BusinessJet

MAY 2009

THE INTERNATIONAL REVIEW OF BUSINESS JET INTERIOR DESIGN AND COMPLETION **swap**shop What can aircraft interior designers learn from their automotive colleagues, and is it all one-way traffic? **sweet**treats Candy & Candy's exclusive interior for an executive AW139 helicopter **galactic**star Gulfstream's G250 sets a new standard in super-midsize cabin comfort normanconquest LORD NORMAN FOSTER CONJURES A CUSTOMISED FALCON 7X CABIN SCHEME FOR NETJETS EUROPE



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WELCOME



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Welcome to the May issue, packed full of references to the automotive sector – bizjet interior designers continue to be influenced by their car counterparts, borrowing and adapting key trends in materials and fit and finish from luxury marques such as Mercedes-Benz, BMW, Bentley, Rolls Royce and Aston Martin. This fascination for all things 'four-wheels' is in response to a – perceived and literal – 'gap' in quality between the two sectors: "It's a real paradox, customers pay much more for a luxury jet than a luxury car but in many of those jets much of the detail is not very well considered in terms of component use and panel gaps," says Design Q's Gary Doy on page 37. "It's not at the same level."

To help bridge the divide, bizjet manufacturers are increasingly turning to auto designers to head up their design studios, or recruiting external agencies with the requisite skills, such as Design Q, BMWDesignworksUSA, Pininfarina or Porsche Design Studio. "There's definitely a lot we can learn from the auto industry," says Kris Tomasson, until recently head of Gulfstream's design studio, and before that a designer at BMW and Ford. "It is very good at perceived quality in terms of fit and finish and minimising material breaks, while the aerospace industry are more like cabinet makers."

Much smaller production volumes and far longer replacement cycles are also highlighted in the same article: "The auto market is very large with a much higher turnover of products while a new aircraft only comes out every 10-15 years," notes Ken Dowd, a one-time Ford designer and now vice-president of Teague's aviation studio.

However, it's not all one-way traffic – auto guys are increasingly being influenced by the aviation sector – driven in part by a desire to reduce the weight of components in response to increasing environmental legislation and the rising cost of fuel – sound familiar?!

Personally, I can only call upon a negative auto interior experience – a leaky sunroof on a Renault Clio that led to an unexpected in-car shower feature when cornering at speed – the inspiration for Bombardier's XRS shower option, perhaps?! At least aircraft don't leak – our seaplanes feature on page 52 could teach some car makers a thing or two!



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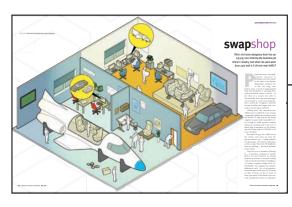
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HerbertArtinger of ACES is the eyes and ears of the VIP owner, ensuring completion facilities keep to task!

nerspicacity is defined as "the ability of acute perception or understanding" - something I hope I have gained with regard to cabin completions and refurbishment, since setting up my company, Aircraft Conformance Engineering Services (ACES), back in 1996. Over the past decade I have personally surveyed a good two dozen VIP/business jet completions at various facilities on behalf of head-of-state, business and government clients. During that time, I have always emphasised the importance of a well-considered cabin interior completion specification – a document usually written by the facility with the customer or his designer. Both parties are often confident they have sufficiently covered and protected their interests – however this is often not the case. Every snag raised during a project reflects an omission in the specification, generating additional costs before re-delivery of the aircraft.

VIP aircraft owners are unique over the past decade or so, ACES has worked with individuals from the Middle-East, Europe and Africa. Naturally, no two VIP aircraft owners are the same - as a result, the specifications for their aircraft differ considerably. However, a specification draft or specification risk analysis can help highlight areas overlooked or those that are unclear, helping reduce AWO (additional work cost) expenses. A well-structured specification should address issues of design philosophy and principles separately, alongside quality criteria and system functionality performance. For this purpose, ACES has developed a check-list matrix for the specification, including cabin sound levels to be achieved.

My team and I try to be as fair as possible, however the specification, once agreed, is non-negotiable! I have seen completion facilities pay a heavy price, because they took the customer's expectations to be flexible. A completed VVIP interior must not become a 'clearance sale', which has achieved only reasonable quality, when world-class quality was the original sales pitch!

ACES does not hold any animosity towards completion facilities, however it will impose on them all of our authority on behalf of the customer, when





required, to ensure the facility achieves the quality standard demanded by the customer. After all, our mission is to protect the interests of our client and assure value for money!

A VIP completion requires a near Olympic effort – instead of competitive events, one has completion phases, each requiring meticulous attention to detail delivered within a strict timescale. The challenge is to solve vendor resource and engineering problems in a proactive manner. For example, a recent project involved a silver leaf plating defoliation problem. The doors and panels were decorated with several thousand silver foil pieces the size of a postcard, applied by hand at the vendor. The end effect was stunning, however the effort to achieve this reaction was immense!

IFE systems are another challenge the latest HDTV screens work flawlessly on the ground, and owners expect the same performance at altitude - flickering or colour degradation is unacceptable.

It is also common practice for a completion facility to subcontract work to vendors for engineering, staff, and documentation, in order to lower costs. It is not unheard of for up to 90% of a project team to be made up of subcontractors - even the designated project manager! However, poor subcontractor management and a lack of understanding of the interior specification, along with the technical





definition of quality and systems requirements, can lead to problems at the end of the completion phase layover, culminating in a barrage of reinterpretation of the expectations of the customer and facility. Unfortunately for the completion facility, inexcusable delays can result in a penalty - some penalty limits are open ended to protect the customer's interests.

Ultimately, a VIP completion is a commercial engagement - whether it ends in bliss or divorce is greatly influenced by good preparation and on-site administration by an experienced project manager.

Whois? **Herbert**Artinger

and his team of experts at ACES have Conformance Engineering Services (ACES) in 1996, offering production quality firms and global airlines. In 1998, ACES project. ACES has subsequently moved



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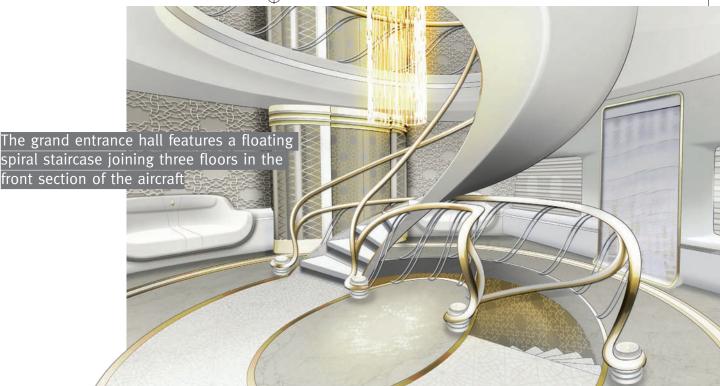
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NEWS



328 Support secures new Dornier 328 Jet 12-seat VIP conversion contract

328 Support Services GmbH has commenced work on an N-registration airliner-configured Dornier 328 (Serial No 3209) at its hangar at Operpfaffenhofen Airport, near Munich, Germany. This aircraft is to be converted into a luxury 12-seat VIP business layout. The aircraft, operated by Aviando Services from Miami, Florida, USA, is due for completion in six months. Special features will include a new sidewall with electric window blinds, a noise reduction kit, and a satellite phone system with two handsets. It will also feature a digital IFE system from Audio International with eight individual TV monitors mounted next to each VIP seat, two 20in monitors mounted on the forward and aft bulkheads, and a new 32in widescreen TV with dropdown mechanism housed in a crezanda. DeCrane soft leather seats have been selected. 328 Support Services' engineering team will fit long-range fuel tanks to the aircraft, enabling a 2,000nm range. The organisation will also be carrying out a series of heavy maintenance checks and other modifications prior to the aircraft's return to service. Overseeing the work will be 328's newly appointed head of design, Jorg Gorgenant. CTM Design, headed by Robin Dunlop, will be responsible for the interior colour scheme.



Design Q and Case4de develop **VVIP A380 interior**

The design, for a Middle East customer, features an entrance hall with a spiral staircase, a boardroom, private lounge, private lift, hamam and prayer room. "There are many technical and certification challenges," said Noureddine Madoui, MD (North Africa & Middle East) for Case4de, adding however that the concept "is feasible".

Flying Colours Corp acquires JetCorp Technical Services

Flying Colours Corp, in association with the existing management of JetCorp Technical Services, has acquired the assets of JetCorp from JetDirect Aviation and has no remaining ties to JetDirect. The St Louisbased JetCorp, the former MRO subsidiary of JetDirect Aviation, is now operating as JetCorp Technical Services Inc. "With a seasoned management team led by current president Bill McLendon, an experienced workforce, and a solid customer base, JetCorp Technical Services Inc will assist us as we continue to grow our company," said John Gillespie, president Flying Colours Corp. "The two companies' capabilities and strengths complement each other extremely well," said Bill McLendon, president of Jet Corp. JetCorp was recently awarded an STC for the conversion of Bombardier Regional Jets from commercial to executive/VIP aircraft, and delivered its first two fully converted Renaissance Series CRJ aircraft in February.

Lufthansa Technik opens new cabin innovation centre in Hamburg

Lufthansa Technik has opened its new research and development centre for its 'Cabin Innovation' business unit. The new building represents an investment of nearly €10 million. As well as offices, it features test laboratories and exhibition areas. The company's Office of Airworthiness and IP-Management have also moved into the new building. "This new facility marks an expansion of Lufthansa Technik's expertise in the field of cabin innovation while also paving the way for the long-term growth of this business unit," said August Wilhelm Henningsen, chairman of the executive board of Lufthansa Technik.



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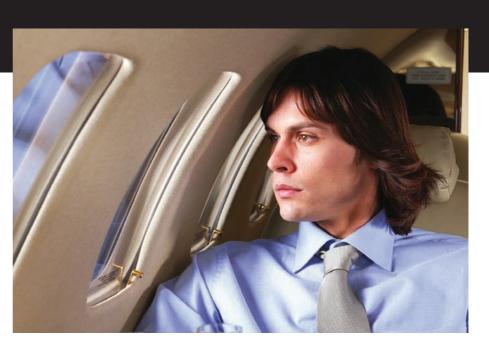
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Greenpoint inducts 16th BBJ

Re-delivery of the BBJ is scheduled for later this year. The interior was designed in-house, led by Annika Svore-Wicklund, GTI's interior design manager. "The leather has a full-grain antiqued effect, the veneer is a vibrant play of natural Anegre and dark stained Karilian burl, and the carpet has a radiant silk floral medallion centred in the living area," said Svore-Wicklund.

New inflight mobile phone solution for bizjets

ASiQ has launched SafeCell, which enables corporate jet passengers to use their mobile phones on aircraft without having to install GSM Picocell network infrastructure and jamming systems. SafeCell is a software application installed on a mobile phone, which operates in flight or offline mode and takes control of the mobile phone to communicate via Bluetooth, instead of GSM, SafeCell connects the mobile phone to the Iridium satellite network, which is outside the global cellular roaming network. The system accommodates voice calls, SMS, news updates and text email. For aircraft that already have an Iridium system, ASiQ has developed a solution using a laptop or UMPC with Bluetooth dongle. The system works the same as a permanent installation and the company says it has been in operation now for three months on a Falcon2000EX. ASiQ also says it is developing a new low-cost access point with voice capability that should be available later this year and will be certified and manufactured in the USA.

Jet Aviation Basel appoints new interior design manager

Jet Aviation Basel recently appointed Elisabeth Harvey as its new interior design manager. She leads a team of more than 20 specialised interior designers who work on narrow- and wide-body interior design and refurbishment projects at the Basel site. Harvey reports directly to Eugen Hartl, the company's vice president narrow- and wide-body completions and modifications. Harvey is a graduate from the London School of Interior Design KLC. Prior to joining Jet Aviation in Basel in 2006, she worked for a British interior designer developing exclusive interiors for high-end commercial projects and private homes.



Yingling Aviation delivers 100th OASIS Interior Cessna Caravan

Yingling Aviation has delivered the 100th Cessna Model 208 Caravan fitted with an OASIS interior. Yingling Aviation has an established agreement that enables Caravan customers to order their Yingling OASIS interior from Cessna for installation by Yingling under its STC. This allows customers to have their Yingling OASIS interior crafted concurrently with the production of their aircraft. Yingling handles all the interior installation logistics. The Caravan OASIS interior provides seating configurations for up to 10 people with two forward-facing seats behind the crew, a four-place club seating area with executive side tables, and aft divan seating for two incorporating a standard flushing toilet approved for occupancy during takeoff and landing. The veneer or laminate wood cabinetry features two standard forward cabinets, one providing a refreshment centre. Equipment including entertainment systems, telecommunications, and flight data displays are available as options. "From the outset of this programme, we anticipated strong response from Caravan operators, but we had no idea that we would reach the 100th unit in less than five years," said Lynn Nichols, president of

Yingling Aviation.





NEWS

All 7X parts can be customized through the use of exotic veneers and precious metal plating



Inmarsat's aeronautical high-speed data service. SwiftBroadband, is now available globally, following a successful satelliterepositioning programme. SwiftBroadband is used for standalone connectivity solutions in business aviation and government aircraft, and is the underlying technology for inflight connectivity solutions used by airlines, through the IFE system or GSM solutions. The SwiftBroadband service was made commercially available in October 2007 over two I-4 satellites. A third I-4 satellite was launched in August 2008. "SwiftBroadband effectively provides a pipe to the aircraft that can be used for cockpit, cabin and operational applications," said Lars Ringertz, head of marketing, aeronautical business at Inmarsat. "We now have a fully funded, fully optimised, next-generation network in place, with assured service into the 2020s. So the message for any airline, business jet or government aircraft looking for connectivity is: we are open for business





NORDAM's cabinetry division in Kansas, responsible for producing all aspects of cabinetry for the Dassault Falcon 7X, has delivered its first cabinets. NORDAM is also producing interior furnishings including galleys, bulkheads, sliding doors, vanities, tabletops and side ledges.

