blankets, and even the utensils. Tokyo-based design and consulting firm Hirano & Associates pitched in at almost every stage in development.

Those decisions were possible because ANA executives had decided early on to put Tsuzuki's strategic planning division in charge. The reason? ANA felt it needed a stronger brand identity. The airline's own surveys revealed

that few people overseas recognized the ANA name. "With competition tough and consumers tightening their purse strings, we felt we had to work on making the branding stronger," says Tsuzuki.

Traditionally, the company had made decisions about services for, say, business class and economy class in a piecemeal fashion. ANA executives wanted a holistic approach for the redesign, to avoid confusing consumers about what the brand stood for. "When you're creating a new brand, it's important to have consistent design for everything that customers see," says Jin Kuze, Hirano & Associates director. "That's easy to say but difficult to achieve."

The changes they settled on were hardly conventional. Rather than trying to cram more seats into the aircraft, ANA went with fewer. Each Inspiration aircraft will hold just 212* passengers – 35 fewer than what's currently available on the same aircraft type in ANA's existing fleet. [*The first 777-300ER to enter service will feature 215 seats, as ANA has had to replace the delayed 24 premium-economy seats with 27 economy seats. Premium economy will be available from August 2010.] Boeing says the aircraft's standard three-class layout can seat up to 365. "Emphasising the number of seats inside is an old, supply-side mindset," says Tsuzuki. "You won't get very far thinking that way in this highly competitive market. Consumers have so many choices these days that airlines have to think what consumers will find value in." Another possible benefit to having fewer seats – fewer empty



03



04



05 06



seats. Currently, ANA fills about two-thirds of its seats, according to the company's website.

The main design concept for the new layout was to give passengers more space – the number one desire expressed by customers in surveys. Hence in premium economy and economy, ANA has chosen seats with a fixed-back shell and sliding headrests and footrests, becoming one of the first airlines to do so. ANA set the rows further apart, increasing seat pitch from 38in to 42in in premium economy, and from 31in to 34in in economy. It has also installed Panasonic's 120-channel eX2 AVOD IFE system featuring larger touch-screen monitors, with a universal power port, iPod connector and USB port at every seat. The airline revamped the menu as well, giving passengers the option of smaller portions of pork cutlet on rice or noodles instead of a full meal.

PRIVATE AND CONFIDENTIAL Redesigning first class (rebranded as 'First Square') involved even more careful planning. Tsuzuki's team started off by asking passengers why they preferred first class over business? The answers surprised them: "It wasn't because of the plushness of first class," says Tsuzuki. "It was the privacy. They were satisfied flying business class when it wasn't full. But some passengers told us that having other people nearby was stressful."

Tsuzuki's team decided early on to make privacy the top priority. ANA modified its existing eight first-class suites (1-2-1 configuration), adding taller walls so passing passengers

or crew can't easily peer in. To maximise the space of each suite, the airline has moved from oval-shaped shrouds to rectangular ones. Each seat converts into a 77in-long bed.

At one point, Tsuzuki's group debated turning the first-class cubicles into rooms. But passengers actually would have ended up with less privacy because the airline felt it had to install cameras in each room so flight attendants could periodically check on passengers without having to enter the rooms. However, the airline is "considering adding a door on the next-generation product," reveals Tsuzuki. ANA is the launch customer for the new Boeing 787 Dreamliner.

- 04. Rendering showing night-time illumination in business class
- 05. A generous table and side table ensure passengers can work in comfort
- 06. Washlet control panel!

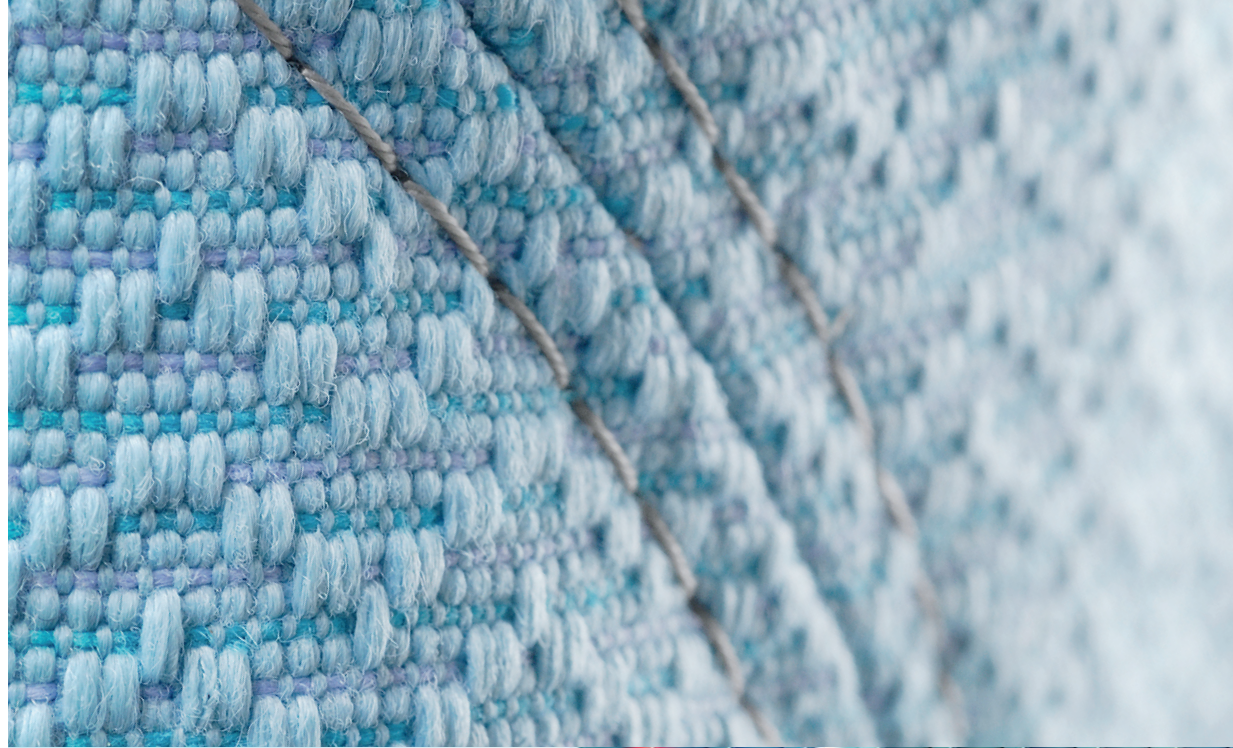
wash and go

ANA's new 777-300ERs will be the first aircraft (first-class only) to sport toilets with electronic bidets, a common item in Japanese homes. The heated water 'washlets' were designed by Boeing and manufactured by JAMCO, which has worked with washlet maker Toto of Japan to tweak the technology for aircraft. "In Japan, the washlet toilet has become a widely available product for the masses, but few people overseas have even heard of it," says Tsuzuki. "As a first step, we had to get Boeing to understand the importance of this product – that was the most difficult part of including washlets." ANA's 787s will see the washlets in both first and business classes.



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TRANSPORTATION FASHION





07



STAGGERING THE SEATS WOULD LET
EVERY BUSINESS-CLASS PASSENGER
LIE FLAT



08

BUSINESS SENSE? Not everyone in the industry agrees that investing in an upgrade of first-class services is worth it. Analyst Bob Mann, who heads R.W. Mann & Co, is sceptical that commercial airlines can win back many of their former customers who now use fractionally owned, private jets for international business trips. “With only a few exceptions, first class – even on long-haul, international flights – is an increasingly uneconomic proposition,” says Mann, who is based in Port Washington, New York.

Perhaps that explains why Tsuzuki’s team spent the most time rethinking business class. In some ways, business class could make or break ANA. In the wake of the US financial meltdown and the global recession, demand for business-class tickets plunged. Companies were slashing their budgets and cutting back on trips. Recent IATA statistics show that those passengers who are still flying are going in economy class instead of business class. Luring the corporate crowd back will be crucial because business-class seats typically bring in the highest profit margins. This fiscal year, which ends on 31 March, ANA has forecast a ¥20 billion (\$216 million) operating loss, from a ¥7.5 billion gain last year, and a 9.5% drop in sales to ¥1.26 trillion (\$8.5 billion).

ANA’s strategy for business class was to address the complaints from passengers about a lack of privacy.

Changing the seating arrangement seemed the best solution. Among the layouts Tsuzuki’s team and Hirano & Associates’ designers studied, a staggered 1-2-1 formation of fixed-shell pods held the most promise. Staggering the seats would let every business-class passenger lie flat. It would also add 50% more space, providing passengers with a fully flat bed (74in long and 25in wide including the armrest) and a direct path to the aisles – even when the seats were by the window. Hirano & Associates also came up with an eye-catching, angular shell design for Sicma to manufacture.

The downside was that the new layout would fit just 68 business-class seats, nine fewer than before. Instead of obsessing about the numbers, Tsuzuki’s group focused on making the extra space count. One example: a side table. Tsuzuki says he himself had often wished for an extra table. When working at a laptop computer on the table in front of him, Tsuzuki would keep his papers stuffed between his seat cushion and the armrest, pulling out the papers every time he needed them. He noticed other passengers doing the same thing. With the new setup, the cubicle where one passenger’s feet go doubles as the side table for the person seated in front. LED lighting above the table aids work while a blue LED bulb inside the cubicle provides a pleasant accent.

07. First-class sleeper suit and amenities

08. ANA’s First Square suite includes a wardrobe built into one of the partitions



09

“

A SEAT MAKER THINKS OF THE SEAT AS JUST A SEAT, BUT WE WERE THINKING OF IT THE WAY INTERIOR DESIGNERS WOULD – AS FURNITURE

”



10

09. Economy features 34in pitch and 10.6in monitors
 10. Premium economy seat pitch is 42in and each seat features a 12in monitor

One thing that ANA and Hirano & Associates thought would make business-class passengers feel at home was a shoe drawer under the seat. ANA officials had seen many Japanese people remove their shoes inside the aircraft, as is the custom before entering a house in Japan. It would also serve another purpose: limiting clutter around the seat that might take away from legroom. The hard part was getting seat maker Sicma on board: “A seat maker naturally thinks of the seat as just a seat,” says Tsuzuki. “But we were thinking of it the way interior designers would – as furniture. It’s part of a whole. It took a long time to get them to understand why we wanted to do it. We were asking them to rearrange the already limited space under the seat where the electric cables and other connection chords and gadgetry is housed.”

ANA used the same consumer-driven approach to rethink the service in business class. Surveys showed that passengers wanted more control over the time they spent on board. So ANA came up with the idea of giving business-class passengers ways to customise services, such as meals. “We thought people should be able to eat what they want when they want,” says Tsuzuki. “Previously, the schedule was always fixed. But let’s say you want to get some work done before having something to eat. Or maybe you want to eat a snack, work a bit, and then have a full meal.” Now passengers can order meals or snacks and specify when they want to eat using menus on the touchscreen monitors.

Tsuzuki’s team even came up with a fragrance – a combination of pine, cedar, mint, and rosemary – for the

hot towels passed out before meals. They also commissioned a signature jingle lasting a few seconds that would play before movies and other IFE programmes.

WELL TIMED? The timing of ANA’s rebranding could play in its favour. Rival JAL filed for bankruptcy in January and is set to axe a third of its workforce and cut back on flights. Tsuzuki says ANA had set their sights on 2010, when Tokyo’s two international airports planned to complete their expansions. This year, an extension to Narita’s runway and Haneda’s new fourth runway will open. The landmark US-Japan Open Skies agreement, reached in December, creates even more opportunities for ANA overseas.