Airbus Corporate Jet Centre completes VVIP A320 cabin

Airbus Corporate Jet Centre (ACJC) has just completed its second cabin - a VVIP A320 interior for an undisclosed customer in the Middle East. The aircraft features a luxurious interior with VIP lounge, bedroom, private office and an area for support staff. The cabin also boasts connectivity (SATCOM, internet LAN, WiFi), in-flight entertainment including audio/ video on demand, a tail camera and LiveTV. This is the second outfitted cabin delivered by ACJC (the jointly owned subsidiary of Airbus and Comlux) since its creation in July 2007.



Gore Design Completions delivers BBJ to the Far East

VIP completions centre Gore Design Completions (GDC) has delivered its first aircraft of 2009. The Boeing 737-700 is a sister aircraft to a project already completed by GDC. The original purchaser sold the aircraft to a customer in the Far East while the interior was being installed. The cabin boasts two private bedrooms as well as a large lounge and bar area. Taking just under a year to complete, the team at GDC worked quickly using the knowledge gained from completing an identical sister aircraft for a separate customer 10 months earlier. This delivery marks GDC's fifteenth Boeing Business Jet completion.







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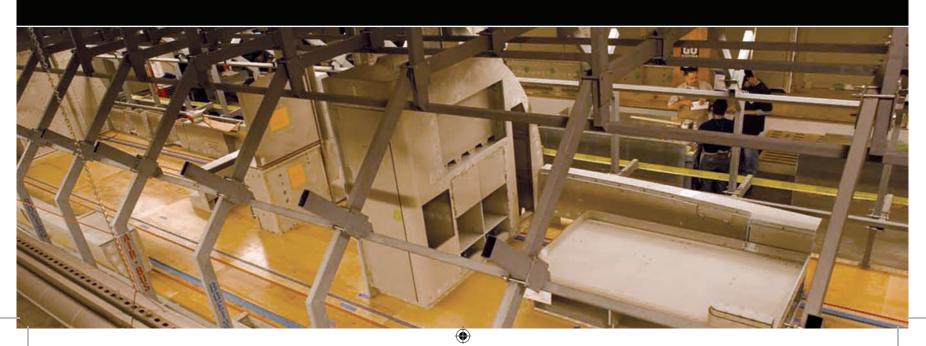
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Pegasus Design has developed a luxurious ACJ interior design with elements inspired by the Art Deco period, for a private customer. "From the concept drawings shown here, the design is being developed to cover every single detail of the interior," says design director Peder Eidsgaard. "Pegasus Design will be supervising the outfitter's building work to ensure materials, junctions and general construction matches the design presented to the client in concept form." Pegasus Design will also supply all tableware and decorative items to ensure the aesthetics are carried through to every element on board.

Description:

The exterior design is striking but business-like, and features stripes in a beautiful two-tone colour developed especially by Akzo Nobel for Pegasus Design. Combined with white and grey metallic 'mica' paint, the aircraft aims to make a statement of subtle elegance. For the interior, the client emphasised the importance of comfort on board, delivered via extremely wide and luxurious seats finished in leather and cashmere with wood and nickel-plated detailing. Dark walnut and zircote wood, in combination with light sycamore veneers, create a warm but architecturally impressive interior. "The owner wanted to have space for personal art, which is incorporated within the design throughout," adds Eidsgaard. The master cabin and en-suite bathroom with shower is located forward of the saloon and galley.



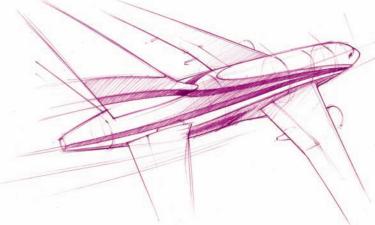






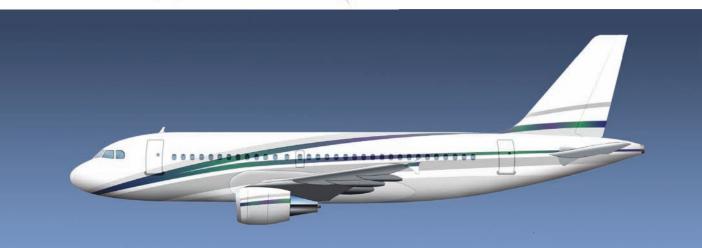


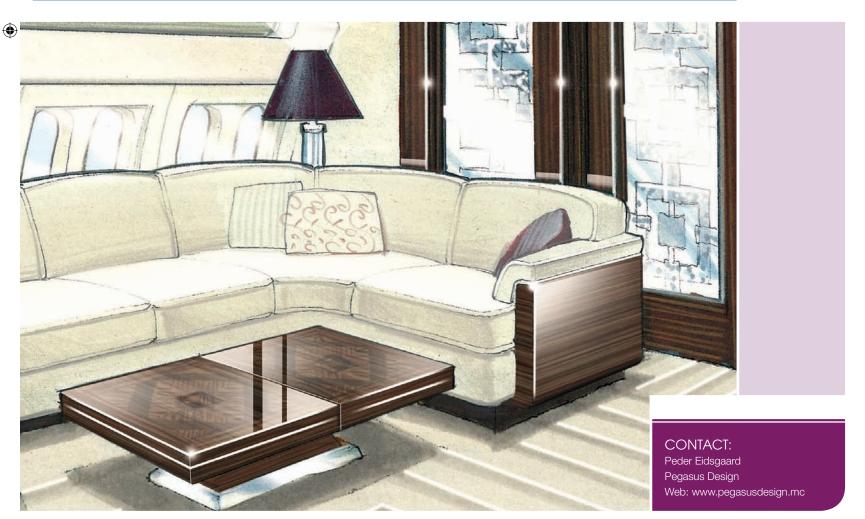




Verdict:

The renderings shown here suggest this project will be a further feather in Pegasus Design's cap. Its pedigree in the bizjet interior market is well-established: in addition to this ACJ project, the Monaco-based design company has a BBJ1 that is expected to be signing with an outfitter this year. Pegasus is also busy finishing an ACJ and a BBJ, both at Associated Air Center, as well as two Global XRS's with Bombardier. Next year another ACJ featuring its design work, together with a highly customised Falcon 7X, will be delivered from Jet Aviation Basel.





Greenpoint's 747-8 OSU berth concept

A guide to some of the innovations at this year's EBACE – from cabin management systems to seating, from completions to connectivity

The 9th European Business Aviation Convention & Exhibition (EBACE 2009) will be held on 12-14 May in Geneva, Switzerland. Last year's event, featuring 440 exhibitors, attracted 13,692 attendees from 91 countries.



Materials science

Perrone Aerospace will showcase its range of leathers and textiles for the aerospace industry. The range includes Summatex, SummaSuede, SummaChenille and

SummaSilk. The company also offers Featherweight Royal Elite leather for weight-conscience applications, and a library of gaufrage prints for a touch of opulence. Perrone is an AS9100 Rev. B Certified manufacturer. The company says the combination of its laser-guided water jet cutting system and range of in-stock raw materials means it can minimise lead times. The company also offers leather cleaning and maintenance programmes. With a Repair Station (FAA / EASA Part 145 #V1VR130X) in upstate New York, Perrone offers repair options to extend the service life of leather.

Cruise control

Emteq will focus on SkyPro, a new cabin management system (CMS). With connectivity through the aircraft satcom interface and to various compatible personal devices, SkyPro provides enhanced aircraft-toground productivity tools. The modular system has many options for customisation. Emteq will also show LED lighting systems, cabin comfort solutions (including the ELEMENTS Seat Heating System and a range of outlets, panels and switches), integrated avionics kits, ARINC and non-standard equipment mounting trays, RF and speciality cables (including data bus, Ethernet and multiconductor), wire harness assemblies, and chip-on-board LED exterior lighting solutions.



Space odyssey

ocusing on the new Boeing 747-8, Greenpoint
Technologies' latest innovation comes from working
directly with Boeing on the Overhead Space
Utilization (OSU). The OSU is a post-production kit
installed in the crown of the aircraft above the main
deck between doors three and five. The additional passenger
space provides an option for personal suites and lounge areas
off the main deck.

Greenpoint has contracted with two Middle Eastern clients to supply four OSU kits for 2011-2013 aircraft deliveries. "Following our long tradition of excellence in engineering and design, we are leading the way with Boeing in the development of the latest in completion concepts for the 747-8," says Sloan Benson, executive vice president of Greenpoint.

Adapting to meet market demands, Greenpoint is also making investments in efficiency. The company says it has many FAA Designated Engineering Representatives (DER) on its staff and has submitted additional applications to the FAA for select disciplines.

Meanwhile the company offers Boeing Business Jet (BBJ) completions expertise – it inducted its sixteenth BBJ earlier this year with redelivery scheduled for the fourth quarter of 2009. It is currently designing BBJ completions scheduled for delivery in 2011 and 2012.

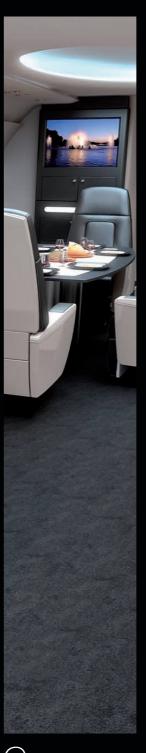
Greenpoint Technologies is a recognised Boeing Business Jet (BBJ) completion centre, and is certified to ISO 9001 and AS9100 standards. The company provides interior design, engineering, supply chain management, programme management, certification and installation.



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Meet the team

Gore Design Completions will be represented at the show by owners Jerry Gore and Kathy Gore-Walters, as well as director of business development, Rob Tomenendal. While in Geneva they will take meetings with several current clients as part of a design review process and will meet prospective customers regarding potential available slots in coming years. The booth will feature the company's updated portfolio with work completed in 2008. Also new to the booth for 2009 is a video tour of the company's 200,000ft² completions and maintenance facility in San Antonio, Texas.



Wide blue yonder

ViaSat will focus on its 'Yonder' Ku-band satellite mobile broadband service. The service, licensed by the US Federal Communications Commission (FCC) for

commercial operation, enables passengers to conduct everyday business operations while in flight, using office-like IP network applications and services. It also delivers entertainment options, including access to home television services or media library selections. Aircraft are free to roam an extensive coverage area – including North America, the North Pacific, the North Atlantic, the Caribbean, the Persian Gulf and Europe, with expansion to full global coverage of all air routes planned by early 2010. Patented ViaSat ArcLight technology enables the use of 12in, lightweight antennas. The service offers data download speeds of up to 10Mbps to the aircraft, and up to 512kbps uploads. The company says that over 70 business jets are already on the network.

Good wood

RUAG Aerospace will showcase its Aircraft Services Network, which offers MRO, modification, and interior design services for Bombardier, Cessna, Dassault, Dornier, Embraer, Hawker Beechcraft, Pilatus and Piaggio aircraft. The company will also display products produced by its interior partner List components & furniture GmbH – including List's 0.8mm (0.03in) 3-ply wood veneer that can be bent over by around 8mm (0.3in) radius without any impact to its final appearance. The product meets flammability standards in accordance with the FAR 25.853 (a)(i) and Appendix F Part 1 (a)(1)(i). Also on display will be a stone veneer – natural granite stone sliced to a maximum thickness of 2.0mm (0.08in), which can be bent over complex surfaces, and used for applications where natural stone would be too heavy. RUAG also offers the installation of a newly developed granite stone flooring by its partner List for the entrance and lavatory areas in business jets.

New facility

AMAC Aerospace will showcase its expertise in corporate and private aircraft maintenance, refurbishment, completion, charter operations, and aircraft management services. The company operates at a new maintenance and production facility at EuroAirport Basel-Mulhouse in Switzerland. AMAC Aerospace's facility has a double hangar with 4,200m² of floor space and a 1,800m² workshop area with technical



offices. A second, 8,400m² wide-body hangar will be completed by mid 2009.









Electric dreams

B/E Aerospace will show its 100 lb UCT Electric VIP seat for light jets. The fully upholstered seat is equipped with a 'comfort touch' controller, tethered to the armrest by a cord reel, so the seat can be operated in any seating position.

The seat reclines electrically to a fully flat position, and features fore, aft and lateral electric assist tracking and 360° swivel. It also has a multiposition electric legrest, two-way electric lumbar, lightweight armrest, headrest with integrated speakers, and an iPod docking station. Its hardshell backrest is designed to provide easy access to electrical components, while the base shroud is integrated with the seat structure to ease upholstery work.

"We recognise that our customers face a major challenge in providing fully loaded electrically operated executive VIP seating all while maintaining or improving aircraft operating performance," says Chuck Barresi, vice president sales and marketing, The Business Jet Group at B/E Aerospace. "Our answer to this problem is our 100 lb UCT Electric VIP seat, suitable for the light jet marketplace. Through our rigorous material evaluation process B/E was able to identify new materials that provide superior comfort and significant weight reductions. So the possibility of electric seating for the light jet market is now a reality."



Net gain

Aircell will feature its global SwiftBroadband solution. In addition to voice service through cabin handsets, the system allows passengers and crew to use their personal laptops and smartphones to send and receive email, use the internet, access a corporate VPN, and more. Customers can choose wired or wireless (WiFi) connections, and several antenna options are available. The system provides worldwide coverage.



Style council

Delta Interior Design will showcase its expertise in the styling and completion of new and refurbished interiors for a wide range of aircraft and helicopters. The company offers turnkey solutions from

concept through design, production, certification of components, installation and Supplemental Type Certification. The company also manages interior refurbishment and modification, controlling quality and making sure the work complies with customer specifications. All the company's projects are designed and developed in close relation with the customer. Aircraft refurbishment works range from the installation of upholstery, silk carpets, 'flying office' equipment and in-flight entertainment systems, to noise reduction and thermal insulation projects.

Seal of approval

Altitude Aerospace Interiors will showcase its dedicated VIP aircraft refurbishment and completions centre, which opened in October 2008 and has now been granted EASA Design Organization Approval (DOA). This enables the company greater scope to design and approve aircraft modifications in-house. "The granting of EASA DOA is a worthy reflection of the outstanding engineering capabilities possessed by Altitude," says Mike Pervan, general manager of Altitude. "We are fortunate to be able to build a completion centre from a core of 50 highly skilled design engineers rather than the traditional hangar and touch-labour scenario. EASA DOA will allow them more scope to work to their full potential." Combined with the utilisation of carefully selected technicians from Air New Zealand's Tech Ops division and craftsman from New Zealand's luxury yacht industry, Pervan believes Altitude is in a good position: "Despite the current economic downturn, demand for our services remains high," he says. "However, too many completion centres before us have rushed the first hurdles and ended



up falling over. We won't be enticed into the same trap of over-promising and under-delivering. EASA DOA is another step in consolidating Altitude's position as a long-term provider of quality completions and refurbishments."







•

Uncovering the Potential of the CRJ



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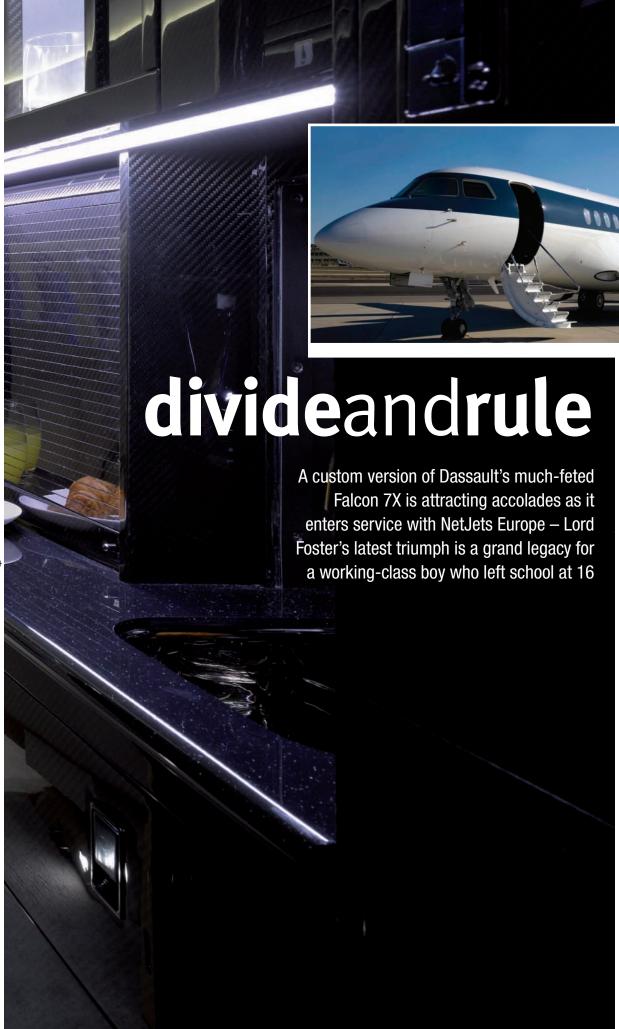
Contact Flying Colours to learn the full story on the CRJ ExecLiner.

WHAT COLOUR IS YOUR EXECLINER?









ince when does a pilot design his own aircraft? Since last year, when the pilot in question was Pritzker prize-winning architect Lord Norman Foster, whom NetJets Europe (NJE) commissioned to trick out the latest addition to its fleet - Dassault's Falcon 7X. Foster had a great understanding of the project from the start. In addition to his day job, he races sailplanes, flies aerobatics and pilots everything from helicopters to historic aircraft and jets. As a frequent NetJets' passenger, he appreciates the value of comfort, and as a designer, he works with form and functionality.

In 2007, NJE placed the then largest order in business aviation history (US\$1.5 billion) with French manufacturer Dassault, for 33 Falcon 7X aircraft, deliverable over the next eight years. Graeme Weston, NetJets' COO, explains that NJE had to live up to its investment and commission a designer who would bring out the qualities of the aircraft. "Lord Foster jumped out as a familiar name synonymous with value, beauty, extraordinary functionality and great design," says Weston.

Mark Booth, chairman of NetJets Europe, threw down the gauntlet when the company took delivery of the first of the two 7X aircraft that are already in service: "Design is an area that has been given precious little attention in the world of business aviation... the personal and intuitive touches added by Lord Foster to the Falcon 7X will meet [passenger] needs in a way never seen before in aviation."

While there may be several notable designers that would disagree, as they



FOSTER7X

WE HAVE NEVER BEEN ABOUT EXCESS... AN AIRCRAFT IS NOT A TOY, IT GIVES OUR CUSTOMERS FREEDOM TO ACCESS MORE TIME



FOSTER7X





FOSTER ALSO



A cream and tan leather scheme in the passenger zone is in marked contrast to the dark finishes of the crew workspace

BUSINESS MEETING



work on time-saving cabin enhancements such as more comfortable lighting and showers on board, Weston backs up his chairman's statement. He says: "Business aviation is not about luxury and NetJets is business aviation's poster child. We have never been about excess... an aircraft is not a toy, it gives our customers freedom to access more time. Most of our clients are working harder than ever now."

Themed zones Foster researched the project extensively, interviewing NetJets' clients and crew to get a wellrounded perspective, and drew on his architect's background to approach the design holistically. Consequently, the interior is thematically zoned into a 'well-being' space for customers and a workspace for crew.

The passenger cabin features a cream and tan colour scheme and Fiddleback Sycamore wood fittings.

Fiddleback has a slight metallic lustre within the veneer, which comes from the way it is peeled off the log and adds to the beauty on board. John Small, a long-term partner at Foster + Partners, was instrumental in bringing the 7X project to fruition. "The attention to detail in the choice of materials and the way they have been used means that inside the jet has a different feel," says Small. "The passenger space now feels more roomy and sophisticated."

Foster used perforated and solid leather from Edelman on the seats, which both creates extra passenger comfort and dampens noise levels, as well as being aesthetically pleasing. Edelman also supplied the leather for the cockpit entry curtain, the lower side walls, seats, divan and armrests.

Foster also redesigned the seating arrangements based on his findings, gearing it towards business meetings and a restful sleeping and dining experience. In contrast, the work area around the galley has an industrial feel, featuring a grey and black colour scheme in carbon fibre. Small says that Foster approached the project in a "dramatically different" way to traditional teams: "He moved away from the same old design concepts, which were not thrilling from a design perspective," he says.

"He approached the project from the ground up and aimed to do something unique that would stand the test of time."

LED lighting gives the interior a warmer feeling, contrasting with the high gloss of the carbon fire galley. The crew rest area doubles as a private office and features leather and textures seen throughout the other zones. Passengers can work on board around the table at the front, then draw the curtain and hide in the back if they wish, where there are two sofas that fold down into beds. There are two lavatories on board and an illuminated

•

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- Five year warranty offered with all units
- The industry's shortest lead time
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- FAA PMA (Parts Manufacturing Approval) on all units
- Fully RTCA DO-160 compliant
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Foster + Partners is the name behind some of the world's most inspired buildings, including the Swiss Re Tower. the Great Court at the British Museum. and the world's largest airport (Beijing)

gap featuring a hand hold at the top of the cabin, to enable travellers to walk around in turbulence. The windows can black out with shades and panels coming from Tapis Corporation. Rips Cocos provided the flooring and there is Airshow IFE on board.

The first aircraft was finished in Dassault's Little Rock centre and delivered at the end of last year. According to Small, the strong collaboration between Dassault, NetJets and Foster + Partners meant that the project moved smoothly throughout the process, despite the fact that Dassault has 20 different manufacturing plants throughout France creating different elements of the aircraft.

Fleet expansion Since Foster's design for the interior was so successful, NetJets Europe approached him to help design the 7X exterior, which now features the bizjet version of the Nike swoosh - a solid dark blue horizontal stripe across the exterior. The stripe unifies the windows of the cockpit and cabin, giving the aircraft a sleeker form. In daylight the windows appear dark (as they are in most of Foster's building projects) and the stripe unifies all the elements on the airframe. "The NetJets 7X is literally a fleet within the NetJets fleet and therefore I felt that this



High flier

Norman Foster was born in Manchester in 1935. After graduating from Manchester University's School of Architecture and City Planning in 1961, he won a Henry Fellowship to Yale University, where he gained a Master's Degree in Architecture.

He is the founder and chairman of Foster + Partners. Established in London in 1967, it is now a worldwide practice, with project offices in more than 20 countries. Over the past four decades the company has been responsible for a strikingly wide range of work, from urban master plans, public infrastructure, airports, civic and cultural buildings, offices and workplaces to private houses and product design. Since its inception, the practice has received more than 500 awards and citations for excellence and has won more than 86 international and national competitions.

Current and recent work includes the largest single building on the planet, Beijing Airport, the redevelopment of Dresden Railway Station, Millau Viaduct in France, the Swiss Re tower

and the Great Court at the British Museum in London, an entire University Campus for Petronas in Malaysia, the Hearst Headquarters tower in New York, Boston Museum of Fine Arts, the Robert and Arlene Kogod Courtyard at the Smithsonian Institution in Washington and research centres at Stanford University, California.

He became the 21st Pritzker Architecture Prize Laureate in 1999 and was awarded the Praemium Imperiale Award for Architecture in 2002. He has been awarded the American Institute of Architects Gold Medal for Architecture (1994), the Royal Gold Medal for Architecture (1983), and the Gold Medal of the French Academy of Architecture (1991). In 1990 he was granted a Knighthood in the Queen's Birthday Honours, and in 1999 was honoured with a Life Peerage, becoming Lord Foster of Thames Bank.

A qualified pilot, Lord Foster flies his own private jet and helicopter between his office and homes in France and Switzerland.







FOSTER7X

 Edelman leather features on the seats

WHEN YOU SEE THE AIRCRAFT TOGETHER ON THE APRON, YOU CAN SEE THE NETJETS' IDENTITY EMERGE

significance should manifest visually both internally and externally," says Foster.

Netjets' Weston, an expert on branding having helped launch MTV, adds: "We saw how valuable overall the project has been and were so taken with the outside, we asked Lord Foster to do the design for our entire fleet livery, which felt dated."

The result is that the 7X theme will be echoed and rolled out across all NJE's 160 aircraft. Weston continues: "It now feels like the magic age of flying. You do not necessarily see straight away what a bold statement it is, but when you see the aircraft together on the apron, you can see the NetJets' identity emerge."

And a strong company identity is more important than ever in these turbulent times. Thanks to the collapse of financial markets, companies and individuals are hiving off their private jets. James Butler, an attorney writing for *Halogen Guides* recently said that fractional share values are in decline. He argued that since fractional jet owners are partners with their jet providers they could be in trouble if the jet provider goes out of business.

Fortunately, that is unlikely to happen to NJE. According to Weston, earlier this year he ran adverts looking for 15 additional sales staff expanding his team of 100 people. Despite the fact the company lost a few clients from the financial sector last year, it added 270 new customers to its programme in 2008. Weston says that overall flying is down by 7-10%, but that there is tremendous demand for long-range large cabin jets and the second 7X aircraft is almost sold out. He says: "Our philosophy is that we are fearful when people are greedy and greedy when people are fearful. We have a large customer base with a lot of contracts and prospects. CEOs and corporates are not taking the decision to buy their own aircraft, but still need to fly privately."

What's on the horizon? Weston says that the two 7X aircraft are "busy flying like you would not believe" and that the third is likely to be delivered in June.

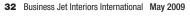
He adds that the collaboration with Foster has been so successful that NJE is using other designers to create interiors for the rest of the fleet. Although he remains tight lipped for now, he hints that there will be announcements of their names in the near future. Foster, meanwhile, will enjoy the fruits of his vision as a passenger when he flies all over the world visiting his many design projects. **END**

Web http://www.netjetseurope.com

















swapshop

More and more designers from the car industry are entering the business jet interior industry, but what can aero learn from auto and is it all one-way traffic?

icture the scene – the highpowered executive is heading to a private airport in the back of his Bentley Flying Spur, sitting in one of the two huge rear bucket seats covered in hand-picked hide and divided by a sweeping burr walnut-finished centre console. At the flick of a switch, he's able to electronically move the front passenger seat forward to create more legroom. More perfectly weighted knurled chrome switches and 'organ stop' controls accent the space perfectly.

Sliding back the smooth-action ribbed veneer cubbyhole cover reveals a beautiful polished metal ashtray with the Bentley 'B' logo atop its lid, fitting snugly in a space made especially for it. It's enough to make anyone consider taking up smoking and is the sort of detail that contributes to the feeling that the Flying Spur is £120,000 or so very well spent.

But when he gets out, walks across the tarmac and steps up onto his private business jet – costing millions not thousands – the interior experience is often a major let-down. He might not take up smoking – but he'll probably need a drink.