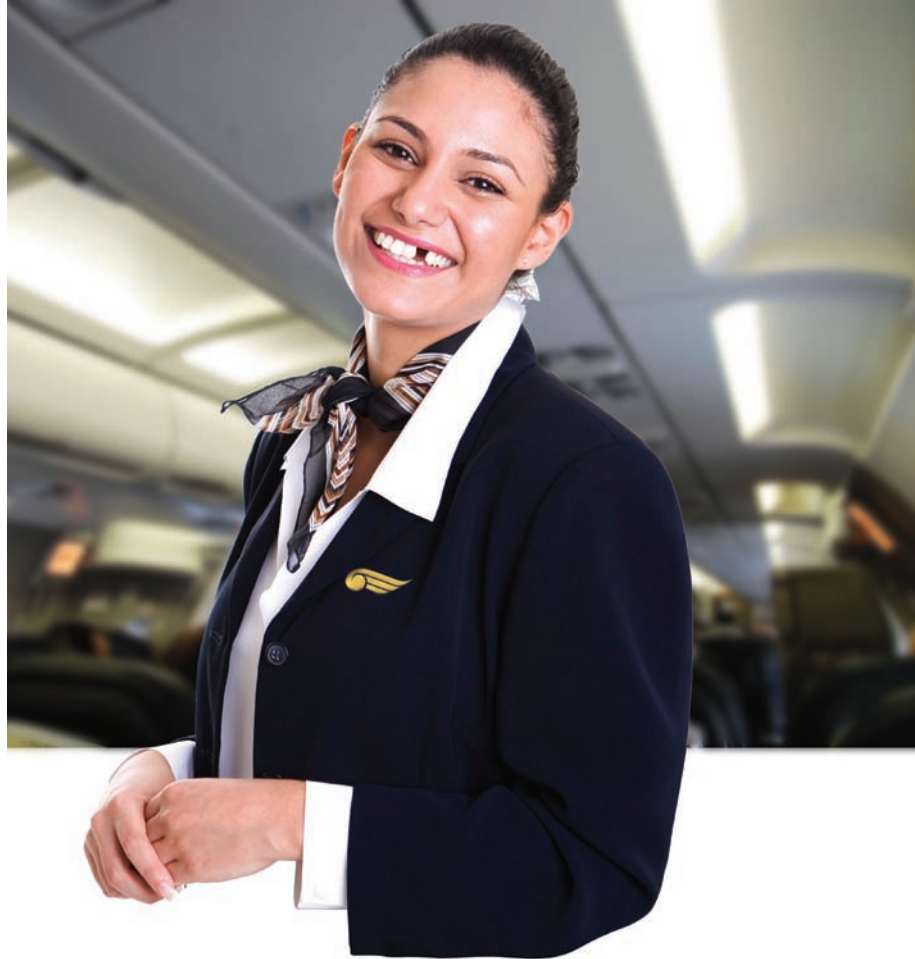
Still, the industry’s near-term prospects continue to be far from bright. Tsuzuki acknowledges the challenges of embarking on an ambitious rebranding amid a downturn for the airline industry that has yet to show signs of a sustainable turnaround.

Some industry experts have speculated that ANA’s redesign offers a peek at what the airline has planned for its 787 Dreamliners. Boeing will deliver the first of its 787 aircraft to ANA later this year. When asked whether the 777 configuration is a test run for the 787, ANA’s Tsuzuki pauses. “It’s best that I not talk about that right now,” he says. ☒

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hotfusion

Once upon a time, IFE was IFE and seats were seats and never the twain should meet – but Panasonic's 'fusion' project heralds a new era of closer integration and cooperation between the two sectors

BRENDAN GALLAGHER, AIRCRAFT INTERIORS INTERNATIONAL



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
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 If Panasonic Avionics Corporation's 'fusion' concept is the answer, what was the question? In fact there were two questions. Could the Lake Forest, California-based IFEC system manufacturer cut the weight of its in-seat equipment by half? And could the company work with the seatmakers from the word go to produce a system that would transform the economics of in-seat video for narrow-body economy cabins?

"Two initiatives came together in the fusion project," recalls Neil James, executive director for sales and product management at Panasonic Avionics. "One was a mandate from chief executive Paul Margis to take at least half the weight and power requirement out of our existing configurations. The other arose from a realisation that if we could work much more closely with the seat manufacturers we might be able to optimise everything in the seat."

Fusion was first proposed to seat vendors at last year's Aircraft Interiors Expo in Hamburg and has since advanced at a pace that surprised even its creators. "Once or twice in the past we would launch a concept, only for the aircraft and seat manufacturers to say it was just the worst time to bring out something new," says James. "But this programme has such universal appeal that it's picked up momentum faster than we expected – everybody's on board with the benefits that it brings."



POWER PLAY The first fruits of the fusion approach were displayed at last year's WAEA show in Palm Springs. A

collaborative effort by Panasonic, Weber Aircraft and US cabin interior design specialist Teague, the Weber 5751 is a lean, lightweight economy-class seat that elegantly incorporates an innovation-packed IFEC screen and user interface. The IFEC contribution to total weight is no more than 1.7 lb and the power demand 7W, compared with values of 3.5 lb and 33W for a typical current configuration. How was this remarkable improvement obtained?

"At the start of our weight-saving drive we set out to make the entire in-seat system lighter," says James. "We thought about power, not just for the screen but throughout the system. We looked at the latest technology for backlights and processors in the seat. We asked how we might be able to consolidate peripherals like the audio jack and passenger control unit."

Then came the realisation that even more could be achieved by bringing the IFEC and seat designers out of their respective closets and having them work together

01. Weber's 5751 lightweight economy-class seat is the first to feature the fusion concept


 WE THOUGHT ABOUT POWER, NOT JUST FOR THE SCREEN BUT THROUGHOUT THE SYSTEM 



02

02. Visitors to last year's WAEA event in Palm Springs were the first to see fusion in the flesh

from the start to create a truly integrated product that would not only be lighter and less power-hungry but also cheaper, simpler and superior in terms of passenger comfort and experience.

James resumes the story: "We told the seat companies we wanted to take all the problems that we have with them and they have with us, and that the airlines have with us collectively, and try to get rid of them. So we went and looked at the vendors' production lines, and asked questions like why do we have screen tilt mechanisms, why are harnesses routed that way, how much does all this stuff weigh?" The seatmakers proved receptive, and now Recaro and B/E Aerospace as well as Weber are working closely with Panasonic to move fusion forward.

LOOK HERE So far so good, but the strategists at Lake Forest were convinced that they needed one more player in the fusion mix. 'Industrial design' focuses on the look and feel of a product, as well as its functioning. "We concluded that industrial design had been compromised over the years because IFEC systems and seats had been designed thousands of miles apart, at different times on different programmes," says James. "So we set out to find

someone who would help us fix that. We chose Seattle-based Teague and gave them full authority to tell us 'no don't do that, it would be awful'."

NARROW FOCUS Panasonic has big, industry-wide ambitions for fusion, but to begin with it is targeting a sector that until now has been largely closed to in-seat audio/video on demand – economy class for the narrow-body market. "We're seeing airlines taking delivery of new narrow-body aircraft and wondering if they can get an edge by making the big step up from overhead video to in-seat," James observes. "We think we've got a system that will allow them to do that without having to pay too much of a weight or power penalty."

There are benefits for airlines and passengers, James says. "First, the airlines will have the chance, at a reasonable price, to offer their economy passengers a premium experience offering more opportunities for branding and revenue generation. Then there are the weight and power savings, increased reliability because there are fewer components, and lower overall total cost of ownership because there's less stuff to be installed in the seat, maintained, replaced and carried around."

As for the passengers, they will enjoy a better class of entertainment and have more living space for a given seat pitch in which to do it. "Working with Weber and Teague, we've packed both the IFEC and the seat tray inside the natural contour of the seat instead of bolting them on to the back," James explains. "At present, when the seat in front is reclined fully at a short pitch the passenger ends up with the screen a few inches from his face. Now we can offer both the perception and the fact of a lot more space."



THERE'S LESS STUFF TO BE INSTALLED
IN THE SEAT, MAINTAINED, REPLACED AND
CARRIED AROUND



ENTERTAINMENT

Weber Aircraft has advanced the state of the art in seat design, introducing the 5751 Slim Line. The 5751 Slim Line integrates the latest IFE thin monitors to offer more passenger space and leg room for increased passenger comfort while achieving higher seating density. Working closely with Panasonic, Weber culture of "can do - team approach" and innovative seat design, combined with the latest thin line monitors from Panasonic supported the development of the most innovative entertainment experience in the industry. Two experts doing what they do best... together.



Patents Pending

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03

SCREEN WITH ENVY Not that most passengers will object to being close to the fusion screen. Fitted flush with the matt-black surface of the seatback and unencumbered by a conventional shroud, the slim, less than 1.5in-deep unit – Panasonic calls it the Eco Series Smart Monitor – is just the most obvious part of a passenger interface that looks set to establish new standards for good looks and user-friendliness.

“We’ve completely changed the aesthetics – the brilliant, LED backlit screen stands out against the non-reflective seatback to provide a cinema-style experience,” says James. “When the airlines saw it at last year’s World Airline Entertainment Association show they were convinced that it was much bigger than its actual nine inches.”

Picture brilliance is further enhanced by the elimination of the opaque filter associated with conventional resistive touchscreens. Instead, Panasonic has gone for more touch-sensitive capacitive technology, eliminating the need to press hard or even tap on the screen. But it is Panasonic’s use of proximity sensors that will have the most transforming effect on how passengers interact with IFEC and other in-seat facilities.

“The sensors allow us to make the screen do useful things and to make the peripherals much easier to work with,” says James. “For instance, if the airline wants to do away with cumbersome and vulnerable passenger control units, all those functions – crew call, lights, volume and the rest – can be transferred to the touchscreen, revealing themselves whenever the passenger’s hand approaches.” In addition, the graphic user interface for the IFEC can be set



ALL THOSE FUNCTIONS – CREW CALL, LIGHTS, VOLUME AND THE REST – CAN BE TRANSFERRED TO THE TOUCHSCREEN



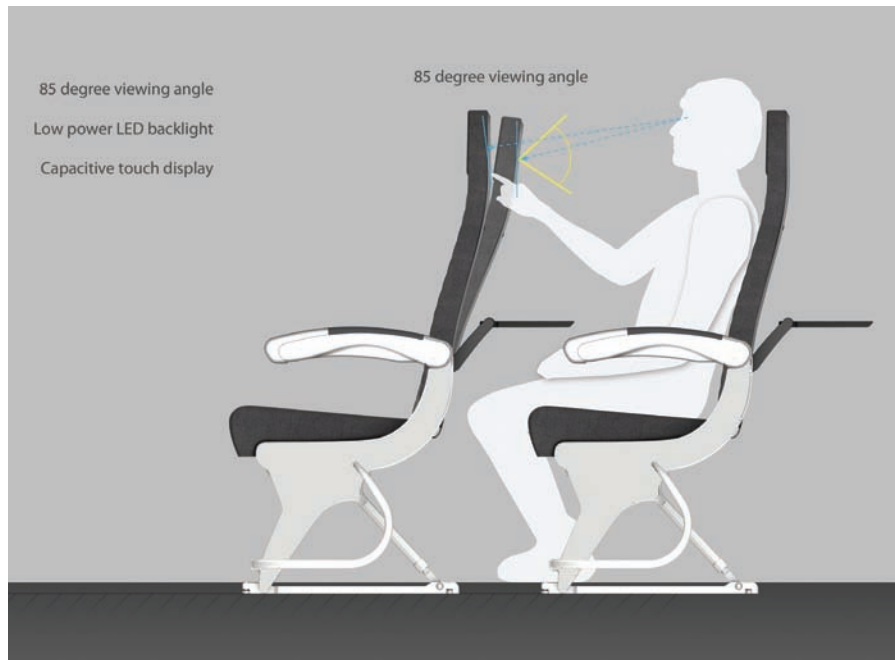
to change in response to the proximity of a hand, bringing up different displays depending on which part of the screen is approached.

03. Fusion features a 1.5in deep Eco Series Smart Monitor

NOW THAT’S HANDY Sensors associated with the peripherals mounted at the edge of the screen – audio jack, USB port and credit-card readers – cause their respective ‘landing lights’ to illuminate as a hand nears. “The default setting for the lights is ‘off,’ so that they don’t spoil the view of the screen,” James explains. “But they switch on when the passenger reaches out – very useful in a darkened cabin – or if he selects on screen a function requiring the use of a credit card, for example.”

Panasonic is confident that the screen will also appeal to airline maintenance directors. Its exceptionally wide viewing angles have made it possible to do away with the tilting mechanism, the lack of mechanical buttons has eliminated a prime source of equipment unreliability, and its advanced LCD technology drives down parts count.

The evidence to date suggests that the world’s leading IFEC system supplier is succeeding in its drive to



04



WE HAVE NO PLANS TO BUY OUR WAY INTO SEAT MANUFACTURING – WE WANT PARTNERS WHO ARE FOCUSED ON THEIR CORE SKILLS, WITH ALLIANCES IN PLACE SO THAT WE CAN CARRY FUSION FORWARD



- 04. Fusion's wide viewing angles have allowed Panasonic to do away with a tilting mechanism
- 05. Coming to a seat near you – Panasonic says production units will be available from November

completely change the way airlines see the weight and cost of IFEC. Its proposition that there is a better, more rational way of developing IFEC and seats as a single package has found a ready audience. And the fusion concept's user interface will please passengers and engineers alike. The question now is how long the airlines and their customers will have to wait before they can enjoy the benefits.

TIME TO MARKET "We're currently offering all the seat vendors, not just our three partners, everything they need to integrate the fusion in-seat system into their products," says James. "We'll have red-label, prototype, units ready for them by the middle of the year, and we expect production units to be available in November. Our target for offerability by the aircraft manufacturers – Airbus, Boeing, Bombardier and Embraer – is early next year."

Over the next 12 months Panasonic will also be working hard to cement its relationships with the seat manufacturers and industrial designers. "We want to have strategic alliances with all of the people we need to fix in place the fusion way of working," says James. "But at this point we have no plans to buy our way into seat manufacturing. We want partners who are focused on their core skills, with alliances in place so that we can carry fusion forward."

And that will mean extending the concept to the premium domain. "Having whetted our appetites with fusion for economy in the narrow-body aircraft market, we're now thinking with the seatmakers about the amazing things we might be able to do in the premium classes," says James. "Not to mention the huge weight and power economies we could get from an installation in a 600-seat A380 – the more seats you fly, the more you save." ☒

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05

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AD112_FUS2010

birthday suite

Korean Air has embarked on a major fleet overhaul, with new Kosmo Suites from Contour spearheading a package of seating and IFE improvements to mark its 40th anniversary

ANTHONY JAMES, AIRCRAFT INTERIORS INTERNATIONAL





Hitting the big '4-0' can have a strange effect on some people – often leading them to reinvent themselves through a radical change of appearance or even lifestyle – just ask your nearest Harley Davidson dealer. Airlines too are prone to taking a good, hard look at themselves when approaching important anniversaries – this was certainly the case with Korean Air (KAL) on the occasion of its 40th anniversary last year, when it decided to refurbish its mid- and long-haul fleets with new seats and IFE systems.

From September 2009 to April 2011, the airline is retrofitting 32 aircraft – nine B777-200s, four B777-300s, three A330-200s and 16 A330-300s, all of which have been in service for more than six years – with new seating and a state-of-the-art AVOD IFE system. New Kosmo Suites in first class from Contour and Prestige Sleeper seats in business class from B/E Aerospace will take pride of place on Korean's retrofitted long-haul B777-200 aircraft (as well as new deliveries to its long-haul fleet).

Meanwhile, its mid-haul fleet of B777-300, A330-200 and A330-300 aircraft will be upgraded with 180° full-flat 20.6in-wide Kosmo Sleeper seats in first class, and 170° lie-flat-at-an-angle Prestige Plus seats in business class. Weber's 5751 slimline seats will be installed in economy across both fleets.

Thales' TopSeries i5000 AVOD IFE system completes the package, allowing passengers to enjoy large 16:9 wide-screen displays and in-seat features, including a slim-line passenger control unit, USB port for personal electronic connectivity and in-seat power for laptops. System functions include a small map display on the passenger control device, 3D games, live landscape cameras and daily news. There are also over 60 movies, 40 short features, 300 CDs, 40 games and 15 audiobooks to choose from.

Taking an average of 25 days to complete an aircraft, the US\$200 million project involves the replacement of 9,720 seats with the help of 28,800 technicians per year. This is the airline's second phase of refurbishment – the

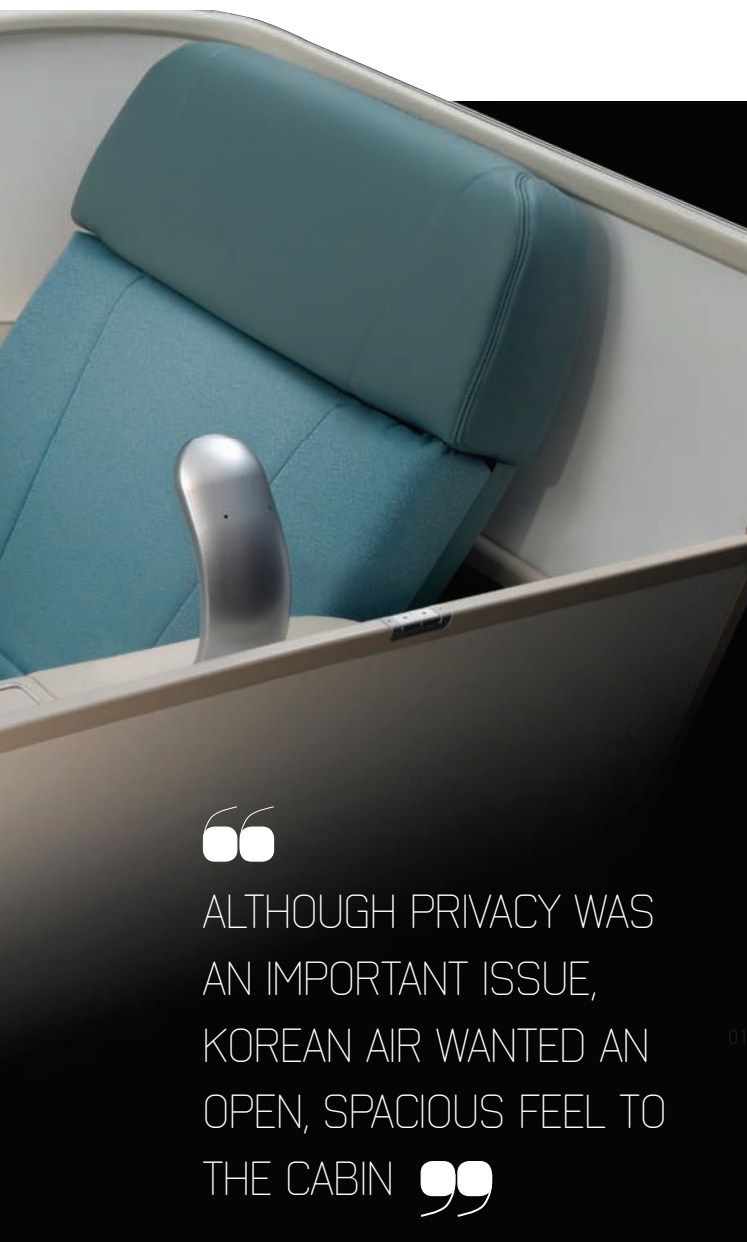


03

first ran from 2005 to 2008 and saw 17 Boeing 747-400s and nine 777-200s outfitted with EADS Sogerma-supplied fully flat Kosmo Sleeper seats in first class at 83in pitch; and B/E Aerospace 'MiniPod' Prestige Plus seats in business class at 60in pitch, providing 170° of recline.

The airline also has 38 new aircraft on order, including 12 Boeing 777-300ERs, 10 787s, 10 Airbus A380s and six A330-200s. Although the airline cannot confirm the exact cabin layout of its A380s and 787s at this stage, it says both types will be equipped with the new Kosmo Suites and Prestige Sleeper seats featured on its new 777-300ERs and retrofitted B-777-200 aircraft. Its first A380 is scheduled for delivery later this year and the first B787 is planned to be delivered in the latter half of 2011.

KOSMOPOLITAN APPEAL The new Kosmo Suites on KAL's long-range aircraft (including its most recently delivered 777-300ERs) are the real star of the show, described as "the pinnacle of luxurious travel" by the airline. Each suite cost the airline a cool KRW250 million (US\$215,000) – the equivalent of a fleet of Harleys! The suite is based on



ALTHOUGH PRIVACY WAS AN IMPORTANT ISSUE, KOREAN AIR WANTED AN OPEN, SPACIOUS FEEL TO THE CABIN



01

Contour's popular 'Venus' product, but the airline has worked with London-based design firm Acumen to customise the offering to its own needs.

Sporting a smart wooden finish to bring a touch of nature to the cabin, each suite features a 26.5in-wide seat that converts into a fully flat 79in bed. Configured in a 1-2-1 configuration and set at 83in pitch, the suites feature a 23in widescreen IFE monitor as standard. Automated privacy screens hidden within the suite's surrounding structure can be raised at the touch of a button, helping to ensure passengers are not disturbed.

"We worked closely with KAL to define a brief for the new first-class product," says Acumen's John McKeever. "The chairman of Korean Airlines, Mr Cho, was actively involved in these early meetings and had a clear vision of what KAL wanted – a first-class cabin that would appeal to both Korean and global passengers. Although privacy was an important issue, KAL wanted an open, spacious feel to the cabin and didn't want to go down the 'full suite with sliding doors' approach that a lot of other airlines have implemented in first class. KAL's preference was for a



02

private eye

The L-shaped privacy screen of Korean's new Kosmo Suites is a key innovation, according to John McKeever of design firm, Acumen: "The 'flexible privacy' of the suite, where a passenger has the ability to control how much or how little privacy they have, is one of the main differentiators compared to other concepts we have worked on," he says. "Some of our original concepts were a lot more 'open' than the product you see flying today, particularly around the ottoman area, where the height of the privacy screens were much lower. Due to the size and weight of the 23in monitor around this area, the height and overall size of the privacy screen had to be increased in order to get enough physical structure to mount the monitor from."

conventional forward-facing layout in a 1-2-1 configuration across the aircraft. Other key drivers for the brief were seat and bed comfort, reducing weight as much as possible and minimising the number of electrical actuators."

FLEXIBLE PRIVACY McKeever says the inspiration for the new suite was based around a low-level lounge concept: "We wanted to create an open spacious cabin when you first board the aircraft, but then offer the passenger excellent levels of privacy should they require it," he explains. "These two requirements tend to contradict each other but we overcame this with the concept of 'flexible privacy'. The new product has integrated, electrically operated L-shaped privacy screens around the seat-end of the suite that are low when entering the cabin, but can be raised by the passenger should they require extra privacy. This gives a feeling of openness within the cabin, but offers excellent levels of privacy without the need for high walls around the suite."

Beyond ensuring the correct balance between privacy and openness, KAL was also keen on using a seat mechanism that had already been developed rather than

01. Korean Air is fitting new Kosmo Suites from Contour on its new 777-300ERs and retrofitted long-haul 777-200s
02. Feature light – Contour and its design partner, Acumen, had to ensure it complied with HIC testing
03. The suites are laid out in a 1-2-1 configuration




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04

05

designing one from scratch. McKeever says the fact that Contour's Venus seat mechanism has a pivot between the backrest and seat pan that allows the full thickness of the seat foams to go across the full width of the seat was critical in its selection: "This eliminates the hard points of the seat structure that you can often feel through the cushions of a typical seat," he says.

A one-piece seat cover system further protects against any cushion splits between the backrest, seat pan and legrest, creating a seamlessly flat sleeping surface with no joins underneath the passenger. The seat mechanism also includes an 'electric pillow' function that allows the passenger to raise their head when watching the LCD monitor in the bed position. "These features, combined with the sculpting of the side furniture and sidearm area, create a very wide and comfortable seating and sleeping environment for the passenger," says McKeever.

SMASHING JOB Despite being loosely based on an already proven product, the new suites still had to undergo exhaustive testing procedures. "Venus was developed for a multiple of aircraft type certifications, but with FAA TSO requirements, each individual airline's aircraft type has to have its own certification plan approved by the FAA or the

airspace authority the aircraft will fly in," explains Contour's Jon Owens.

In this instance, the feature light unit mounted to the side furniture provided a real challenge from a structural and passenger Head Impact Criteria standpoint. "The light unit had to be positioned outside the arc of the passenger's head in a crash scenario and also withstand the potential passenger abuse loads that could be applied to it," explains McKeever.

In addition, the team ran into some material certification issues for some of the trim and finish items. For example, McKeever says the use of leather on the side furniture proved difficult to get through the required fire and smoke testing: "A significant number of different leathers and substrate combinations had to be tested before a smoke and toxicity pass was achieved."

The one-touch feature on the PCU bed, dining and TTL buttons also proved challenging from a certification perspective. The seat control software had to ensure that the seat mechanism would stop if anything got in the way of its movement.

However, the certification process could have proved even more strenuous, but for one key decision: "We separated the seat from the furniture physically so that the

- 04. Each seat converts into a fully flat 79in bed
- 05. The seat control unit features 'one-touch' position controls



KAL HAS INCREASED PITCH FROM 60 TO 74 INCHES, TO ENABLE EACH SEAT TO CONVERT INTO A FULLY FLAT BED



06

06. Korean Air has opted for B/E Aerospace's popular MiniPod seating in business class

seat became a TSO certification path and the furniture became a non-TSO path," explains Owens. "This meant that the seat is only fired at 16g."

SMOOTH INSTALLATION With so many aircraft to refit, KAL was keen to ensure the new suites were easy to install – and to maintain once in service. The airline therefore strove to reduce the number of electrical actuators and moving parts wherever possible as these add weight and complexity. "One of the key objectives of this product was to take the next step forward with regard to ease of installation, which means inherently that the maintenance it also easy," says Contour's Owens. "Boeing actually made the comment to us following installation that this had been the easiest and quickest installation they had done."

"The seat mechanism and side furniture are attached directly to the seat tracks, thereby eliminating the need for a heavy plinth structure," adds Acumen's McKeever. "In addition, the fact that the design does not have high suite walls and no sliding doors saves weight."

As for keeping such a large project on track, McKeever says having a clear leader was key: "Mr Cho, the chairman of Korean Airlines, was actively involved throughout the whole design process especially in the early concept stages. His presence at key design presentations ensured decisions were made quickly and the programme kept on track."