Gary Doy is a co-founder of Design Q – a specialist company in luxury sports car and business jet design projects as diverse as exterior styling work for the Ferrari FXX to building a 4.5-tonne complete flight deck for Bombardier. He explains the industry differences well: "It's a real paradox, customers pay much more for a luxury jet than a luxury car but in many of those jets much of the detail is not very well considered in terms of component











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ILLUSTRATION BY Toby Leigh

 Bentley Flying Spur
 Walnut burr and chrome detailing and 'weighted' buttons reinforce the notion of quality

One-way traffic?

It would be wrong to suggest that the automotive interiors industry is a panacea of design forward-thinking. Teague's Ken Dowd, who has sat in both camps, cites DVD headrest systems that have only recently populated car interiors but have been on aircraft "for aeons" as one example. A more fundamental aerospace design 'given' – weight reduction – has been forgotten by the car industry over the years as designers have added more safety kit and gadgets. Design Q's Gary Doy sees this as another area the auto industry can learn from: "When I pick up any part from the aircraft industry it's light," he says. "But do that in the car industry and I'm shocked at the weight of almost anything from the air vents upwards." Optimisation programmes are helping says Doy, as are CO₂-related taxes and legislation, encouraging carmakers to once again look to shed the pounds – witness the Mazda 2 being lighter than the outgoing model – an almost unheard of transition in recent years.



use and panel gaps. It's not at the same level."

So why is there so often such a disparity and what can business jet interiors learn from the automotive industry?

Much to learn Kris Tomasson, new design director at NYC-based design and branding specialists the Arnell Group, but very recently head of Gulfstream's design studio (and before that a designer at BMW and Ford) is also well placed to see both sides. "There's definitely a lot we can learn from the auto industry," he says. "It is very good at perceived quality in terms of fit and finish and minimising material breaks, while the aerospace industry are more like cabinet makers."

The widely different volumes built in the two respective industries explain

THE AUTO MARKET IS VERY LARGE WITH A MUCH HIGHER TURNOVER OF PRODUCTS

part of the problem, according to Tomasson: "There are far fewer business or elite travellers so the competition just isn't there."

Replacement cycles are also slower so innovation and progress takes longer to filter through, as Ken Dowd, a one-time Ford designer and now vice president of the aviation studio at Teague, Boeing's long-term industrial design partner, states: "The auto market is very large with a much higher turnover of products while a new aircraft only comes out every 10-15 years."

In comparison, new cars typically now have a six-year product cycle with a facelift after every three.

Different approach Bigger volumes in the car industry can help with economies of scale, but Design Q's Doy sees other process benefits that the



AUTOMOTIVETRENDS

THIS TEACHES AUTOMOTIVE DESIGNERS HOW TO MAKE PARTS LOOK GOOD IN TERMS OF OFFSET, GRAIN AND FIT

business jet industry could learn from: "Tooling for automotive parts is very expensive and given the volumes involved you have to define the product very carefully. With 100 or more major elements inside you don't want to be making mistakes on fit and finish. This process teaches automotive designers how to make parts look good in terms of offset, grain and fit, even if the piece price is inexpensive. It's not just about volumes, but about focus too."

Cases-in-point are the super-high-quality interiors on high luxury saloons from Bentley, which only make 5,000 to 10,000 cars a year and Rolls-Royce, which doesn't do many more than 1,000 per annum. Even top-end models don't cost much more than £250,000-£300,000.

Positive impact The good news for the business jet interior industry is that much of this automotive expertise is now coming through on forthcoming aerospace products. In his one and a half years at Gulfstream, Tomasson says he put in place many automotive working practices, including setting up a new open-plan studio in Savannah, Georgia. For Gulfstream's new flagship model – the G650 – Tomasson says he approached the whole 'ground-up' project "exactly as you would a car programme. We did mock-ups in foam, prototyping, worked with CAD data,

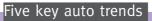
A-surfacing and more. Right now the jet is at the feasibility stage and should launch in 2012."

Previously, he says, some aircraft interior designers would only make simple 2D elevation view sketches at a level comparable to designs for a domestic interior with many of the parts rudimentarily engineered and left to fine cabinet makers to make fit. "They never got down to the level of detail you need when dealing with 3D CAD data," he explains.

Different suppliers In terms of content, Tomasson was keen to integrate the latest consumer electronics trends into Gulfstream aircraft, including touchscreen capabilities similar to the iPhone. Dampening is another good example of the sort of 'surprise and delight' he was after so that ashtrays close like 'draw-close' units in modern kitchens.

Indeed, he sought out different suppliers for some of these features, looking to the auto industry for seating and the consumer electronics field for switches – condemning some business jet industry suppliers in the process: "Some of them are appalling," says Tomasson. "They're so complacent and as there's not much competition they charge a fortune for the quality you get."

Aside from a stricter focus on attention to detail, Tomasson says the



Fit and finish quality continues to soar — even Hyundais and Kias are very well bolted together and the new VW Golf is at BMW or Mercedes standards.

Weight reduction – similar to aerospace, the auto sector is looking to reduce weight in response to green legislation.

Button- and switch-count reduction – fewer knobs equals less weight/cost, while a stripped down dashboard looks better and is easier to use.

Real materials – more real (cold-touch) metal plate and wood veneers are being used to lend an air of authenticity and luxury.

Human machine interface (HMI) improvements and connectivity – the 2009 Chrysler 200C concept is a good example, featuring components from the same supplier as the iPhone touch screen (Nartron). Meanwhile the 2009 Lincoln C concept features an in-dash avatar to talk to and advise on the best local restaurants to visit!

G650 mock-up –
 the real aircraft will
 be available from
 2012

 Chrysler 200C concept features iPhone-style touchscreen components



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AUTOMOTIVETRENDS



- Gantas' A380 includes electric window shades
- 6. Storage drawers have been designed with great attention to detail in terms of their fit and finish
- Concealed IFE controller ensures a clean line and provides some 'surprise and delight'

3D TOOLS DEVELOPED FOR THE AUTO INDUSTRY ARE NOW GETTING MORE USE FOR AEROSPACE ENGINEERING

G650 will offer a cleaner aesthetic representing modern world luxury epitomised by high-end furniture and cars like Bentleys and Aston Martins. He also promises the G650 will be good enough not to need much customising with 12 different floorplans offered with many material variations.

As it's far from on sale, he can't say too much more but does indicate that the G250 mock-up revealed at the NBAA show in Orlando 2008 gives a taster of how the G650 will look.

In defence of aviation interior suppliers, Teague's Dowd says it can be difficult to design quality on small volume runs with lots of regulations on safety but does add that 3D tools originally developed for the auto industry are now getting more use for aerospace engineering. "In order to get this higher quality interior you do have to spend more money, but the aircraft industry is pretty mature now," adds

Dowd. "Look at the 787 and 747 and you'll see a much, much higher level of sophistication — all digitally produced."

Designer touch Getting designers from outside of the industry involved is also shaking up standards. Acclaimed product designer Marc Newson is one such example, picked by Qantas to be its official creative director and design its new Airbus A380 interior. The designer is best known for numerous iconic pieces of furniture - including the Lockheed lounge that took its inspiration from an aircraft fuselage and helped launch his career - but he has considerable aircraft experience. He designed an iconic interior for a Dassault Falcon 900B in 1999 before going on to design the Kelvin 40 Concept jet for Foundation Cartier, and the SkyBed Business sleeper seat for Qantas in 2003.



MAYBE IT TAKES AN OUTSIDER TO SEE WHAT IS GREAT ABOUT WHAT'S RIGHT IN FRONT OF YOU



Although not a business jet, the first-class sections of Qantas' A380 features many bizjet touches, which Newson claims were the result of him being able to influence things from the very beginning: "You don't often get the opportunity to work on the development of an aircraft in parallel," he says. "It's normally shoehorning stuff in. Consequently there are a lot more things you can do."

Thus he was able to design the interior cladding for the portholes and install two-stage shutters for them opaque and full blackout - all electrically activated from the first-class seat's portable console. Newson is a self-confessed aerospace nut, heavily influenced by classic aircraft such as the De Havilland Comet and Boeing 707: "A lot of design in aircraft is not particularly inspired by aircraft or the technologies especially developed for that industry," he says. "I think it's more people trying to interpret domestic or terrestrial interiors in the air, which I feel is a fundamentally stupid approach. Take Airbus's 'gaspers' - one's a light and one's for aircon - they were developed for aircraft, but people stopped using them in the 1970s because they thought they were a bit too utilitarian. But I love that aesthetic."

Newson sees the aviation side of his business expanding – so much so, he has recently set up a separate company called MN Aerospace to cater for it.

Just like a foreigner visiting your country maybe it takes an outsider to see what is great about what's right in front of you. Now that those 'foreigners' are populating the aircraft interior industry overall quality can only improve, as Gulfstream's ex-designer Kris Tomasson concludes, in comparing a Bentley to the new G650: "we're aiming for a compatible experience." High-powered executives the world over will be breathing a collective sigh of relief. **END**

Web www.designq.co.uk; www.marc-newson.com; www.teague.com

- 8. Rolls Royce Phantom
- Audi A8 dashboard detail
- 10. Aston Martin DBS



Kris Tomasson's top rides!

Rolls Royce Phantom – Automotive luxury at its best, setting the standard for the elite traveller experience. A business jet interior should aspire to offer the same sense of luxury and prestige one can only experience in a Phantom. Innovative ideas such as the integrated in-door umbrella is what we need to see more of in the aerospace industry.

Audi A8 – One of the best examples of automotive interior quality. The aerospace

industry can learn a lot about real and perceived quality and attention to detail from the example offered by a production A8. Excellent use of materials and finishes

Aston Martin DBS – Great mix of luxury and technology. The aluminium trim accents and use of Alcantara give a sense of understated elegance that is very relevant to the aerospace industry. Contrast stitching in the leather enhances the form, in keeping with current fashion trends.







INTERIOR DESIGN & REFURBISHMENT





s more of the world's wealthiest clientele are now turning to executive converted airliners for their airborne travel, the manufacturers of large traditional business jets are fighting back, creating new interiors that create the appearance of more spaciousness and luxury, including features not traditionally found on large business jets.

Bombardier's US\$55 million (well-equipped) Global XRS is perhaps the most dramatic example of this trend. The XRS can be laid out to accommodate up to 14 passengers in executive configuration and can carry a payload of up to 2,075 lb with full fuel.

Beginning in 2006, the oncebranded 'Global Express', which first entered service in 1996, received a complete makeover.

An additional fuel tank located at the wing root increased range to 6,150 nautical miles at a brisk 0.85 Mach and a better fuel computer cut refuelling time by 15 minutes. A new take-off flap setting allows the aircraft to take off from high-altitude airports on hot days at increased weights and with more fuel on board, increasing range under those conditions. Enhanced Vision with Head-Up Display (HUD) was added as a standard feature, allowing the XRS to land safely in the most adverse weather. Datalink has also been added to the cockpit.

Bombardier, working with UK-based Design Q, completely redid the cockpit. The XRS's new 'Global Vision' cockpit features a flowing, sweeping design incorporated around three large, flatpanel avionics, navigation, and systems displays. The control yokes are finished

GLOBALXRS

- Club seats are positioned around a large table – ideal for dining or work
- 2. The table features a mahogany veneer finish

in hand-stitched leather and the pilot seats have been substantially improved both in terms of fit, function, and overall comfort.

Cabin improvements The XRS also sports new cabin standard features, options and layouts. The weight allowance for cabin components has been increased from 6,000 to 7,800 lb. The XRS cabin has 15ft³ more storage space compared to the original Global Express. Galley space and galley storage space has been increased. The XRS has accommodation for onboard offices, including airborne high-speed internet. The XRS can be outfitted with forward and aft crew rest areas, meeting the regulatory requirements for 12-hour, non-stop flights. The dual crew rest compartments are located forward of the aft lavatory and aft of the main cabin door.

The cabin compartments can be bifurcated with optional electric-release sliding doors. Cabin seats can be equipped with electric recline and power lumbar and an electric high-low conference table is also available. A menu of IFE options includes direct broadcast satellite television, XM/Serius satellite radio, an 18.1in 'pop-up' monitor (mounted on a hydraulic lift) that stowes in the credenza, and 10.4in plug-in monitors at individual seat positions.

Cabin lighting has been improved and new window surrounds have increased passenger field of view and filter more natural light into the cabin. A new cabin pressurisation system lowered cabin pressure to 4,500ft at 45,000ft cruising altitude and 5,700ft



CABIN SEATS CAN BE EQUIPPED WITH ELECTRIC RECLINE AND POWER LUMBAR

AND AN ELECTRIC HIGH-LOW CONFERENCE TABLE IS ALSO AVAILABLE











at 51,000ft; and a Liebherr cabin humidifier has been added as an available option.

Turn up the volume Impressive as these changes are, Bombardier wanted to do more. The company's designers already had much to work with: total cabin volume is 2,140ft³, the cabin measures 48.35ft long, is 6.25ft tall, and is 8.17ft wide at the centerline and 6.92ft wide at the floor. The cabin floor area is 335ft³.

Such a large footprint allows for a great deal of customisation. Late last year Bombardier debuted a mid-cabin shower design for the XRS with up to 40 minutes of run capacity. (See the February 2009 issue of *Business Jet Interiors International* for more details.) But showers are just one way Bombardier is making the XRS cabin look, feel, and function more like an airliner class competitor.