BUSINESS BOOST In business class, KAL's long-haul B777-200s will feature 28 Prestige Sleeper seats in a 2-3-2 configuration, based on B/E Aerospace's popular MiniPod product. KAL has increased pitch from 60 to 74in, to enable each seat to convert into a fully flat bed. Its new 777-300ERs will be fitted out with 56 Prestige Sleeper seats at the same pitch. However its retrofitted mid-haul 777-300s will feature 41 MiniPod seats set at 60in pitch offering 170° of decline. IFE screens in business class are 15.4in wide. "While increasing numbers and pitches of Prestige Class seats, we maintained the pitch of economy class at 32-34in, although the number of seats in economy class has slightly decreased," says a spokesperson for the airline.

In economy, Korean has plumped for Weber's 5751 slimline units with 10.6in IFE screens and sliding seat cushions for improved ergonomics across both its long- and medium-haul fleets. The 18in-wide seats are set at 32-34in pitch and provide 121° of recline. Each seat has a USB port and a coat hook.

With its smart new seats and IFE, Korean can look forward to a bright future – proving the old maxim true – life really does begin at 40! ☑

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OUR RESEARCH ON ANGLED LIE-FLAT BEDS INDICATED QUITE CLEARLY THAT THE QUALITY OF SLEEP YOU GET IS NOT THE SAME AS LYING TRULY FLAT



01

02



Flat matters. A lot. Professor Martin Darbyshire, whose product design company, Tangerine, has been responsible for two generations of lie-flat accommodation in British Airways' Club World cabins, says the original Dusk, introduced in 2000, offered the first truly flat business-class bed. Measuring 6ft (72in) long and 19.5/20in wide, it was installed initially in a 2-4-2 configuration on the airline's B747-400s and B777s, with the centre pair arranged yin-yang style.

"That probably was the most densely populated seat that offers a truly flat bed," Darbyshire comments. "And I think the term 'truly' is meaningful, in the sense that our research on angled lie-flat beds indicated quite clearly that the quality of sleep you get is not the same as lying truly flat." That is mainly because good-quality sleep relies on the ability to turn freely from one side to another, he says: "Angled lie-flat beds inhibit you from doing that, so the ability to lie flat out as you would in your home offers a significant improvement."

There is an important perceptual issue, too. "If you think you're going to have a good night's sleep your physical experience is much more likely to be a good one," says Darbyshire. "The experts that we consulted at the time were indicating that 80% of the quality of your experience can come from your belief that you're going to have a good night's sleep."

However, the ability to turn without waking remains fundamental. "When you look at how people sleep in their

homes in their own beds, they can turn a lot in the night while they're asleep and they don't wake, they don't disturb their sleep patterns, and they then get the hour and a half of really critical deep sleep which is crucial to actually rest the mind and the body," says Darbyshire.

Tangerine and British Airways would have liked to offer a longer bed, Darbyshire adds, "but the density of population then drops dramatically and the business case doesn't stack up in the same way".

The magic of the patented yin-yang format is that it positions the elbow of one seated occupant over the body of their counterpart, so everybody gets a minimum 20in of shoulder room but the seats can still be installed eight abreast. "That's crucial," says Darbyshire. "If you spool down to seven the losses are significant."

AT A STRETCH The Dusk configuration, with a Contour-made seat typically 20in wide and 72in long when extended on a 73in pitch, was reasonably space-efficient, leaving only a small dead area in the forward corners of the cabin. Its successor had the working title of Stretch and was manufactured by B/E Aerospace.

"It fits the same plan view," Darbyshire explains, "but by angling the body slightly and then by making the armrest go down to the bed surface, you are able to increase the width from 20in to over 25in. You get the increase in width but without losing any more space on the aircraft itself, and still using the same patent."

- 01. British Airways revamped its Club World with 'Stretch' in 2006
- 02. Armrests that fit flush to the seat surface ensure there's plenty of room for passengers to turn on their side when sleeping



03



04

- 03. Virgin Atlantic's Upper Class Suite (UCS)
- 04. The herringbone format of Virgin Atlantic's UCS takes space from the aisle to give to the passenger

Other improvements included significant increases in comfort through design of the seat itself. "By redefining the kinematic path and shortening the seatback we were able to move the adjacent passengers 4in further apart," says Darbyshire. "Keeping the seat pan steeply angled when travelling forward to bed mode has also increased comfort in a very reclined angle, which led to the inclusion of the Z-bed position."

Ergonomics are behind the separate footstools that complement both seats, enabling occupants to change posture easily rather than restricting them with a traditional legrest. Losing a motorised legrest can also save on weight, complexity and maintenance – both Dusk and Stretch have just one actuator.

The Stretch format, Darbyshire believes, is the most efficient possible on the B747 and B777 without overlapping adjacent seats. "There are other solutions which are more compact now," he says, "but one has to raise the question about whether they really are a full business class."

There are also products for other aircraft types that have introduced space efficiency and given space back to the passenger by taking it away from other areas. "The Virgin UCS [Upper Class Suite] product with its reverse herringbone form is space-efficient because it narrows the aisle down. It takes the aisle space away and gives that back to the living space of the passenger," says Darbyshire.

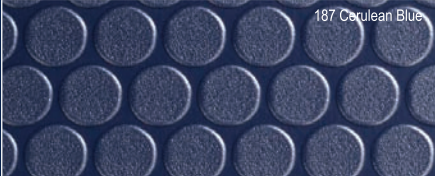


THE VIRGIN UCS PRODUCT WITH ITS REVERSE HERRINGBONE FORM IS SPACE-EFFICIENT BECAUSE IT NARROWS THE AISLE DOWN

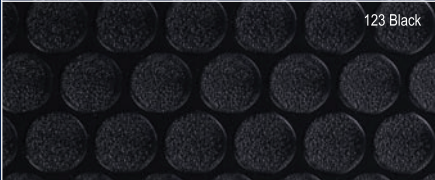


Whether an airline is prepared to do that depends to a large extent on the sort of meal service offered and whether it involves taking catering trolleys through the cabin frequently. "If you don't have catering trolleys you can get away with a narrower aisle," Darbyshire explains. "The regulations allow you to drop down to 15in, but it's typical for a business carrier to offer 20in of aisle." The narrowed aisle is not obvious on the Virgin installation because the footstool screen is quite low where it does enter the aisle.

ROOM ON TOP There are several current proposals for overlapping and even double-deck seating arrangements, intended to enhance comfort while maintaining or increasing seat numbers. Probably the most ambitious of the vertically integrated seating/sleeping schemes is Millennium Group's two-tier Air Sleeper, which aims to provide flat beds at between two and three times the density of existing business-class seats, and with certification for take-off and landing in any position from upright to fully reclined. Founder, chairman and chief executive Dr Arujna I. Rajasingham says the last several months have seen increased interest in the concept: "We are in discussions with several airlines," he says. "There have been requests for LOPAs and we have provided these. For example, a B777 business-class cabin that we reconfigured for Air Sleepers increased the number of bed/seats from 53 to 110. That is at the limit we believe is allowed for that cabin, because of emergency considerations."



187 Cerulean Blue



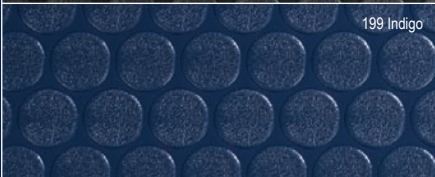
123 Black



195 Navy Blue



183 Sonic Gray



199 Indigo



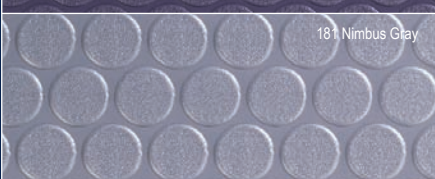
191 Dark Blue



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181 Nimbus Gray



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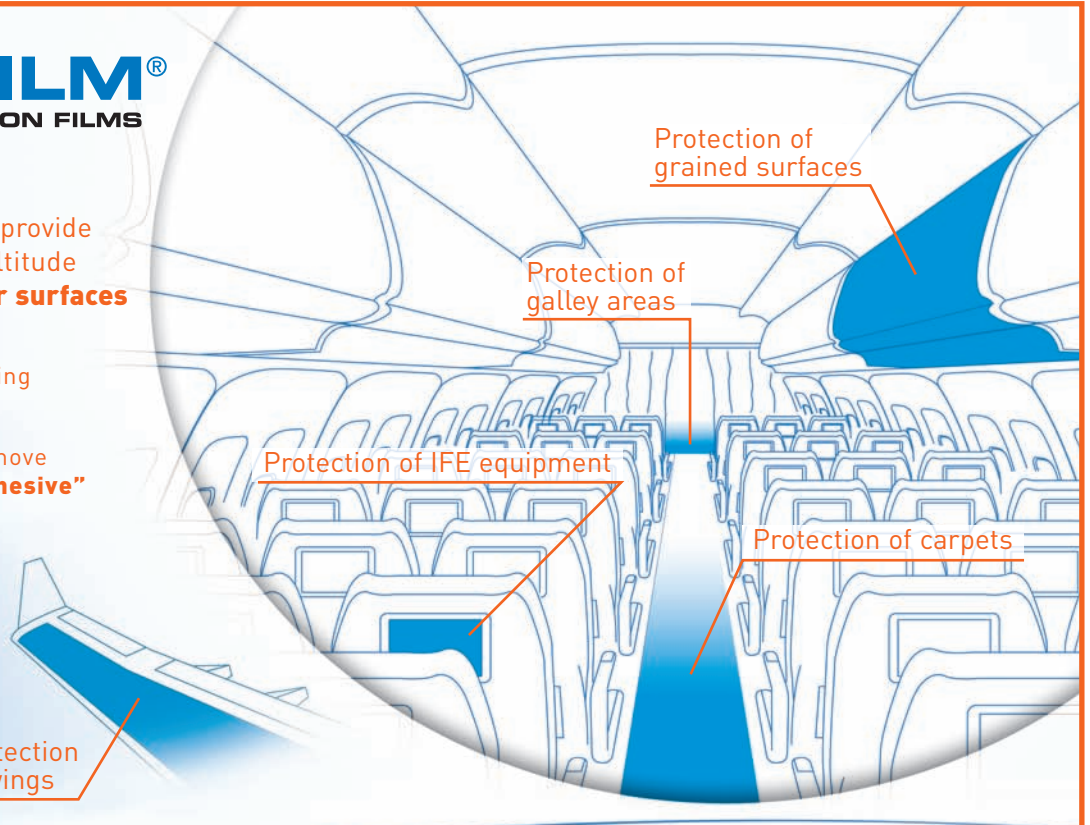
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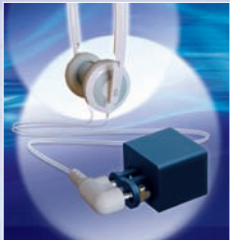
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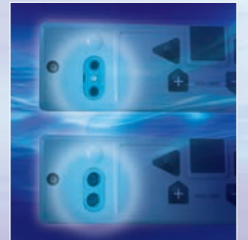
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05



06

At 22.5in wide, the Air Sleeper beds are “wider than the business-class beds they are to replace,” Rajasingham points out. They have a maximum length of 76.1in. “This is just one of a large range of options for the Air Sleeper,” Rajasingham adds. “The designs are of course custom-made for each airline and for each aircraft.”

Airborne Hotel Systems has also continued to refine its ABH proposal, which would add a third aisle and an upper tier of seats to A380 cabins in order to give every passenger a bed. Communications manager David Martínez-Celis says that a recent analysis involved a detailed comparison between the actual seat count of A380s already in service and proposed solutions with ABH configurations. Excluding first-class cabins, which the company expects to stay single-level, the results suggest, for example, that Singapore Airlines could increase the type’s capacity from 471 to 500, with six extra business- and 23 more economy-class passengers. Alternatively, it could lose a row of 14 economy-class seats from the upper deck or 18 downstairs to create a lounge area or another row of business-class seats. Gains for other carriers are more modest, and Air France’s A380, which is configured with 538 seats, would actually lose nine seats from economy class while gaining only two in business, although everyone would have a bed.

Certification of radical concepts, though, is always likely to be tricky. At James Park Associates, which has looked at stacked sleeper schemes as well as developing the ultra-wide sofa/bed for Singapore Airlines and more recently designing the Sicma-built Envoy Suite that US Airways is installing reverse herringbone-style in its A330-



TESTS UNDERSTANDABLY TEND TO ASSUME THAT SEATS ARE OF A TYPE THAT HAS BEEN SEEN BEFORE

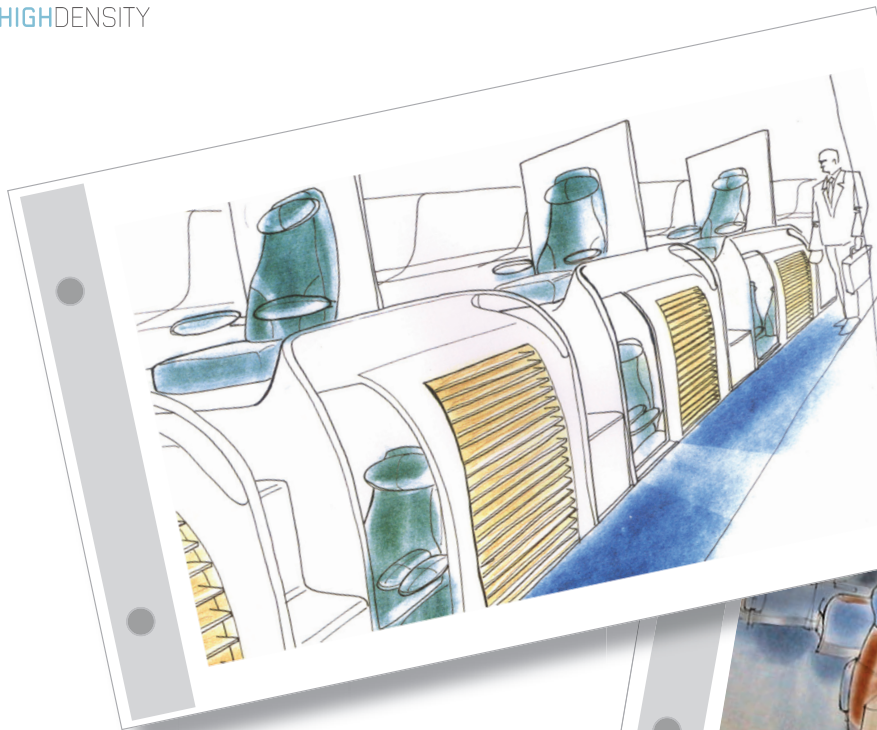


200s and -300s, senior designer Ben Orson says the latest innovation was able to build on earlier work with angled seats, so some of the major issues had already been resolved.

“Seats and regulations evolve simultaneously, so tests understandably tend to assume that seats are of a type that has been seen before. For a forward-facing seat to comply with head strike regulation, for example, is relatively simple, because of the combination of the distance from head to the object it’s striking and often the object’s relative lack of rigidity,” says Orson. “For a herringbone-type seat to comply, generally the distance will be reduced, the angle of movement relative to the passenger’s seated orientation very different, and the item of furniture being struck less forgiving. It’s a totally different set of circumstances. The rules that have been drafted up to that point, obviously they need to be complied with, but they weren’t originally framed around that particular scenario.”

CLUB LIMO As it happens, in the early stages of the project that resulted in Dusk, Tangerine also proposed a more space-efficient concept known as Club Limo, based on a lightweight stacked set of pods with a reduced ceiling

- 05. Airborne Hotel Systems’ ABH concept adds a third aisle and an upper tier of seats to the A380 to give every passenger a bed
- 06. US Airways’ Envoy Suite is angled (23.5°) away from the aisle in a reverse herringbone layout



07



08



I WOULD STILL QUESTION IF THE SPACE EFFICIENCY BENEFITS WOULD OUTWEIGH THOSE OF COMFORT



- 07. Tangerine's Club Limo concept
- 08. Early design sketch of Tangerine's yin-yang Dusk concept for Club World

height. "Time-to-market issues killed the concept at the time," Darbyshire recalls, "but I would still question if the space efficiency benefits would outweigh those of comfort or the quality of the overall experience."

Installing Club Limo would have meant removing the overhead bins and PSU rail to give a ceiling height of 100in on a B747/777, then adding a central corridor between the seats on the upper tier. Certification would have taken too long – Dusk was delivered, from concept to first aircraft, in just 16 months.

In any case, Darbyshire says, it is neither quick nor easy to do direct space comparisons and establish which is better: "There are just too many variables. In my experience, many immediate claims do not bear out once the full reality of designing to fit an airline's requirements, passenger aspirations and competitive pressures have been fully addressed."

Apart from meeting safety and certification requirements, with higher shells forming bigger challenges for dynamic testing, and complicating issues such as reach of oxygen masks and cabin visibility, any new scheme has to take into account airframe generation, size and monument positions, plus routes, cabin sizes, the number of classes, and meal service routines. It also has to be designed for both night and day, and there are time-to-market and product lifetime considerations.

"If I were to assess a space-efficient design, I would want to question to what extent comfort and normal

activity are being constrained by the new form of space efficiency, and whether the benefit is really meaningful in proportion to the investment," says Darbyshire. "Business-class passengers are intelligent people and they quickly assess the pros and cons of new products."

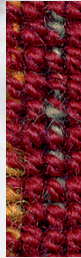
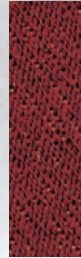
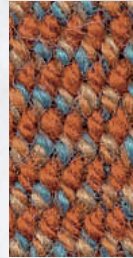
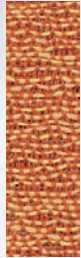
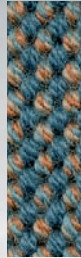
Separating the bed from the seat could offer a real benefit to comfort, he considers. Designing a seat to pass the 9g downwards dynamic test, and yet still making it comfortable as a seat and as a bed can be a major challenge, complicated by the requirement for lightness. In the case of the Stretch seat, for example, "a tremendous amount of work was done to optimise the relationship between seat geometry, the crystalflex diaphragms that form the seat pan and back, the design of the cushions – done in conjunction with Beaerospace and Franklin Products – and the removal of a bulky headrest assembly to enable greater comfort to be given around the upper body," says Darbyshire.

For shorter night flights, on the other hand, "a separate bed can be a real pain if one is stuck bolt upright in the take-off and landing position waiting for the safety belt light to go off or turbulence to abate," Darbyshire comments. Certifying a seat with a passenger lying flat, though, he sees as "an interesting opportunity – as long as one can be comfortable and free to turn over". ☒

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differentclass

Gulf-based carriers have redefined premium-class air travel in recent years, as their buying power has even enabled them to persuade the manufacturers to modify their airframes to accommodate new amenities

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The former Trucial States became independent as the United Arab Emirates at the end of 1971, along with Bahrain and Qatar. In 1974, together with Oman, the three new states bought BOAC affiliate Gulf Air, which was just starting direct flights to London using Vickers VC10s. Barely two years later the airline had introduced its first Lockheed L1011. Dubbed the 'FiveStar TriStar' and advertised as "the most luxurious airliner the world has

ever known", the new aircraft featured a lounge bar with 10 non-revenue seats, first-class centre-aisle seats that could swivel to form a club-four arrangement for dining, and free wine in economy. But then it was competing with Concorde on the London route.

Just 33 years later, with three of the original partners plus Dubai having started their own airlines, the arrival in the last quarter of 2009 of the first new Airbus A330-300s at Oman Air and Etihad was a reminder of the extent to which Gulf Air and its offspring have transformed accepted notions of what is achievable in a commercial airliner cabin.

EVERYTHING AND MORE Oman Air's new three-class layout "delivers everything the discerning traveller could want, with more space, comfort and luxury than ever before", said CEO Peter Hill at last November's inauguration





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of the Muscat-London service with the new aircraft. The provision of lie-flat seats, direct aisle access and a la carte dining for every passenger in first and business class, together with the comfortable and spacious economy-class seats, he said, means Oman Air now offers “an unmatched level of quality for all passengers”.

It is hard to argue with that assessment. The six mini-suites in first are designed to offer a private jet-like experience, with what the airline says is the longest lie-flat bed available on any commercial airliner. Set at 87in pitch and 25.5in wide, with a built-in eight-point massage system, stowage for hand luggage, dedicated space to hang a coat and a 23in video monitor, the seat converts to an 82in-long bed. First class also includes a small area for socialising.

The 20 business-class seats, again configured 1-2-1, are pitched at 82in and come with stowage space, a privacy screen and a 17in monitor. And the 204 economy class seats in 2-4-2 configuration, each with a 10.4in screen and adjustable head and leg rests, are pitched at 34in, though the airline says their innovative slimline design provides the sort of legroom found in premium-economy cabins with a 36in pitch.

France-based seating manufacturer EADS Sogerma supplied the seats for all three classes.



OMAN AIR IS ALSO THE FIRST AIRLINE TO OFFER BOTH CELL PHONE AND INTERNET ACCESS ON BOARD



Oman Air is also the first airline to offer both cell phone and internet access on board, its first A330-300 being equipped for the OnAir phone service supported by Inmarsat SwiftBroadband satcoms. Audio and video on demand, six channels of live TV, new menus in every class and specially trained cabin crew sporting new uniforms by Balenciaga complete the offering.

Meanwhile, the first of Etihad's five A330-300s, delivered late in December, also has three classes, including 12 of the new first-class mini-suites already installed on two of the airline's A340-600s, plus the new business and economy classes. The first-class cabin includes a changing room to complement the 80.5in beds with their personal wardrobes and mini-bars, as detailed in September's *Aircraft Interiors International*, and Etihad has

- 01. Oman Air's new A330-300s feature 20 business-class seats at 82in pitch
- 02. Oman Air's A330-300 first class boasts six mini-suites at 87in pitch



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03



04

contracted Lufthansa Technik to retrofit the B/E Aerospace-manufactured suites in another nine A340s this year.

INNOVATION IMPERATIVE Jacques Pierrejean's Paris-based Pierrejean Design Studio has worked on many of the Gulf carriers' accommodation initiatives, starting with the mini-suites that Emirates introduced in 1998 and including new interiors for Qatar and Etihad. The firm was not responsible for the new Oman interior, but was involved indirectly through its work for seat manufacturers, and Pierrejean says that with a business-class pitch greater than most airlines use in first class and a dedicated area for socialising complementing the mini-suites in first, it will be impossible to improve on this standard because of the impact on seat numbers: "It's actually for me the maximum level that we can reach."

The market, Pierrejean says, has changed completely over the last 15 years, "and we have pushed these new airlines to do something a bit different from what we have in Europe or America. With Emirates, for example, we started the idea of giving passengers VIP comfort in first class but also in business class".

Qatar's approach was different, with CEO Akbar Al Baker looking for a more restrained feel – a German car rather than an over-the-top Italian model is Pierrejean's analogy – and the result is a less complex approach with less reliance on electrical functions. "For Etihad, on the other hand," he adds, "we said, okay, now we have to push the idea a little bit further and maybe imagine what could



BOTH AIRBUS AND BOEING HAD TO BE PUSHED TO MODIFY THEIR CABIN ENGINEERING



happen in the future for this young airline coming on the market after so many others. So we thought, why not imagine business class as a little bit different, offering each passenger direct access from the aisle? So we created the pod seat, which has been the best business-class seat of the year for the last three years now."

ART OF PERSUASION The big orders placed by Gulf carriers earn them a degree of special treatment from the manufacturers, Pierrejean adds. When Emirates wanted to replicate the mood lighting it had introduced on its A340-500s on the 777-300ER, for example, Boeing was initially resistant, but was persuaded to do it using new LED technology, instead of the fluorescent tubes used by the European manufacturer. Both Airbus and Boeing had to be pushed to modify their cabin engineering to accommodate oxygen provision for Etihad's business-class pod seat. And the Emirates 52-aircraft A380 order meant Airbus was receptive when asked to modify the forward area of the

- 03. Emirates' A380s include a lounge for socialising
- 04. Emirates is currently the only carrier to offer onboard showers



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purchasing power

Boeing attributes the unprecedented rates of growth in Middle East air travel seen in recent years to the region's unique combination of economic expansion, modern air transport infrastructure and favourable geographic location. Its Current Market Outlook sees annual economic growth in the region of 3.8% driving revenue passenger kilometre growth of 6.6% over the next 20 years, with the fleet more than doubling in size as a result, from 840 aircraft in 2008 to 1,860 by 2028. New deliveries of 1,710 aircraft are expected to include 130 large, 850 twin-aisle, 680 single-aisle and 50 regional jets: the region was due to take 45 twin-aisle aircraft last year (around 20% of global twin-aisle deliveries) and another 50 in 2010.

Airbus anticipates that Dubai will be the world's fourth-biggest airport by 2028, behind only Hong Kong, London Heathrow and Beijing. Its forecast, based on a projected 5.9% annual increase in RPK over the next 20 years, calculates that the region will take 189 very large, 668 twin-aisle and 561 single-aisle aircraft, resulting in a fleet of 1,790 passenger aircraft with 100-plus seats. It is the region's handful of global airlines that Airbus predicts will take the lion's share of new aircraft, accounting for more than 50% of the total and more than 70% of the twin-aisle and very large deliveries.

upper deck with the water supply and drainage to support the shower-spa installation.

For Pierrejean, the Emirates A380 is the best innovation of this aircraft: "You have a real lounge, real mini-suites, a real shower spa, a good approach with the forward staircase, and a good business-class seat." For the future, he is pushing the lavatory manufacturers to incorporate changing rooms so that premium passengers have somewhere to change into pyjamas. "If you want to use a standard lavatory to change your suit for pyjamas, it's a gym exercise," he says.