The company has also created and installed a mid-cabin media suite on board the XRS demonstrator that has a luxury automobile look-feel. The focal point is a large, 31.5in flat-screen monitor mounted in a custom









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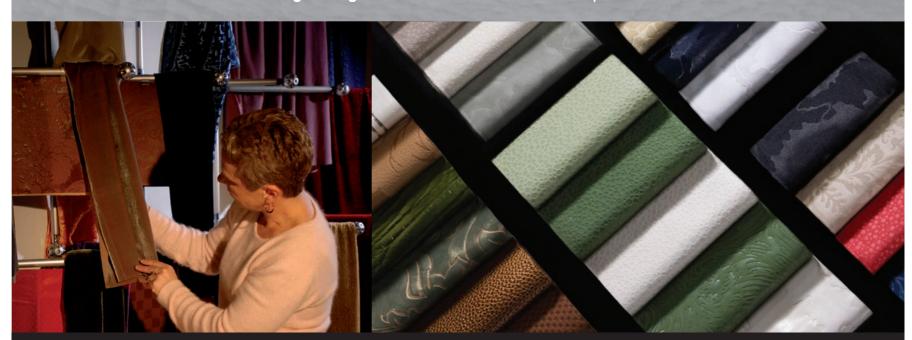
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entertainment cabinet opposite a sidefacing, full-berthing, three-place divan. The monitor is complemented with a surround-sound system with both cabinet and monitor-mounted speakers. The cabinet also contains a workstation with an adjacent seat that transitions into the dining/conference grouping, also located in the mid-cabin area, creating seating for five. Bombardier designers created a seamless line between the workstation PSU and the cabinet.

These large cabin features aside, it is really an innovative use of shapes, colours, textures and fabrics on the XRS demonstrator that creates a sense of richness and spaciousness typically only found on larger aircraft. "A Global is not as big as a Boeing, but we wanted to bring those features into the aircraft," says Marianna Rivera, a designer at Bombardier's Global Completion Center

Global XRS

Crew: 2-4 Passengers: 8-19

Cabin length: 48.35ft (14.7m)

Cabin width (centreline): 8.17ft (2.49m) Cabin width (floorline): 6.92ft (2.11m)

Cabin height: 6.25ft (1.91m)

Floor area (excluding cockpit): 335ft² (31.1m²)

Cabin volume: 2,140ft³ (60.6m³) Cabin altitude: 4,500ft at 45,000ft

Cabin features: Forward galley; private aft stateroom; dedicated temperature zones; dedicated mid-cabin workstation/media suite with 31.5in flatscreen monitor; optional Liebherr humidifier;

optional aft-cabin shower suite.

softened it up. It's a noticeable change, but it is also a subtle one," she says.

Driving force Rivera was part of Bombardier's in-house design team that came up with a completely new look for the XRS that borrows heavily from the luxury automotive sector. "The colours were inspired by the automotive industry, but we wanted to have a classic feel to the interior so we decided to stay with beiges and dark browns and rich wood tones."

Sandra Henry, a design supervisor on the team, says the XRS demonstrator's unique look is down to a new approach, rather than new materials: "We applied traditional finishes and materials in new ways," she says. These include an inlaid mahogany panel in the sidewall; and a metal bullnose that runs along the lavatory and galley side ledges.

Because of the crew rest area located aft of the cockpit on the right side of the aircraft, the galley was relocated opposite (on the left of the aircraft). The metal bullnose and metal handles on the doors "punches a little pizzazz into that area as you come aboard the aircraft and walk into the cabin," says Henry.

Subtle contrasts were also employed. The French seat stitching and piping were done in contrasting colours. The seats themselves were covered in twotone 'Antique Glaze Cow' and standard







PEOPLE NOW REALISE THEY CAN HAVE ALMOST ANYTHING THAT IS IN THEIR HOME OR

OFFICE IN THEIR AIRCRAFT

- The galley features doors with a metal bullnose and handles
- The galley has been relocated opposite the crew rest area

Townsend leathers. The bulkheads featured ribbed insets over the fabric. The door jambs were covered in a high-gloss black piano finish, while the mahogany veneer was carried through as an accent on doors, cabinets, and tables. Using multiple woods on the tables "worked well together, but was not glaringly loud", adds Rivera.

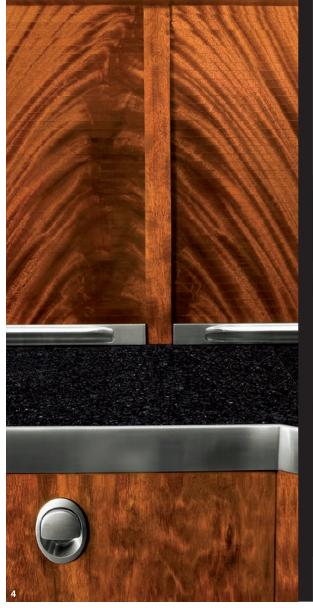
Henry says the demonstrator has "opened up people's minds with regard to use of different materials and inserts", and has gone over so well that Bombardier counterparts to the company's Learjet and Challenger divisions have asked for the specifications to present at client meetings. "We wanted a demonstrator that would make people say, 'Wow, this is different'," Henry says.

While the colour and material combinations obviously did this, it is still the combination media/state room that remains the biggest draw aboard

the XRS demonstrator. "Customers really like the aft cabin and the feel of the stateroom and media centre," asserts Henry. "People now realise they can have almost anything that is in their home or office in their aircraft," she says.

"We get a lot of calls on the woods and leathers," adds Rivera, but notes that the entertainment cabinet was still the big draw. Rivera hints that the entertainment cabinet and oversize monitor may become a standard option on XRS in the near future: "We want to design and sell that as an option."

Competitive interest Bombardier's main competitor in this sector, Gulfstream, is also putting more 'large cabin' options into its aircraft, including large flat-screen monitors, according to a company spokesman. While neither Bombardier or Gulfstream can offer the absolute cabin volume on board an Airbus Corporate Jet or Boeing Business Jet, both companies are working hard to offer customers the same ambience, features and functionality; from gourmet galleys to showers and plush bathrooms and now, big-screen media rooms. END

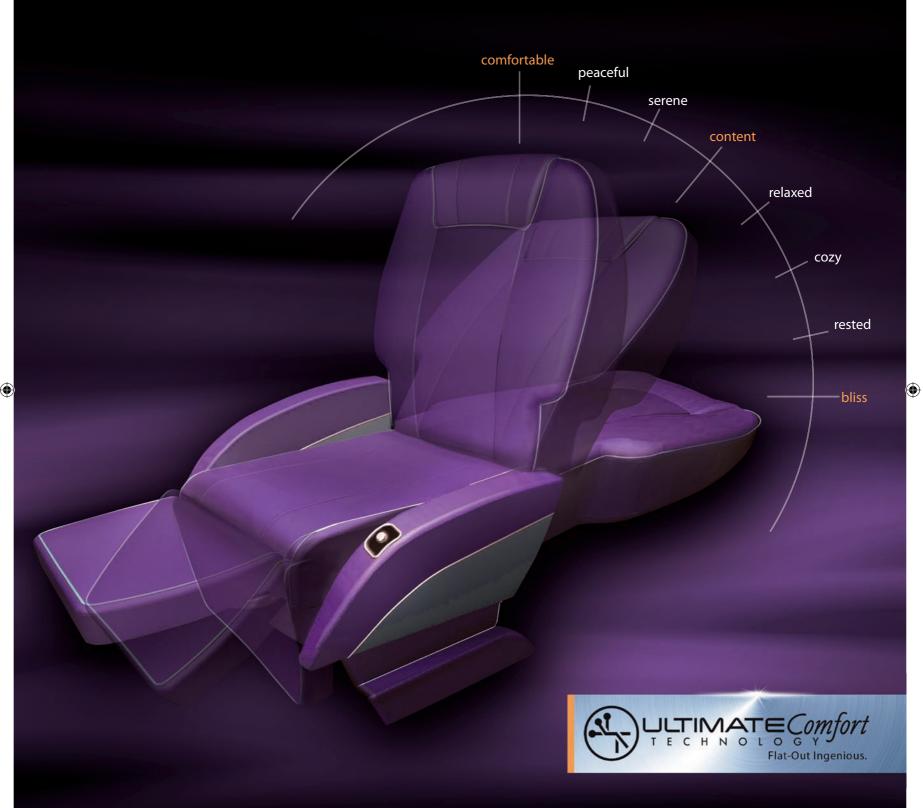




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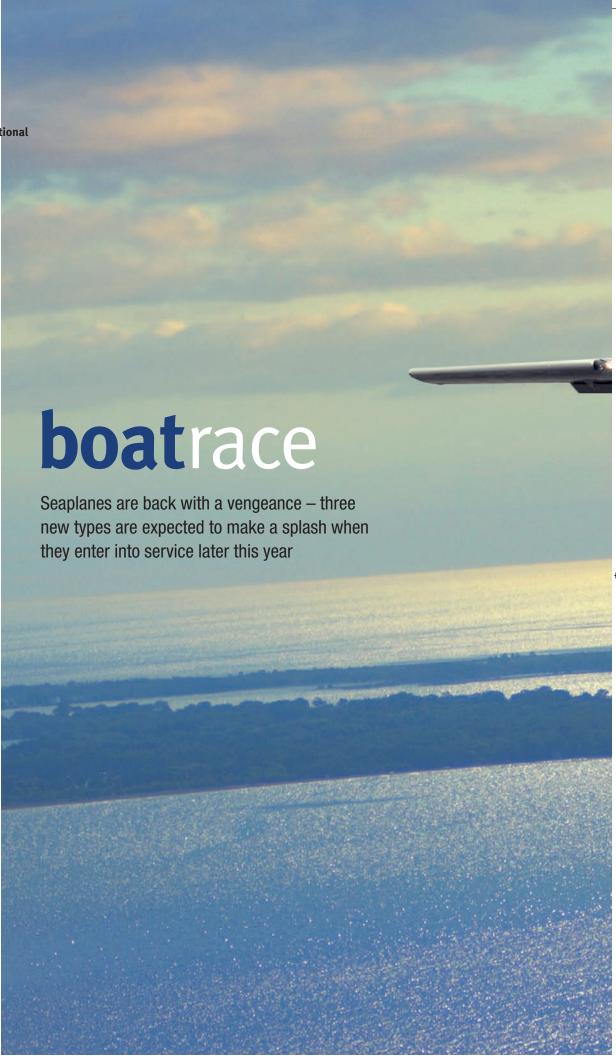
here may be stormy seas in world markets, but negotiating choppy waters is all in a day's work for a seasoned seaplane operator. Sales may be down elsewhere, but there is constant demand for an aircraft that can land and take off from water. With that in mind, OEMs remain optimistic about the future for their products.

Canadian airframer Viking specialises in de Havilland aircraft: including the DHC-3 Otter and the DHC-6 Twin Otter. Marketing and business development manager Angie Murray points out that there will always be a market for seaplanes. "They are specialised products," she says. "A Twin Otter has a particular job to do and is a steady workhorse."

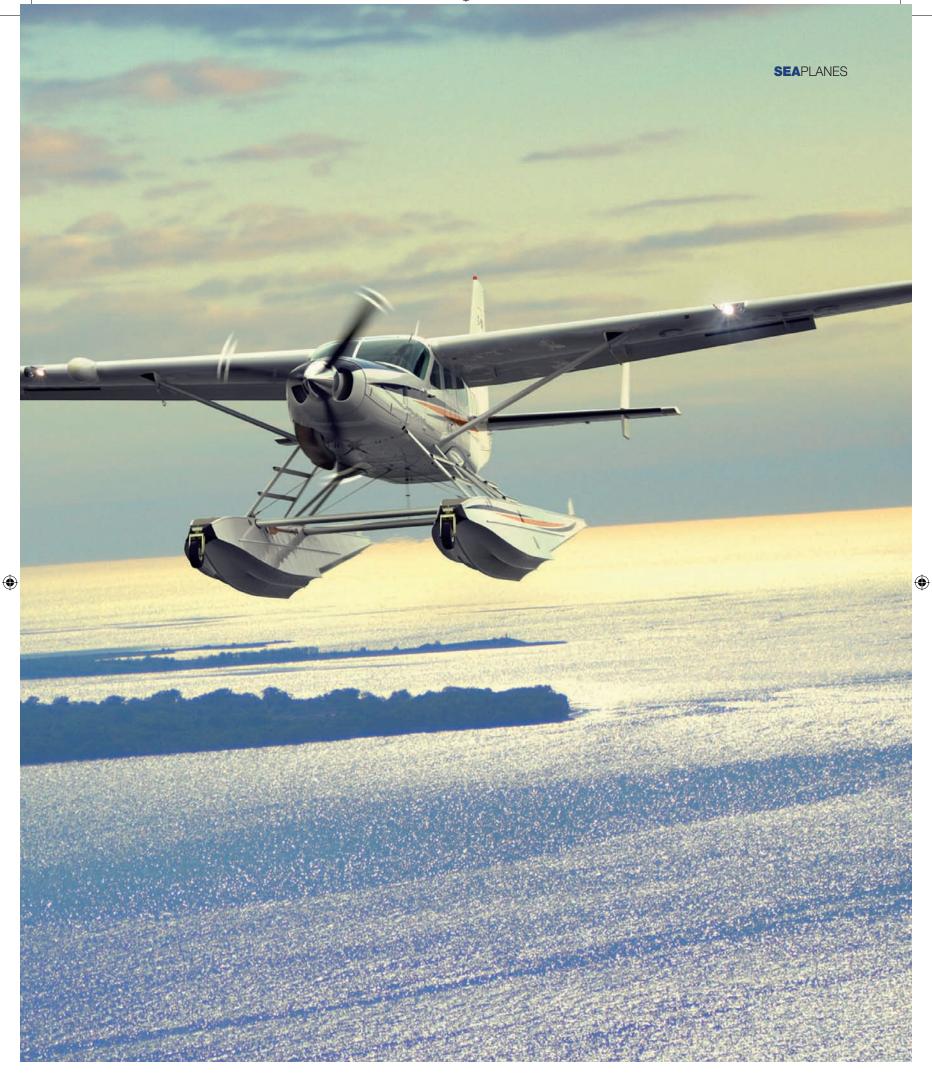
Operators around the world want swift, direct transport to coastal towns, islands and remote locations. "Seaplanes can operate around the globe, making for a strong niche market," adds Murray. "While many are used in luxurious resort areas for high-end clientele, developing countries also use seaplanes to support remote communities where infrastructure is lacking."