GLOBAL APPEAL For the future onboard brand and product experience on Etihad's fleet of new A380 aircraft, the first of which is due to be delivered in 2012, the airline selected a consortium of UK-based agencies – Acumen, Factorydesign, Promise and Honour – to provide expertise in customer insight, as well as product and aircraft interior design.

Its thinking on the Etihad project must remain under wraps for the time being, but consultant director Michael Crump from Honour, whose role is to lead the design strategy and management of the consortium's deliverables, sees some common cultural and historical threads in the approaches of the Gulf states and their airlines. "They're all relatively young nations," he says. "They're all rapidly

building an infrastructure to create modern global business centres of excellence and also high-end, luxury leisure destinations. This is attracting and growing the business market and a high-yielding premium leisure market."

Abu Dhabi, Dubai, Qatar, Bahrain and, to a lesser extent so far, Oman, are all developing an infrastructure and a society that is built around growth in tourism and business, Crump says: "There is a large proportion of nationals in the region who are high net-worth individuals, so there's always a market for the premium products on those carriers, and consequently they position their products and brands at the premium end. They've all got suites or beds in first and business."

Many of their offerings are positioned to embrace the service styles of hotels, Crump says. "Qatar positions itself as 'the world's 5-star airline' and Etihad has hotel style

- 05. Etihad's new Diamond (first class) suite on its new A330-300s
- 06. Qatar Airways' A340-600s include a first-class lounge



IF YOU WANT TO USE A STANDARD LAVATORY TO CHANGE YOUR SUIT FOR PYJAMAS, IT'S A GYM EXERCISE





THEY'RE ALL TRYING TO REPLICATE THE HIGH LEVEL OF SERVICE APPROACH THROUGH THEIR PRODUCT OFFERS



07



08

- 07. Emirates is replicating the 10-abreast economy seating of its A380s on its 777s
- 08. Emirates' A380s feature a staggered high-density business class layout

check-in and food and beverage managers on board.” And the service and hospitality levels reflect the local culture: “It’s a region of the world that has a high service-level culture. The nationals expect high standards of service and support, and that is what makes the region attractive, both as a place to do business and as a holiday destination. So they’re all trying to replicate the high level of service approach through their product offers and differentiate themselves against some of the older established players.”

FEWER FRILLS Not everybody gets a bed, of course: Emirates is one of a relatively few airlines to shoehorn 10-abreast economy-class seats into its 777s, and Etihad revealed recently that it was planning to follow suit as part of a Y-cabin modification programme for its own six-strong 777 fleet, which will also include an IFE upgrade. But Crump points out: “The home market in their own region is not sufficient to sustain the growth that they’re all trying to fight for, so whether it’s Dubai, Abu Dhabi, Qatar or Bahrain, they’re all trying to do the same thing, to create an international hub and feed traffic through to Europe, Americas, Asia and the Far East. But they’re also trying to build a compelling destination for people to stop over and have a holiday or take some time out.”

The approach is not just a headlong plunge into the future, though. As Crump says: “I think for all the Arabian Gulf nations there’s a tremendous sense of pride that in a very short space of time their nations have grown from small villages and nomadic tribes, to become some of the wealthiest and most financially influential nations in the world. But there is a strong sense of respect for their heritage and for the land and the desert, and when you get close to the Arabic culture you understand that respect and that connection with their past. So they look back with respect, whilst projecting forward with pride and an irresistible sense of optimism.”

In Jacques Pierrejean’s view, the Middle East may have reached a plateau in terms in comfort. Future innovation, he suggests, may come instead from India or Africa, where airlines such as Nigeria’s Arik Air are working on how to compete with the Gulf carriers. “If a young company is coming through, it has to do something better or different to gain a place in the market. And that, for me, is the evolution. The Middle East will be maintaining this level of quality and services, and new competitors will be looking for something a little bit different.” ☒

CONTACT

Pierrejean Design Studio, Web: www.pierrejean-design.com



Airline CATERING

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SHOWPREVIEW

DUBAI 2010

Welcome to Aircraft Interiors Middle East 2010



The second Aircraft Interiors Middle East will be held at Dubai Airport Expo from 28 February to 1 March 2010. The free-to-attend event incorporates an exhibition and a series of workshops, with speakers including Gary Doy of Design Q (which has

worked with Virgin Atlantic, Cathay Pacific, Bombardier and BAE Systems), and Nouredine Madoui of German design firm Case4de. Patrick Brannelly, vice president of Emirates' passenger communications and visual services, will deliver the opening address and also

take part in a panel discussion on connectivity. Meanwhile, the Hosted Buyers Programme will see decision-makers from top airlines – including Bahrain Air, Emirates, Etihad and Wataniya Airways – attend pre-scheduled meetings with exhibitors.

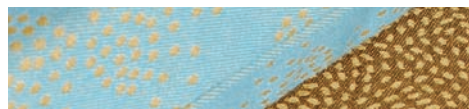


TAKE THE FLOOR

Gerflor will present some of its latest floor coverings designed specifically for aircraft interiors, including very high-definition wood and mineral decorative patterns, the Batiflex alternative to traditional carpet, lightweight floor coverings, and technical solutions for a completely watertight system. All Batiflex floor coverings can be hot welded, delivered cut to size, and are available with a self-adhesive backing option. They have been designed to meet aircraft manufacturers' and airlines' requirements, including reduced weight, superior anti-slip properties, dimensional stability, durability, telegraphing minimisation, and ease of installation, cleaning and maintenance.

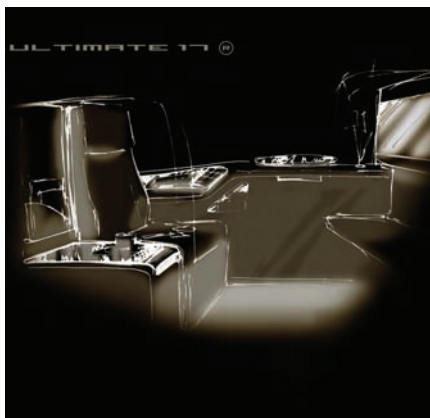
MATERIAL WORLD

Tisca Tiara will showcase a new collection of ready-to-use aircraft interior fabrics and carpets in carefully harmonised designs and colours. The company designs, develops and manufactures a wide range of premium fabrics (including seat covers and curtains), as well as carpets for the complete cabin interior – all under one roof. Tisca Tiara says its fabrics and carpets allow airlines to reduce their operating costs by lowering kerosene consumption, reducing maintenance, and minimising replacement and refurbishment costs.



CRYSTAL CLEAR

Recaro will display its Comfort Line 3620 and Smart Line 3510 economy-class seats, both winners of the Crystal Cabin Award in 2009. The CL3620, designed for long-range flights of up to 20 hours, has a single-beam construction designed to provide a lean profile and generous legroom, even with a short pitch. It also features flexible material in the headrest, a footnet, and an ultra-thin backrest. The SL3510 weighs 9.1kg, has a non-adjustable backrest set at 15°, and is suitable for short-range flights of up to four hours. The seat is designed to offer weight reduction without compromising quality.



EADS Sogerma super-first-class Ultimate 17 seat is designed to offer luxurious comfort.

upwardly mobile

Percival Aviation will introduce SkyPAL mk2, a new onboard wheelchair, designed and manufactured in light of the new ECAC Code of Good Conduct – EU Regulation No 1107/2006.

SKYPAL is small enough to use as an aisle chair, travel as cabin baggage, or be stowed – measuring 350 x 565 x 245mm when folded. The wheelchair is made mainly from aluminium, foam and fabric, and weighs 6.5kg. Percival Aviation says its wheelchair complies with the (UK) DPTAC onboard wheelchair specification and the (US) DoT 14 CRF Part 382, and will be supplied with an EASA form 1 and full component maintenance manual.



suite deal

Aviointeriors will present the Sky Suite, a private cabin designed to provide a level of luxury and privacy beyond a first-class seat. The fibre-optic lit private cabin features two adjustable seats, with their own tables (which can function as a large dining table), and can be transformed into a bedroom complete with queen-size flat bed and plush mattress, wardrobe, LCD video screen, mini-bar and other amenities.

Aviointeriors will also show its new premium-economy-class seat, which is designed to provide a luxury home feeling at 36-38in pitch.



SITTING COMFORTABLY

Aeristo will unveil several new products aimed at increasing seating comfort, including VentiMesh, a passive seat ventilation and comfort material that is designed for installation underneath leather seat covers, and to offer excellent fireblocking capabilities. Another new product is Fyairheat, a nanocarbonfibre foil heating system that can be installed in seat cushions, panels and flooring, and is designed to be super lightweight, also doubling as a Radio Frequency Interference (RFI) shielding material. Aeristo will also display the Aerovitt pneumatic seat adjustment system, which combines lumbar and side support with optional massage systems (seven-bladder lumbar massage) and seatwalking.



EVERYTHING'S COVERED

Sabeti Wain Aerospace and **Dyers International** have merged to offer greater benefits to their customers – from Sabeti Wain the design and manufacture of laminated seat covers, and from Dyers expertise in the dry cleaning of fabric seat covers and the care and maintenance of leather seat covers. Both companies have facilities in the Dubai Airport Free Zone and both are established suppliers to airlines in the Gulf region.

AIR SUPPORT

Case4de will showcase two programmes – Aerospace Supplier and Subcontracted Integration Service Team (ASSIST), a 3D integration programme, and Airplane Interiors Modification Management (AIMM). ASSIST was developed to alleviate supply chain issues that can lead to costly delays due to 3D design rework. Lean principles based on in-depth expertise in processes, methods and tools (PMT) matching allows suppliers to focus more directly on the core business of technical design and address actual integration issues, rather than expending resources on PMT adherence. Meanwhile, AIMM teams are experts in project management, aiming to put aircraft back into operation quickly and on budget.



Happy Design Studio's Didier Wolff aims to dazzle visitors with his custom livery design talents.

THAT'S ENTERTAINMENT

The IMS Company's Entertainment division will showcase the PAV705 portable media player (PMP), which is available with a standard life battery (SLB) or an extended life battery (ELB). With the SLB, the unit weighs 21.6oz (612g) and has a battery life of over four hours. With the ELB, battery life is over 10 hours, and weight is 25oz (709g). The unit measures 7.1 x 5.0 x 0.8in (182 x 128 x 20mm), with a 7in touchscreen, 16:9 aspect ratio and 800x480 screen resolution. With a storage capacity of up to 160GB, PAV705 can entertain passengers with up to 320 hours of AVOD, interactive games, surveys and news. The company's Flight Deck division will show SkyTab 2350, which runs advanced software applications for the flight deck.



PLASTIC FANTASTIC


Kydex will display several of its thermoplastic sheet products for aircraft interior components. While the company has more than 3,500 standard colours to choose from, it also offers a colour-matching service, and says its products are available with short lead times, in short production runs, and in a variety of patterns and textures. Kydex FST and Kydex FST-IM (a new injection moulding resin) are compliant to FAR 25.853(a) and (d) and Airbus ABD0031 and Boeing D6-51377 requirements. Meanwhile the company will also showcase Kydex 6565(d), a thermoformable material with a decorative surface, fused during extrusion to a Kydex substrate.



fullservice

Beyond investing in new 'hard' onboard products, airlines also need to ensure their inflight catering and service remain compelling for frequent fliers

LIZ MOSCROP, AIRCRAFT INTERIORS INTERNATIONAL

 As the airline industry splinters into increasingly marginalised segments, full-service long-haul carriers at the higher end of the market are working overtime to tempt passengers back on board. Travellers are bound to be the winners as catering and service elements are honed to provide a competitive hook.

Since food is the way to many people's hearts, airlines are going all out to provide the best in catering. Austrian, for example, has hired an inflight chef to serve its business-class passengers on long-haul routes. Others have enlisted top cooks to create sumptuous menus for premium passengers. American Airlines has worked with Darren McGrady, the London Savoy-trained chef who cooked for HM the Queen for 11 years; while SWISS has brought in – among others – Michelin-starred Heiko Neider, head chef of fine dining at Zurich's five-star über-luxurious Dolder Grand hotel. Neider created signature dishes such as scallops with cauliflower, ginger and star anise in first class, while business-class passengers enjoyed veal with carrots, black cumin and polenta cubes.





01

dare to be different

Design can play a key role in defining an airline's catering and service offer. LSG Sky Chefs equipment design team was awarded with the French Design Council's 'Observateur du Design' for inflight equipment designs developed for Corsairfly in 2009. The carrier's passengers are mainly excited holidaymakers. When the charter airline introduced a new service concept on its long-haul flights, LSG Sky Chefs introduced the 'Exploration' economy-class tray. The design combines interesting shapes with vibrant colours to transport the passengers into a holiday environment from the moment they board the aircraft. With nine colours to provide variety, tray sets look different from one passenger to the next. The new equipment weighs less than the previous generation and has been on board flights since March 2009.



02

01-02. LSG Sky Chefs equipment design team's economy-class tray set for Corsairfly

Further east, Jet Airways teamed Michelin-starred chef Yves Mattagne with LSG Sky Chefs to create a Western-style menu for the airline, while British tearaway Gordon Ramsay has acted as a consultant to Singapore Airlines. "Working with star chefs is still very 'in' for many airlines," says SWISS's head of inflight, Sarah Klatt-Walsh. "There is also more emphasis being placed on sustainability, with carriers promoting fair trade products, bio/organic, or 'green miles'," she continues. "Recycling and bio-degradable packaging are also hot topics at the moment, and this trend is sure to grow further until it becomes a standard."

Flag carriers are also increasingly introducing menus that reflect national and regional specialities. For example, SWISS's 'Taste of Switzerland' programme promotes culinary delicacies from different Swiss cantons every three months. The airline selects guest chefs from a region to create seasonal menus using local products that are

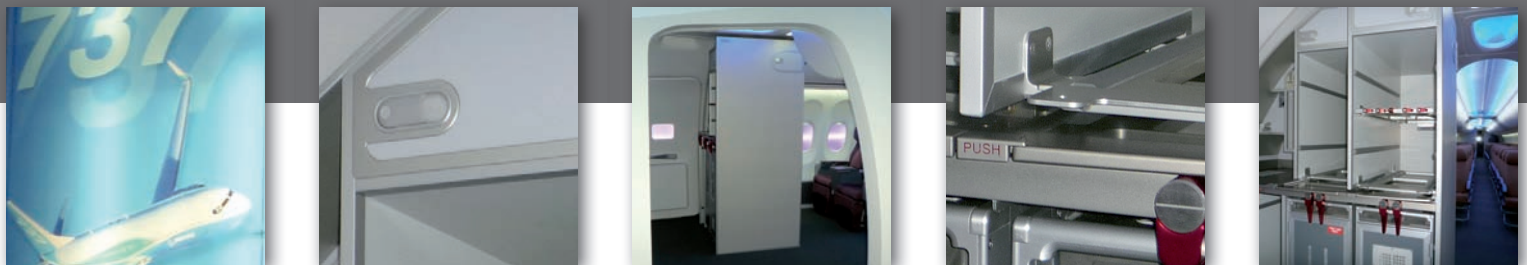
complemented with regional wines, cheeses and other local specialities. These menus are offered to premium passengers alongside 19 special menus, including low calorie, kosher and vegetarian.

FREE THINKING Leading carriers also allow their premium passengers to choose when they want to eat during the flight, with meals presented on individual plates, restaurant-style: "We offer a 'freedom' service in Upper Class so people can eat when they want to," says Virgin Atlantic's Chris Birch, head of product. "In premium economy we serve meals on crockery to differentiate the offering from economy."

Virgin Atlantic says passenger feedback is also vital in building a winning catering and service concept: "To find out our passengers' needs, we use a mixture of customer research focus groups assessing satisfaction of service on board," explains Birch. "We cross-tabulate people's



Experience the benefits of more flexibility



Discover the new MaxFlex2 galley, jointly developed with Boeing for the B737 Sky Interior at Aircraft Interiors Expo, and experience the benefits of more flexibility.

Aircraft Interiors Expo, Zodiac Aerospace - **booth 7D50**

DRIESSEN

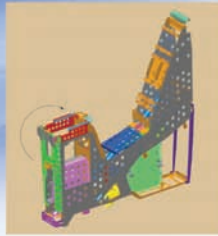


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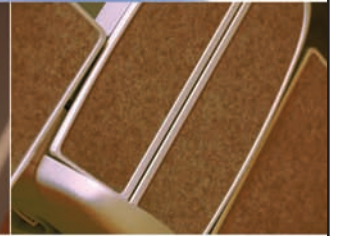
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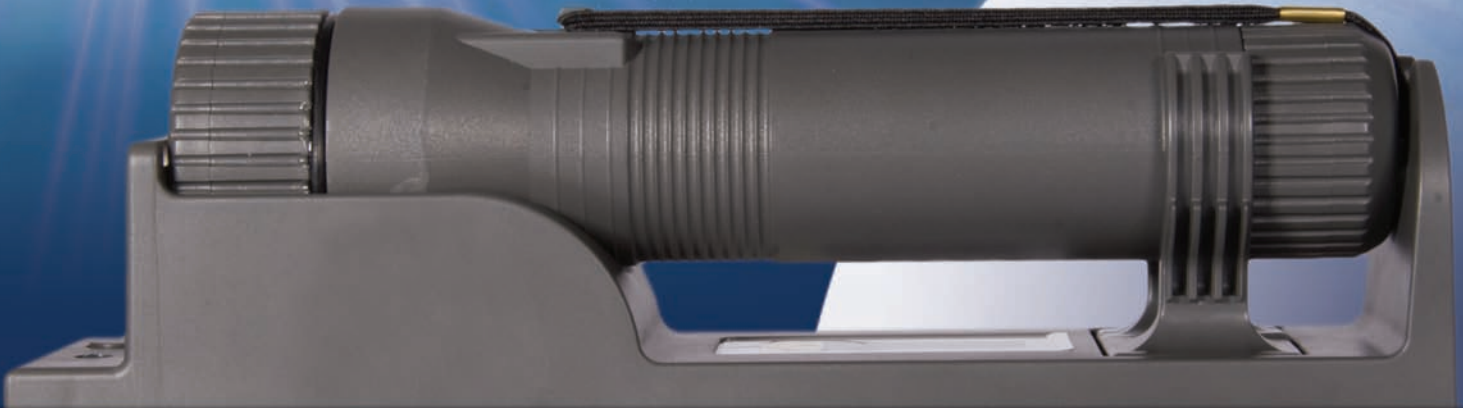


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03



04

- 03. Virgin Atlantic's inflight bar epitomises its philosophy that premium passengers should be able to drink or eat what they want, when they want
- 04. SWISS first-class appetiser
- 05. Gate Gourmet Preludio meal tray



05

responses with different aspects of our main loyalty measures to find out how likely they are to fly with us again. We can't afford to rest on our laurels and don't want to take our customer service for granted."

The airline works hard to keep up to date with popular food brands and beverage trends: "People are interested in healthy foods as well as comfort foods – although one flight isn't going to turn someone into a healthy person," says Virgin Atlantic's service design manager, Paula Mignucci. "We also focus on the origin of our food and give passengers as much information as we can, and they decide what to have."

KEEP IT FRESH According to Nina Harman of The Business Spa (TBS) consultancy, constantly updating catering and service is key to stimulating airline sales:

kaizen principles

SWISS recently extended its contract for onboard products and services with Gate Gourmet until the end of 2015. The deal covers a business spend in excess of CHF600 million (US\$577 million), and includes service to the airline at Zurich, Geneva and Basel. SWISS operates approximately 20 long-haul and 200 short-haul flights daily from the three airports.

"Last year Gate Gourmet and SWISS started applying the 'kaizen approach' of continuous improvement to those processes in which the companies interact with each other," says Philippe Op de Beeck, gategroup senior vice president and president Europe and Africa region. "This close collaboration with SWISS has strengthened our relationship and enables both companies to simultaneously increase quality and reduce cost."

The agreement covers all Gate Gourmet's services to the airline. According to Sarah Klatt-Walsh, SWISS' head of inflight, kaizen has had huge benefits. "We apply the methodology to help us improve the service flows on board, reduce 'wasted' service steps, and to bring more quality of service to the passengers and our crew," she says. For example, SWISS has created 'Ready To Go' trolleys, which combine everything the flight attendants need for the flight into one or two trolleys. Crew can start onboard service quickly and spend more time with the passengers in the cabin rather than in the galley searching for food, beverage, and materials. Kaizen principles also translate into fuel savings. SWISS has shaved around 10% from its weight by analysing every item on board for its usefulness. The airline is now evaluating lighter crockery for its premium classes.



06



07



08

- 06. Gate Gourmet signed an agreement in November 2009 to provide catering to SWISS at Zurich, Geneva and Basel airports
- 07. Beef lobster dish from Gate Gourmet
- 08. Austrian has inflight chefs on board its long-haul business-class flights

“Re-energising the service you deliver can be your best weapon in the fight for competitive edge and improved profits,” she says. Harman has worked with Virgin Atlantic, bmi, Swiss, BA (OpenSkies), Air Canada and NetJets on the strategic development of catering and service.

For OpenSkies, TBS designed and delivered the inflight catering product and worked with crews to beef up service. TBS drew its food influences from the UK, but with subtle cultural differences. British high tea with a French twist proved a big hit in business class. Harman says: “We made up boxes with cakes from Ladurée, which our French passengers raved about and took home. Our New York passengers got a deli box with a bagel.”

Staff were trained using role play and taught to have a thorough knowledge of the food and wine served so they were able to answer questions. Harman says managing “internal change” is the most important process involved

when updating an airline’s catering and service: “We ensure everyone in an organisation understands his or her critical role in making the new service a success,” she says.

In an ideal world TBS would like to take crew to superior five star hotel chains to experience the best of service. The company has proposed the idea to the private jet sector, but this would prove too costly for most airlines, especially in the current climate. “Chains like the Fairmont and the Four Seasons are the best,” says Harman. “Service is consistent throughout the brand, unobtrusive and attentive. Staff are high calibre, present well and always deliver.”

Service is the public face of any brand, continues Harman: “We train staff to be friendly, but not over the top, even down to how they greet people. They should always say ‘hello’ rather than ‘hi’ and try to use passengers’ names in business class.”

SWISS’s Klatt-Walsh agrees, adding it’s important to treat passengers as individuals: “Customers appreciate efficient, friendly, attentive, warm service and authentic, simple and fresh meals, packaged nicely,” she concludes. “But most important of all, they want to feel appreciated as guests on board.” ☒

“ WE TRAIN STAFF TO BE FRIENDLY, BUT NOT OVER THE TOP, EVEN DOWN TO HOW THEY GREET PEOPLE ”

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flexappeal

Driessen-Zodiac Aerospace presents a new generation of galleys for the B737, designed for maximum flexibility

Driessen-Zodiac Aerospace is developing a new generation of galley, MaxFlex 2 (MF2), for Boeing's B737 aircraft. MF2 will be the standard galley on the new B737 Sky Interior configuration, which is due to be launched in July 2010, and will also be compatible with the current standard B737NG interior, with no need for change or additional certification.

One of the main design goals in designing MF2 was to provide flexibility, enabling operators to select from a large selection of pre-certified completion kits or modules, and therefore develop their own custom configuration. These can be changed to new arrangements at any time during the aircraft's lifecycle, as catering requirements and marketing strategies evolve, or as the aircraft are deployed on new routes or even change hands. "The galley modules (options) for each compartment will be unlimited," says Abraham Sarraf, sales and marketing director at Driessen. "Airlines will be able to choose from a list of arrangements, using a

sophisticated configuration tool, for each available compartment in the galley."

Inserts from all approved suppliers can be selected to complete the galley. "All inserts currently certified for the B737NG are compatible and will be available to the airlines with this galley, including water boilers, coffee makers, ovens, hot cups, refrigerator, chillers, etc," says Sarraf. "Additionally, the MF2 has been designed to accept Arinc inserts, which will be certified with B787 and A350 in the future."

Beyond flexibility, Driessen has also worked with Boeing on improving aspects such as installation, maintenance and reliability – analysing data so they could make efficiencies and implement lean practices. "This investigation was done in every aspect of the galley. The design was defined after two years of data collection and analysis," says Sarraf.

The system connects with aircraft systems such as power, water and waste using 'quick disconnect' connectors and

hoses, for easier and quicker installation and maintenance. Materials used include a composite for the workdesks, and Kevlar for panels. Sarraf estimates that efforts to simplify design have led to a reduction of around 300 parts per single galley shipset.

"MF2 galleys boast a long list of advanced design concepts, incorporating maintenance, ergonomics, manufacturability, reliability and aesthetics," says Sarraf. "The only way to describe it is to go and see it at our exhibition stand at this year's Aircraft Interiors Expo in Hamburg [18-20 May 2010]."

Driessen-Zodiac Aerospace is a leading global designer and manufacturer of aircraft interiors and equipment. The company, which became a Zodiac Aerospace company in July 2008, is headquartered in the Netherlands and has dedicated manufacturing facilities in Thailand, the USA, the Czech Republic and the UK, with 15 repair and maintenance facilities and seven sales offices across the world.

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Reader Enquiry No. 501





Yarwood Leather, which is partnering with Regent Aerospace on a new leather, says it is time to focus on passenger comfort

home comforts

While much has been said about the global economy, Yarwood Leather says a significant number of major airlines are still investing in new aircraft, especially with the advent of the latest generation from Boeing and Airbus. "These radical new aircraft require a totally new cabin interior design and most feature groundbreaking new products and services," says John Nicholls, CEO of Yarwood Leather, which supplies aviation-grade leather (examples pictured above) to commercial airlines. Nicholls also says that these same airlines are rolling out cabin interior overhaul programmes on their existing fleets, to maintain brand continuity, while those airlines which do not have the budget for new aircraft invest in refurbishment across all classes. "This is often a more economically viable approach, and care is taken to ensure a well thought-out modernisation is achieved," says Nicholls. "Any successful retrofit starts with a high-quality visual impact, which is inevitably accompanied by high-quality raw materials."