Norse code In 2007, Viking started working on a new derivative of the 19seat de Havilland Canada DHC-6 Twin Otter Series 400. Due to launch later this year, Viking anticipates a strong market for the type. The company's largest customers are two fleet operators in the Maldives, one of which, Maldivian Air Taxi (MAT), has already ordered two. Inthikab Ahmed, ground operations manager, says: "Twin Otters are the most suitable aircraft for this type of operation. They are comfortable aircraft for a short and scenic 20minute flight, which is what we offer predominantly."

The company runs up to 150 flights a day in peak season. "Although bookings in the tourist sector are down and we have seen a drop in services, we are still averaging 100 flights a day," says Ahmed. Such heavy usage means







SEAPLANES





ONS AVAIL

that a robust interior is crucial and MAT has opted for both VIP and commuter shuttle variants in leather. He adds: "We have two versions, red leather seats as standard and the VIP configuration in light cream leather with more legroom."

Interior motifs Viking offers both VIP and shuttle choices. "We have several different interior configurations available, including executive, VIP and corporate shuttle," explains Murray. "Customers have options to outfit as they would like." The OEM keeps a

selection of materials samples on-site, which it is able to install in three different options. Seat coverings include cloth, cloth leatherette and an upgraded leather version. The aircraft are delivered green to customers, and several of them choose their own interiors house. Viking contracts local suppliers Oregon Aero to do the installations.

"Heating and ventilation does not seem to be a problem, and an air conditioning system is being introduced as an option in the -400 as the aircraft operates in extreme temperatures," adds Murray. "The cockpit seats are (MAT) is a keen

MAT Twin Otter with VIP interior



also configured with conformal foam for comfort. Lavatory installations are also available."

The company is also analysing several coatings for its new -400, given that around 200 of its customers operate in salt-water environments. This means a hard working aircraft needs a major overhaul every three years, at a price of US\$1.5 million per aircraft. To combat this heavy wear and tear Viking is looking at E-coat, which boosts the corrosion-resistance capabilities of the hull and floats.

Originally created for the car industry, E-coat is a cross between electrostatic spray and powder coating. Viking has added new corrosion prevention properties to the new aircraft by adding compounds to the primer and the chemical edging and in extra layers of paint. It also comes with fewer wires, therefore fewer connections, which can corrode and cause maintenance issues. The key for operators will be to use a fresh water wash after use.

Seastar delay Veteran airframer Dornier Seaplane Company is also relaunching an aircraft. Although entry into service of the Seastar has been put back several months, the company is continuing to build its sales team. It says it foresees demand for up to 50 Seastars a year. Its refurbished demonstrator boasts a new paint scheme and executive interior and is already booked out, according to Jim Holcombe, vice-president sales and marketing.

"We have kitted it out with a nautical theme, navy carpet with a tan line and tan leather seats," says





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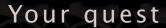
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Norwegian nous

Norway, famous for its Arctic explorers, can also lay claim to two pioneering female seaplane pilots. Gidsken Nilsine Jakobsen was born in 1908 in a tiny village near the Arctic Circle. She was the second Norwegian woman to get a flying licence and the first to set up an airline. She had to learn to fly a seaplane, since there were no civilian airfields in Norway in her day. In winter 1929, backed by her father, she bought a doublewinged open seaplane with two seats, a Finnish variant of the Moth. Along with a co-pilot, she flew the aircraft from Finland to her home base. Conditions above the Arctic Circle in midwinter are grim, with no sun for more than a month. The weather is freezing cold with gale force winds and Norway is mountainous, which makes flying overland extremely hazardous. Jakobsen flew the open cockpit aircraft over the frozen inland region to Oslo. In 1932, she co-founded Nord-Norges Aero (North Norwegian Airlines) flying a ten-year-old Junkers F13W.

Thirty-six years later in 1968, her compatriot Turi Wideroe became the first female airline jet pilot in the western world. Her father Viggo Widero founded an airline in 1934, for which she flew from 1965 onwards. Wideroe also flew 10-seat DHC-3 single Otter seaplanes, kitted out as commuter shuttles and medevac variants. "It was tough flying, but the scenery was so beautiful. It was the best part of my flying career," she said.

IN SOME OF THE SMALLER SEAPLANES, HEADSETS ARE USED TO REDUCE AIRCRAFT NOISE IN THE CABIN

Holcombe. "The periphery is in a light colour." He points out that the hull of the boat means that the cabin is wider than the average jet interior, giving the impression of lots of space.

The Seastar first flew in 1984, and three were built in Germany before production ended in 1991. The composite 12-seat aircraft is powered by twin Pratt & Whitney PT6A-135As, set together above the wing. Chief executive Joe Walker lists the corrosion-proof composites and custom design among its merits. "Because it's a flying boat and not a boat-modified airplane, it's one of the fastest seaplanes out there at 180kts," he says.

Faster speeds do not mean more noise. Holcombe says that the Seastar is "no noisier than a King Air". As an unpressurised aircraft, the -400 is

generally noisier than a usual VIP vehicle, which is "the nature of the beast", according to Murray. MAT offers its customers earplugs on board if they wish to use them. In some of the smaller seaplanes, headsets are used to reduce aircraft noise in the cabin.

The VIP Seastar competes with several business aircraft in terms of comfort, coming with an enclosed lavatory and six seats in a club and a half-club configuration. "Although it has a range of up to 700 nautical miles, it is unlikely that it will be used over those sector lengths," says Holcombe.

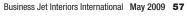
That's the spirit Not to be outdone, US outfit The New Nose Company has launched a new carbon fibre twinengined seaplane dubbed the Clipper Spirit, based on the design of the 1949



- 3. Viking Air Twin Otter -400 executive interior
- 4. Viking Air Twin Otter -400 during its first flight







SEAPLANES



5. Dornier sees demand for up to 50 Seastars a year

VIKING'S BACKLOG TOTALS ABOUT 40, WHICH TAKES THE COMPANY INTO 2011 IN TERMS OF PRODUCTION

Grumman Albatross. President Charles Simpson says: "There is a big market for seaplanes today, particularly from within the Middle East, Europe, South-East Asia and the Caribbean, and we hope to fulfil the demand with the Clipper Spirit."

The Clipper Spirit will be 20.2m (66.5ft) long with a hull beam of 2.7m, and a wingspan of 29.2m. New Nose is evaluating the Rockwell Collins ProLine 21 glass cockpit, but is undecided on its choice of powerplant. The 1.8m-

high, 20.4m² (220ft²) interior will have a flat floor and be configured for up to 24 seats as well as for corporate and medevac applications. The privately owned company says it expects a market demand for 200 aircraft over 10 years

Future prospects The first -400 will go to Switzerland's Zimex Aviation later this year. "Once people see the first one, then orders will pick up," says Murray. The first nine Seastars will be priced at US\$5.5 million and be equipped with the original round dials on the flightdeck. Later models will have glass cockpits, air conditioning and autopilots and will sell for US\$6 million. According to Dornier, orders are split evenly between executive and commuter versions, across both US and international customers. Viking's backlog totals about 40, which takes the company into 2011 in terms of production.

Operators are cautious about what will happen next in their sector. "Bookings have been down 15% with some hotels predicting a drop to 30%, which would be the worst case scenario," says Ahmed. "I hope this does not happen."

Despite such a gloomy prognosis, Holcombe strikes a note of optimism: "The market has dampened everyone's business, in the current climate, but we are encouraged that we have a unique aircraft that will weather the storm." END

Web www.vikingair.com; www.dornierseaplane.com

Golden era of travel

Flying boats have a rich aviation history and were a mainstay of VIP travel for many years. Rather like the relationship between private jets and yachts today, the Boeing B-314 Clipper was the aerial counterpart to luxury ocean liners of the past. US airline Pan Am's B-314 fleet was opulent in the extreme.

Fielding a crew of up to ten, the aircraft could carry up to 74 passengers, who travelled lavishly. On board were sleeping berths, lounges and luxurious lavatories. Hot food and drink were available on demand served in silver goblets and real china by white-coated stewards. There were also thick carpets, soft lighting, and comfortable upholstery in soothing colours on board. Heavy soundproofing in the walls helped to dampen noise.

Two irregular rows of large rectangular windows delineated the upper and lower decks. The cockpit and baggage were upstairs and passengers sat in several lounges with convertible sleeper couches downstairs. These turned into curtained bunks at night. The lounges were decorated in alternating colour schemes — turquoise carpet with pale green

walls, or rust carpet with beige walls. The rooms could seat up to ten passengers during the day, but only six on an overnight flight.

Even the crew were comfortable. The flight deck was one of the most luxurious ever made. At 21ft long and 9ft wide, crew could stand up and had full headroom throughout. The roomy cockpit was adjacent to a complete flight operations centre, containing a 7ft navigator's table. There were two heavy maroon curtains, which could be closed at night, separating the pilots from the rest of the deck, so that they had clear night vision.





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emand for Agusta Westland's intermediate/medium AW139 twin turbine helicopter is so strong that the company has established production lines in Italy and the United States and will soon open a third in Russia. More than 430 of the US\$12 million (base price), 15,000 lb helicopters have been ordered and over 230 are in service. The helicopter is the best-selling model in its class.

The AW139 was originally envisioned primarily to service the off-shore oil industry with cabins configured for 15 passengers in a high-density layout and two pilots. Indeed the majority delivered to date are working for offshore operators, but the helicopter is also gaining popularity in the fire-fighting, medevac, law enforcement and executive/VIP sectors.

More than 60 AW139s are flying with executive interiors, and designers including Versace and Pininfarina have created custom interiors for the helicopter. The latest to do so is Londonbased interior design firm, Candy & Candy. Fully outfitted with a top-of-theline cabin, the price of an AW139 is near US\$17 million, virtually the same price as a new mid-size business jet. Indeed even its glass panel avionics, Honeywell's Primus system, is similar to what you would find in a new business jet. The avionics are just one nice distinguishing feature of the cockpit - the other is space. The flight deck is as ergonomic and comfortable as any you would find on a modern airliner and the pilots' field of view borders on the spectacular.

The AW139 was initially badged as the AB139 to reflect its lineage: A joint venture between Agusta and Bell Helicopter. It made its first flight in 2001 and gained FAA certification in 2004. In late 2005 Bell sold its part of the venture to Agusta to enable it to







focus more of its resources on the V-22 military tiltrotor as the development of a new light twin helicopter, the Model 429. The helicopter was subsequently renamed the AW139. Like any modern aircraft programme, the AW139 brings together a diverse confederation of suppliers and risk-sharing partners, including the aforementioned Honeywell, Pratt & Whitney Canada, PZL Swidnik, Liebherr, and Kawasaki.

There are several features that combine to make the AW139 a formidable executive transport. The five-bladed main rotor and four-bladed tail rotor systems produce relatively – for a helicopter – low vibration and noise levels. The Automatic Flight Control System (AFCS) can be fitted with a four-axis autopilot and the helicopter can be equipped with an optional ice protection

Candy & Candy has created a slick and sexy interior for the AW139, featuring a rear-facing curved divan and an oval conference/ coffee table

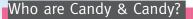
and detection system – allowing it to operate almost anywhere in any kind of weather. The twin Pratt & Whitney Canada PT6C-67C engines are rated at 1,531hp each and have so much reserve power that the AW139 can lose an engine at its maximum take-off weight and still safely fly off. The engines and the rotor system also produce an impressive top speed of 165 knots – 10 knots faster that what up until now had been the gold standard of corporate helicopters, the Sikorsky S-76 series.

Cabin dimensions However the size of the AW139's cabin is perhaps its most dramatic feature. The flat floor/flat ceiling cabin measures 8.86ft long by 6.89ft wide and 4.66ft tall. The 120ft³ of baggage space is accessible both from inside the cabin and externally from

both sides. Six large pop-out cabin windows provide excellent passenger visibility and the dual 55in-wide sliding cabin doors facilitate easy loading and egress. The cabin's modular design allows quick configuration changes with executive seating from four to nine passengers. There is ample space for office equipment, refreshment centres, and in-flight entertainment/information components. The cabin and cockpit can be separated by a privacy divider and the dual-zone climate control assures that separate temperatures for the cockpit and cabin can be maintained.

Both Versace and Pininfarina were quick to realise the potential of the AW139 for their signature looks. Versace's standard treatment is based around its traditional black and white





Owned by thirty-something Candy, Candy & Candy is an interior design and development management company known for a number of high-profile projects style sector. Its portfolio includes large and boutique residential developments in London (including One Hyde Park, private homes, yachts, jets and helicopters for clients in Monaco, Spain, Italy, America, Russia, Hong Kong, Qatar and Dubai. The was on a slightly smaller scale -a one-bedroom flat in Redcliffe bought for £122,000 in 1995 using a £6,000 loan from their grandmother. After renovating the apartment while living in it, it

'Home' collection with hand-stitched seats and floor tiles. The Pininfarina treatment, as you might expect, has more of an automotive feel with rich veneers, dark leathers, sculpted seats, and a hint of carbon on the cabinets. Pininfarina designed a nine-passenger interior with a rear-facing four-place divan, two forward-facing slide and swivel executive seats with refreshment cabinet divider and three removable, forward-facing jump seats. To dampen cabin noise and vibration, all monuments, window treatments are attached via isolator mounts. The IFE system is as elaborate as found in any corporate jet: 15in monitors with moving map, CD/DVD/satellite radio, iPod connectivity, eight-speaker sound

system, master touch-screen controller, individual source and volume controls

in the four outboard seats, Air Cell satellite phone, and full-spectrum upwash lighting on the rear cabin bulkhead. Pininfarina is also working on other aviation-related projects including Sukhoi's SuperJet.