However, while progress is made in the design of soft furnishings in terms of adding value through weight saving and cost cutting, Yarwood Leather warns that customer comfort should not be overlooked. "Customers increasingly want to replicate the comfort and experience of their home furnishings for their inflight experience, but until now this has not always been possible from a technological, economic and maintenance viewpoint," says Nicholls. "There are many benefits that can be seized upon from cover

materials (reduced weight, customer perception, built-in performance characteristics, etc) that offer an often-overlooked added value to the interior proposition."

With this in mind, Yarwood Leather has been working closely with Regent Aerospace to understand exactly what customers' needs and desires are. For almost two years, these two companies have been collaborating on a programme to develop a next-generation leather that satisfies the requirements of airlines, maintenance, repair and overhaul organisations, and most importantly, passengers.

"We have been working behind the scenes for 18 months on a new leather programme that we plan on launching at the Aircraft Interiors Expo in Hamburg, with Regent Aerospace," says Nicholls. "We see great synergies in our partnership at every level, which will allow us to build on Yarwood's truly world-class supply chain solution to the industry."

"We are finalising our new product launch for Hamburg in May, and we are very excited to launch our new partnership," said Reza Soltanian, owner and president of Regent Aerospace.

The partnership has involved an in-depth investigation of the requirements of the airlines and passengers, and the best method of merging these into an optimum product and service, at the right price point. In addition, by considering the needs of the MRO industry, the companies aim to ensure that all aspects of the supply chain are specifically catered for with a total care solution.

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right first time

As airlines continue to enhance their interior ambiance and extend their brands into the cabin, some are producing more demanding and complicated part designs, using more plastic and larger plastic parts, particularly in premium seating. The picture above highlights just some of the parts that may be made from thermoplastic materials. Designers also face strict regulations, especially with regards to smoke density and flammability testing.

"As a result of these trends – and because of their versatility in processing and fabrication, and their ability to meet strict regulations – pressure forming with thermoplastic materials has become more common. Additionally, vacuum-formed thermoplastic sheet is now being used in a large variety of aircraft applications," says Ronn Cort, international business manager at Kydex, a company that specialises in manufacturing thermoplastic sheet.

Kydex says that choosing the materials that will be used for thermoformed components at the start of a project is the best way to maximise design opportunities – allowing designers to work within the parameters of the materials, instead of having to revise the design to meet restrictions at a later date. This is an idea echoed by Glenn Johnson, director of design at B/E Aerospace: "The best design is one that works. Designs requiring revision in production result in compromise, delays, additional expenses and, ultimately, disappointment."

Kydex says compliance to federal aviation requirements (FAR 25.853 (a) and (d)) and aircraft manufacturer regulations (Airbus ABD-0031 and Boeing D6-51377) regarding fire retardancy,

flammability, smoke density, and toxicity is the number-one driver in material selection.

Different materials also display varying processing capabilities, and understanding these is essential for budgeting and efficiency. Here, Kydex says a forming temperature of 163-200°C (325-390°F), the ability to be formed on standard presses and cut on standard die-cutting machines, the ability to form complex shapes and contours, crisp detail with minimum rejects, a drying time of no more than four hours at 120°C (248°F) and no need for painting are all advantageous in a material. The ease with which machining, sawing, blanking and punching can be performed may also be important.

In terms of aesthetics, designers may want to consider if the material is available in repeatable custom colours, a range of gloss levels, a variety of thicknesses, and decorative surfaces, as well as considering the material's ability to be used in combination with other decorative materials.

Designers must consider how the desired aesthetic will be achieved. "Pay close attention to how modern textures look post-processing, and consider other options if necessary," says Johnson. "For example, the use of a textured female tool that provides the final visual surface is a possible solution to more difficult parts that lose texture under heat and vacuum."

The designer might also consider budget, time parameters, the quantity they will need of each part, and whether parts will need to be replicated at a later date, as well as the material's durability, chemical resistance to industrial cleansers, and ability to be recycled – depending on the designer's evaluation of what is needed.

Kydex recommends choosing materials for thermoforming at the start of a project, to avoid costly design revisions later

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heatwave

Monogram Systems – TIA Division has been in the business of designing and manufacturing aircraft galley inserts for more than 40 years. During that time, TIA has evolved into one of the industry’s leading manufacturers of microwaves for use on board aircraft.

The WaveJet AX (patent pending) is designed to fit existing and future galley layouts, its exterior dimensions meeting the new ARINC 810-Size 4 standard. Airlines can install the microwave in an existing ATLAS-standard galley without changing the layout or sacrificing valuable galley space.

The WaveJet AX is a compact microwave oven, of rugged yet lightweight construction, that offers a high degree of reliability. According to TIA, the unit provides uniform heating, with efficient internal ventilation to preserve food quality. Features include a turntable, LED display and keypad installed in the door, an advanced safety interlock system and a solid-state cooking timer.

The WaveJet AX is available with ATLAS and ARINC 810 standard connectors.



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benbettell

Want to know more about key industry individuals, but haven't got the time to search for their Facebook profile or LinkedIn page? February's 'FaceSpacer' is Ben Bettell, business development director at Premium Aircraft Interiors Group (PAIG). Ben is one of the industry's best known, well-travelled and most loved personalities – sadly Ben is retiring this summer, but don't expect him to go quietly!

01 HOW AND WHEN DID YOU FIRST GET INTO THE AIRLINE INTERIORS BUSINESS?

I spent my apprenticeship in the machine tool industry and then began travelling the world selling equipment that serviced both the automotive and aerospace sectors. In the early 1980s I joined IPECO, where I had a wonderful time being part of the team that made the company a world-class leading crew seat manufacturer. I joined LA Rumbold in the late 1980s, working in North, Central and South America. I've been back in the UK for the past 12 years.

02 HOW HAS THE INDUSTRY CHANGED OVER THE YEARS?

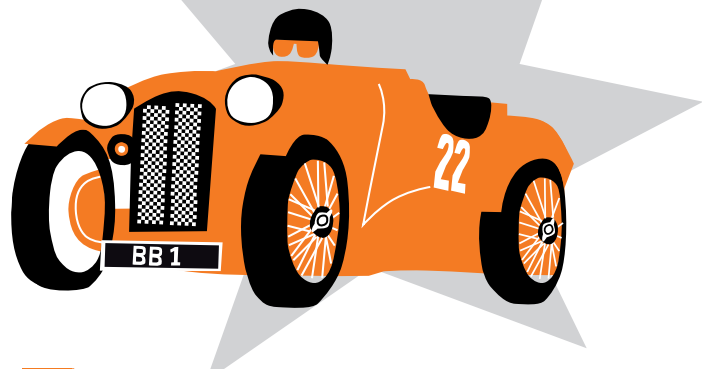
The business has changed in so many ways – some good and some bad. We didn't have aircraft interiors journalists for a start! We didn't have designers either – the watershed moment for me was in 1994 at LA Rumbold when we worked in secret with Design Acumen industrialising and developing the first commercial fully flat first-class seat for British Airways. Suddenly the airline industry woke up to a world where aircraft interiors differentiation was the most major tool to attract customers. In my opinion, we were the trailblazers and I was a part of that – it was a fantastic time. In the wider business context, I think the industry is mistakenly trying to emulate the automotive sector, where the supply chain is so vast it does not need to be encouraged or developed. The aircraft interiors supply base is very small, very specialised and needs to be cultivated. The cost of entry is high and sadly the automotive style of supply chain management does not recognise the enormous customisation and variation that exists in a fragile aircraft interiors business, which has to manage an 'aliens and strangers' (low-volume, highly customised) contract-by-contract business.

03 WHERE DO YOU SEE THE NEXT GREAT BREAKTHROUGH IN SEATING OCCURRING?

I think the battle will move aft in the aircraft, with the biggest innovations taking place in the premium-economy and economy cabins. Take Contour's Freedom fore-and-aft-facing economy seat – the customer got extra legroom and the airline had the opportunity of earning more revenue.

04 WHAT IS THE BEST ASPECT OF YOUR JOB?

I have been very fortunate in my career. I have been travelling internationally for 40 years and have met and enjoyed the company of many wonderful people from many different cultures.



05 AND THE WORST? The complete reverse of the above – you can't travel constantly and not miss your home life.

06 HOW OFTEN DO YOU TRAVEL IN A YEAR AND WHERE HAVE YOU BEEN MOST RECENTLY? ANY AMUSING EXPERIENCES? AND WHAT'S YOUR FAVOURITE AIRLINE?

It's hard to come up with an accurate figure for the first question. All I know is that most years I have been away from home more than 200 nights per year. I really can't answer the question about my recent whereabouts – I would have to kill you if I did! As for memorable experiences, I think I'll take the Fifth – I don't want to be spending my retirement in court! I do like to fly and experience as many different airlines as I can, as it's the best way to learn a lot about your products or your competitors' products. However, I am not just being politically correct when I say I actually do not have a favourite.

07 YOU'VE DONE BUSINESS WITH QUITE A FEW AIRLINES – WHEN IT COMES TO 'SEALING THE DEAL', HOW DO THEY VARY?

Now you are pushing it – I was hoping to find some consultancy work when I retire from PAIG! After 40 years of travel and meeting thousands of people from many cultures, I have learned that you do not have to shout the loudest to get yourself heard. For me it has always been about enthusiasm for the job and the company that you represent. It all comes down to relationship building. I do remember on one occasion arguing for days about US\$73 per pax place – in the end the only reason we split the difference was because it was the day before Christmas Eve and both of us wanted to go home!

08 PAIG HAS OFFICES WORLDWIDE – HOW DO YOU KEEP ON TOP OF EVERYTHING?

We have a great group of people – being the oldest in the company, they are very kind and put it all in writing for me so that I don't forget.

09 WHEN AND WHY DID YOU DECIDE TO RETIRE AND WHAT ARE YOUR PLANS?

This one is a bit personal, but I am happy to share this with you as many of my colleagues, customers and friends know and have met my wife Lindsay, who in 2008 had a serious operation. She is well on the mend now, but it just made me think that having been married for 20 years and having spent so much time away from home, I wanted to change that balance. I will also be able to follow my passion for classic car restoration, rallies and tours, which over the last few years have taken a back seat.

10 PAIG HAS THROWN A FEW PARTIES OVER THE YEARS AT THE AIRCRAFT INTERIORS EXPO – ANY TIPS ON WHAT MAKES FOR A GOOD EVENING?

What can I say – location, location, location and people, people, people – put the two together and you have a great formula. For me, the most memorable party we had in Hamburg was when B/E Aerospace and PAIG booked the same venue on the same night. Apart from being competitors and both having a desire to closet our customers, we agreed to open the dividing doors of the room and we all partied together.

LAV SPACE. THE FINAL FRONTIER.



The new Yokohama B757 lav retrofit is modern, stylish, and most of all — spacious. Our new B757 retrofit lav incorporates organic shapes into the overall design, including the industry's first certified curved bi-fold door. Passengers enjoy more spaciousness and comfort.

Selected by American Airlines.

The Yokohama lav has been successfully piloted on an American Airlines premium B757. Additionally, it has common parts with Yokohama B737 lavatories.

See it here: www.yaainc.com/B757lav



Or contact Kelly Stolle, VP of Marketing & Business Development: Kelly.Stolle@yaainc.com Tel: 253.893.0130

PGA



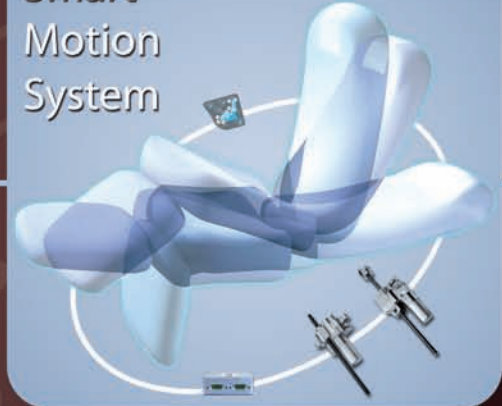
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Smart
Motion
System



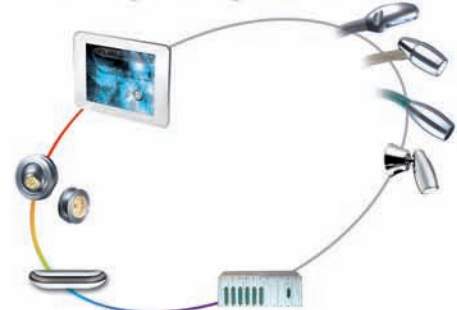
Cabin

IFE & CMS



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Reading Lights &
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