Sweet treats As fresh and innovative as these designer interiors are on the AW139, they are eclipsed by what the jet-set interior design firm of Candy & Candy has in mind for the ship it has on order. The firm is the designated designer on various chic megaresidential projects from Beverly Hills to Hong Kong including the futuristic One Hyde Park development in London. The firms' portfolio includes both affluent private client individual residences and large-scale developments. At any given time, its 55-member design staff is working on 20 to 25 projects according to Martin Kemp, the company's chief designer. Recently those have included high-end Executive AW139 operated by Swiss Jet AG at Zurich Airport, with an interior designed by AgustaWestland's in-house team





completed 62m Candyscape II, built by Italy's Viareggio Super Yachts (VSY). The interior of that 'boat' includes a split-level master suite, gymnasium, media room with 103in plasma television, leather hide floors, crystal chandeliers, circular glass elevator with glass floor, and a rotating bed on the sundeck so you are always positioned at the perfect tanning angle. This is Candy & Candy's second mega-yacht.

The AW139 does not offer quite the same yacht-style interior space but Candy & Candy's approach is no less innovative. The VIP layout features a rear-facing, curved divan opposite two single VIP 'owner' seats separated by a carbon fibre cabinet/refreshment centre finished in dark grey mikassa and stitched leather. It holds drinks, porcelain, flatware, snacks, and condiments.

The cabin incorporates fresh elements including leather cupholders and a quilted suede headliner with a unique stitching pattern that creates a three-dimensional look.

"It's a very unusual pattern - a very beautiful three-dimensional surface," says Kemp. "You know how in a Bentley or Ferrari you have a quilted headliner? Well we just took that principle and pushed it a little bit further."

THE ULTIMATE AIM IS TO

The cabin is completed in dark grey mikassa finishes, subtle smoked nickel and almond gold plating, and high sheen silk carpet with irregularly handstitched leather overmats. Touch switches housed in flush fittings control the cabin's LED and reading lighting. Kemp says Candy & Candy plans to use a unique liquid metal and resin polymer coating on some of the interior panels that creates a flat finish with "streaking lumps" that create a sensation of motion and movement.

One collateral benefit of some of these non-traditional material choices is to enhance cabin sound dampening. "A lot of materials we've chosen to use, by their nature, offer a little more soundproofing than the standard materials the aircraft is normally fitted out with," says Kemp.

However, the design's most unusual feature is the oval conference/coffee table located between the divan and the

single seats. Plans are for this removable monument to house a large, doublesided, pop-up plasma monitor. When not in use as a pop-up, a top can be fitted to the structure allowing it to be used as a table. The entire structure can be quickly removed and replaced with two additional single seats.

Kemp says the AW139 cabin design was a little bit "more of a challenge, very tactile - challenging what has conventionally gone before without being gimmicky. These things are very chic and very elegant looking but in an understated way," he says. "We do these things with very subtle touches. They're unusual without being tasteless they're never tasteless.'

This AW139 will also have slightly larger luggage capacity, gained by the installation of smaller fuel tanks. Lightly loaded, a standard AW139 can fly 500 nautical miles unrefuelled.

Candy & Candy is also working on two corporate jet projects – a Bombardier Challenger 605 and a long-range Global XRS, both of which will incorporate hallmarks from the AW139 project, including metallised leathers and shaved carpets. But Kemp realises that the certification challenges will be greater on the AW139, due both to the large plasma screen and the 30g seat requirements for the curved, rear-facing divan.

The firm's AW139 will not be delivered until 2010, plenty of time to resolve the regulatory and testing hurdles. "The (divan) is a departure from regulation," Kemp admits. "The ultimate aim is to market the product and demonstrate our ability in the aviation industry and extend our scope into the lifestyle," says Kemp. "We were rather tired of seeing a conventional helicopter interior," he says. "There isn't quite another helicopter flying around like this." END

Web www.candyandcandy.com











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t's like buying a classic used car that is a tad rough around the edges. When Gulfstream purchased Galaxy Aerospace in 2001, it knew it was acquiring a project. The super-midsize Galaxy was, to put it kindly, a troubled aircraft in acute need of rehabilitation.

Production was stalled, deliveries were late, and aircraft in the field were plagued with a serious list of mechanical problems. They included starter generator failure, slow landing gear actuators, jet fuel that vented into the aft equipment bay. The Galaxy also had a myriad of fit, finish, and function problems and malfunctions on everything from the toilet to the ventilation system. Customers were furious.

Gulfstream rebadged the aircraft the G200 and moved quickly to fix what it could: stepping up customer service; designing a lighter weight interior – the old one was fat; and quieting the cabin with a new thermal acoustic insulation package. It also replaced underperforming vendors and brought more work in-house at its Dallas production facility. Short-term, these efforts bore dividends: completion cycle time fell from 14 months to four, exceptions at delivery plunged 90% to less than ten per aircraft, and the dispatch rate improved from 90% to 98%.

Heads up The G200 offers the market a unique value proposition because its ovoid fuselage actually has more headroom than a full-size Gulfstream G-IV (with a tube that is only 2in narrower), seating for eight to 10 passengers, a 3,600 nautical mile range, 45,000ft ceiling, and top speed of 0.85



GULFSTREAMG250



all-new engines, wings and avionics

The forward galley's modular design will

allow clients more

choice over inserts

engines gave the aircraft good fuel economy for an aircraft of its size. It also made the G200 a runway pig when heavily loaded, gave it useful load problems, and required some of the aircraft's fuel to be stored in the fuselage. And without more powerful engines, more aerodynamic wings that could hold all of the aircraft's fuel, and updated avionics, the G200 risked becoming an also-ran to the competition.



Pilots also did not care much for the inflatable pneumatic de-icing boots on the leading edges of the wings and stabilisers, a jet fashion *faux pas* akin to wearing an orange hunting jacket to one's own wedding, and a constant reminder of the anaemic bleed air capabilities of the G200's engines when mated to an aircraft of its size.

So three years ago, Gulfstream began working on a successor aircraft that addressed these shortcomings – the US\$24 million (2008) G250. Gulfstream, which unveiled the design in October 2008, anticipates its first flight later this year and certification in 2011.

The G250 retains the G200's positives and discards the rest. As expected, the engines, wings, and avionics are all new and are predicted to enhance the aircraft's performance.

The blowers in the back are being replaced with more powerful Honeywell HTF7250G high-efficiency turbofans, rated at 7,445 lb of thrust each. The new, quieter, and more fuel-efficient engines will power the G250 up to 41,000ft in just 20 minutes and reduce cabin noise. The redesigned transonic wing considerably shortens the G250's required takeoff distance under full load. The aircraft will now be able to comfortably use 5,000ft-long

runways. Up front, the G250 will be guided by a PlaneView cockpit built around the Rockwell Collins Pro Line Fusion system. The system features three large, high-resolution 15in LCD displays and can be outfitted with synthetic and enhanced vision, enabling landings in the worst weather and the most challenging topography.

Cabin freeze Details of the G250's cabin are largely complete and most of the design is expected to be finished by the end of the first quarter of 2009, and vendor selection by year's end.

"We're moving into detailed design of the cabin interior now, says G250 program manager Mark Kohler. "You can make tweaks along the way, but the basic cabin interior design is largely frozen."

The tube is unchanged from the G200, but moving all the fuel into the wings has created more useable cabin space, as well as inflight access to the 120ft³ baggage compartment. Three basic cabin layouts are available in eight-, nine-, or ten-passenger configurations, including double-club and club with half-club opposite a three-place, side-facing aft divan. A forward cabin divan option is not anticipated. A seat vendor has not been formally selected, but Gulfstream does





Marathon Winner 2008





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not anticipate offering full-electric function seats on the G250.

Overall cabin length is now 25ft, 10in from the forward edge of the lavatory to the aft edge of the galley. That extra space also allowed Gulfstream to eliminate the recline restrictions on the right-hand aft chair. On the G200 it is limited as not to conflict with the emergency exit.

Room with a view More cabin room translates into noticeably larger lavatory space as well. The lavatory on the G250 will be a full 48in wide compared to the relatively cramped 26in on the G200. The G250 lavatory will have a wardrobe closet, two large cabin windows, sink with raised ledge, and a vacuum toilet system — a unique feature in a super-midsize. The vacuum system will use a vacuum generator to power the system up to 16,000ft; above that altitude it will be powered by differential air pressure.

The redesigned galley, while the same size as on the G200, will have increased stowage space, a gaspercooled ice drawer, and sink with slide-

out work surfaces. It will also have a modular design, allowing customers to specify differing locations for the positioning of things like coffee makers, ice drawers, glassware, and liquor. Another clever but important innovation are drawers that can accommodate all sizes of catering trays. Options will include espresso makers, choice of microwave or convection oven, and stemware storage. "We used input from our customers in designing the galley with more flexibility and more work surface area," says Kohler.

The G250 cabin will also feature a forward closet.

Sound approach Natural lighting will come from 19 cabin windows, supplemented by LED lighting. Specifics of the window shades and cabin lighting are still being evaluated in Gulfstream's advanced technology and acoustics laboratory in Savannah. "We're testing the acoustics package, the window shades, and all the other materials used on the interior of the aircraft to minimize noise levels," says Kohler. "We've tested different types of

DOES NOT ANTICIPATE OFFERING FULL-ELECTRIC FUNCTION SEATS ON THE G250

transparencies and window shade mechanisms because we know all of these contribute to interior noise levels," he says.

The rapid pace of technological change has prompted Gulfstream to intentionally defer some selection decisions. "The capabilities of LED lighting is changing pretty quickly and we are still working through that," explains Kohler. Likewise, the in-flight entertainment system specifics "are a couple of years out," says Kohler. But it will include high-definition television (HDTV), and larger, 17in flat-panel standard cabin displays. LCDs larger than 17in are a contemplated option.

Cabin altitude at FL450 is a comfortable 7,000ft and the G250 will have Gulfstream's "100% fresh air

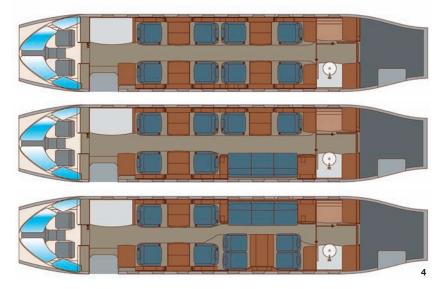
Seat vendors are
 vet to be announced.





THE TEAMS MET SEVEN TI **BEFORE THE FINAL CABIN MOCK-I**

- Three cabin layouts are available for passengers to choose from
- The G250's PlaneView cockpit is based on **Rockwell Collins** Pro Line Fusion architecture









Gulfstream G250

Crew: 2

Passengers: 8-10

Cabin length: 25ft 10in (7.87m)

Cabin width: 7ft 2in (2.18m) Cabin height: 6ft 3in (1.9m)

Cabin volume: 935ft3 (26.5m3) Cabin altitude: 7,000ft at 45,000ft

Cabin features: 19 large oval windows; forward galley, with extra-large ice drawer with gaspercooled storage, sink with slide-out work surface, increased storage capabilities; aft lavatory with two large windows, a raised ledge sink, and a vacuum toilet system; inflight access to baggage compartment (120ft³); choice of three floorplans. Cabin-Essential philosophy ensures a single-point failure will not result in the loss of cabin functionality.

system". Gulfstream has turned to Honeywell to provide all the cabin environmental control and cabin pressure systems on the aircraft. Gulfstream plans to place all of the systems on a rig and pre-test the system in its entirety before it is installed on the aircraft.

Fail-safe architecture The G250 will employ Gulfstream's 'Cabin-Essential' architecture: all major cabin systems are redundant so that no single-point failure will compromise cabin functionality. Gulfstream says this means "the cabin lighting always illuminates; water is always available; and an entertainment source always works."

The electrical system also promises to be more robust on the G250, incorporating large aircraft features that include independent generators on each engine and a quieter auxiliary power unit.

Overall, the G250 cabin is expected to closely follow the cabin mock-up of the aircraft that was unveiled last year, but reaction to the mock-up, combined with input from Gulfstream's customer advisory teams, has already prompted a

few changes, according to Kohler. "We designed the cupholders with lids, but customers told us, since cupholders are in use 95% of the time, they did not want them with lids," Kohler said. The polished metal trim on the sidewall tables also prompted mixed reviews as some customers prefer an all-wood look.

But by and large, prospective customers liked the cabin's look, according to Kohler, and that comes as no surprise as Gulfstream makes extensive use of various customer advisory teams that operate a broad cross-section of aircraft in the mid-tolarge cabin categories. The teams met seven times before the final cabin mock-up was unveiled last year.

While a Gulfstream spokesman declined to quantify the number of G250 orders to date, such a meticulous solicitation of customer input during the design phase significantly improves the G250's chances when it does come to market.

The bar for super-midsize bizjets just got a little higher. END

Web http://www.gulfstream.com











Shaping The Future

First Completion Perfection in the UAE for VVIP Aircraft - DASH8-Q300

The interior of the DASH8-Q300 was designed by GAS in close partnership with the customer and completed by GAS Interior Specialists. Particular attention has been paid to the overhead panels, IFE rack, class dividers and seats of the aircraft. DASH8-Q300 is worldwide the first aircraft which was completed as a VVIP aircraft.

The aft cabin has a VVIP layout, while at the rear of the aircraft there is a wardrobe. The in-flight entertainment system has been designed first time for the Q300 aircraft.

"The completion of this first aircraft in the UAE is the step beyond all expectations," said the CEO and founder of GAS, Zeydan Oencue.





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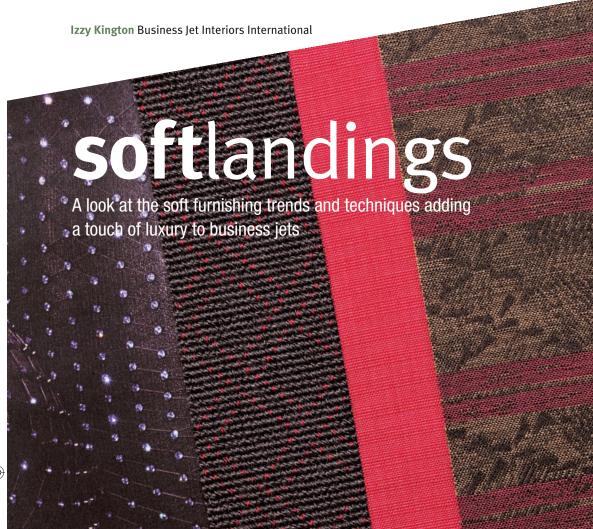
Tel: +44 1554 784 220 Fax: +44 1554 784 228 **GAS Germany**

Hauptstrasse 26 D-28865 Lilienthal Tel: +49 4298 466132

Fax: +49 4298 466136







lightyearEvery year, Lantal develops its 'Conceptional Forecast' – a compilation of ideas, themes, patterns, and colours that anticipates design trends for aircraft soft furnishings. The Conceptional Forecast for 2009 is devoted to lightness, both literally and figuratively.

The lightness theme is transformed into lightweight seat-cover fabrics, and polyester piece-dyed and lasercut curtains. For this year's carpets, the company used a special technique that gives the colour accents a prominent texture.

Lantal also creates custom hand-tufted carpets for luxurious aircraft interiors, incorporating all kinds of yarns (including leathers, silks and lurex), textures (such as ribbed, tip-sheared and velour) and techniques (such as carving and embossing).

www.lantal.com



printscharming

apis's new design and printing programme, 'Optique", allows designers to print any design onto the company's TapiSuede and Ultrasuede products.

Using Optique' - which meets FAA requirements for commercial, corporate and VIP aircraft - designers can develop designs on material up to 100ft in length.

Tapis also offers Ultraleather, a lightweight faux leather product that weighs just 310g/m. Ultraleather is

available in various colours, patterns and textures, including a multistretch fabric that extends around curves.

Tapis maintains an extensive inventory of in-stock product lines allowing for a quick turnaround. It can also customise any fabric to match any colour. Tapis also has a 35,000ft2 in-house flame treatment facility that provides flame treating, inspections, shipping, colour matching, product consistency, and quality control.

www.tapiscorp.com

blooming marvellous

delman Leather has launched a new range of colours in its All

The bright colour pallete of the 'Perennials' range is inspired by flowers – in particular lemongrass, coral, rose, zinnia, iris and daffodil. These colours are designed to

complement each other, not clash, so that they can be used together.

All Grain leathers are available with a stain resistant system developed in cooperation with Crypton. As with all Edelman leathers, All Grain is GREENGUARD certified.

www.edelmanleather.com



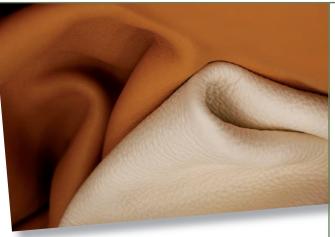




intheloop
TISCA TIARA's 2009 collection of hand-made carpets incorporates new yarns and materials, and emphasises textures as well as varying levels of loop piles. For example, TISCA FORUM is a Wiltonwoven carpet that contrasts cut and loop pile sections to form geometric or floral patterns. The carpet is made using pure new wool from New Zealand and can be produced in any colour and various widths.

The company has also introduced new upholstery and decorative fabric collections, which are permanently flame-retardant and can be washed instead of dry-cleaned. This collection has been integrated into a very large stock programme that the company maintains - countless fabric and carpet collections in harmonised designs and colours are ready for immediate shipment, with no minimum order quantity.

www.tisca.com

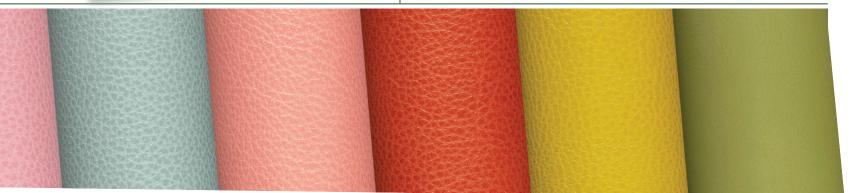


naturalselection

Produced exclusively in Bavaria, Germany, Cascade is an ecologically friendly leather that Moore & Giles designed to offer all the luxury and sophistication of pure aniline leather.

The leather is produced using a vegetable tanning process featuring agents derived primarily from the fruit portion of exotic plants such as the Peruvian tara tree, blooming German rhubarb and Mediterranean valonea oak - all re-growing shrubs. By contrast, traditional vegetable tannins are created by harvesting forest wood.

The company says that only premium hides are procured for Cascade, to ensure it has a beautiful cutting surface. The leather is non-allergenic, non-irritant to the skin and employs no artificial finishes or pigments. www.mooreandgilesinc.com



invogue

Purity and perfection are the focus of Townsend Leather's newest leather collection. The Cosmopolitan Collection features three aniline-dyed cowhide products – Classic, Glamour and Couture.

Classic has a buffed matte finish; Glamour a luminous pearlised sheen; and Couture is finished with a soft hand-rubbed effect that gives gentle surface contrasts.

All three qualities are available in six neutral, coordinating colours – Black Pearl, Pharaoh's Gold, Pyrite, Steely Blue, Smoky Quartz, and White Pearl – in stock and available for immediate shipment.

Townsend Leather can also provide these leathers in custom colours, with a lead time of four weeks.

www.townsendleather.com





backto**life**

The Leather Institute specialises in the maintenance, restoration and conservation of leather. The company's seat management programme aims to save operators money by restoring leather that would otherwise be discarded. The refinished leathers can then be treated to help prevent soiling and staining.

"Our research has determined that the majority of discarded seats are not thrown away because they have failed, but because they have lost their aesthetic appeal. Return them to their original beauty and you can save a significant amount of money," says Sean Dorgan, director of customer services at the company.

The Leather Institute offers complete restoration services for business jet interiors at over 50 locations, and has a network of mobile service providers. It also conducts completion centre training for aircraft and seat manufacturers, so that they can resolve minor issues such as ink marks.

www.leatherinstitute.com

overtherainbow

Andrew Muirhead and Son has just launched its new 'Library of Leather', enabling customers to choose leather in a wide range of colours, available from stock. All the hides featured in the library are available by next-day delivery.

As well as the popular neutral tones, the library includes some more

As well as the popular neutral tones, the library includes some more bold choices. "Private owners today spend millions of pounds personalising their aircraft and although lighter shades of beige and grey are most popular, giving a serene and airy interior, some of our more vibrant colours are often used to add contrast and interest," says James Lang, director of the company.

Although a wide range of colours is available, the company also offers a bespoke colour-matching service.

www.muirhead.co.uk

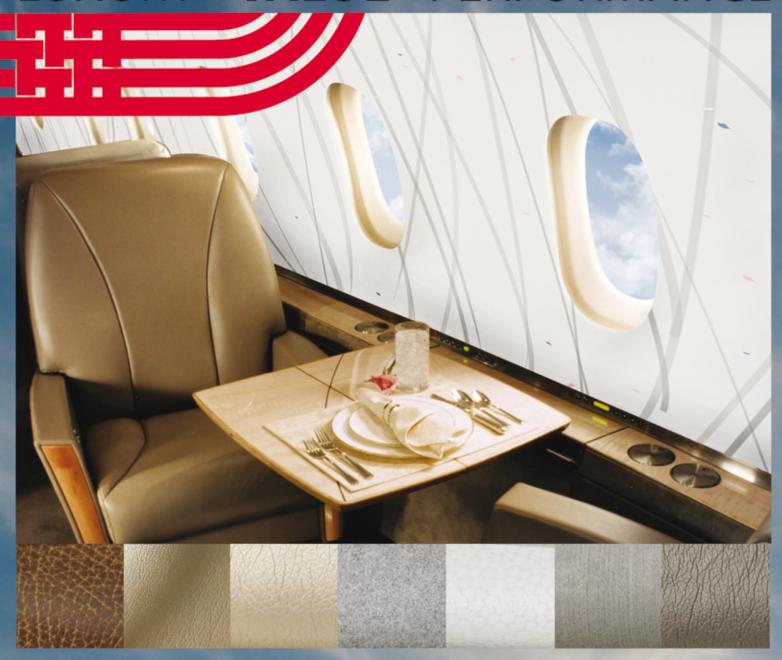








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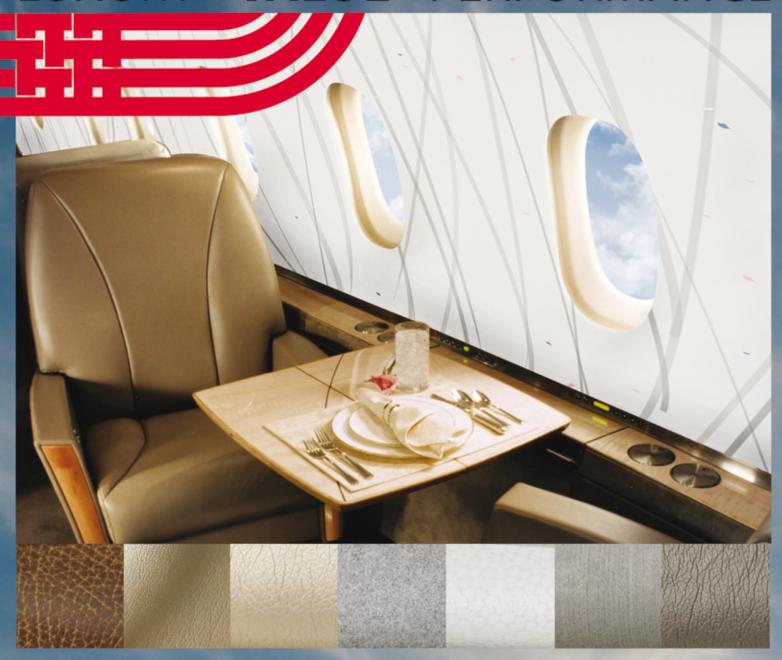


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Flying Colours Corp is focused on making the design process more customer-oriented

Whether the project is completing an interior for a brand new aircraft, or updating an existing one, design is an invaluable part of the overall completion process. Having a responsible and well-rounded design team with proper resources is crucial. Flying Colours Corp, a leading completion and refurbishment company, has embraced this philosophy, and boasts a dedicated completion design team and a new design centre.

design centre.

Flying Colours has invested in making the design process comfortable and relaxing for clients, with dedicated lounges equipped with areas for gourmet meals and private offices. Its design lounge also houses entertainment hubs with large LCD monitors to allow clients to relax while maintaining their active schedules.

with large LCD monitors to allow clients to relax while maintaining their active schedules.

The Flying Colours' design process was established with clients' needs and desires firmly in mind – helping them to strategically modernise their aircraft, whether the aim is to increase functionality, integrate new technologies, increase the value of the asset, or a combination of the three.

The company says that this process goes beyond schematic renderings and samples – it is about building a good relationship with clients and listening to their goals and wishes.

"In many cases it is not always about the most exotic wood veneers or modern seat design – our clients want to utilise their aircraft as a space to conduct

when getting from point A to B, and turn around to use it as a comfortable travel vessel for long leisure trips," says Kate Ahrens, interior designer at Flying Colours.

The Flying Colours design team has also

The Flying Colours design team has also made a point of building good relationships with its suppliers. It is able to display all the various options available to clients – with a number of leather, veneer, lighting, and in-flight entertainment products on display. The company says that this also assists in facilitating quick and reasonable material deliveries, leading to an overall reduction in aircraft downtime.

Another key aspect of the Flying Colours' design process is being able to show clients what their interior may look like via drawings and schematic diagrams. "Having state-of-the-art 3D technology has really enhanced the completion and refurbishment process and is a very helpful tool when discussing projects with clients," says Sean Gillespie, director of sales and marketing for Flying Colours.

"The design of the business jet, whether it is completely customised or a routine refurbishment, should be an extension of the client's vision for the overall utilisation of the aircraft," says Gillespie. "An aircraft designed by Flying Colours encompasses this philosophy. We strive to produce interiors that are both aesthetically pleasing, while keeping in mind the overall function of the aircraft."





artandsoul

EAD Aerospace Interiors uses original masterpieces of art and furniture to give the aircraft 'soul'

EAD Aerospace was one of the first companies to obtain EASA Design Organisation Approval. Founded more than 11 years ago, the company has evolved from systems engineering to the design, certification and completion of VIP aircraft — from aircraft selection to final redelivery.

Its vision is to create interiors with 'soul' by placing as much emphasis on classic decorative and furniture elements as that placed on more technological components. After participating in several 'classic' VIP projects, EAD Aerospace's owners developed the feeling that despite the use of luxury materials and state-of-the-art design, something was missing from these aircraft – just like a hotel may have faultless decoration, yet lack soul. "On the other hand, there are some magic places, with aged paint on old walls, scratched leathers and used carpets – and yet the whole place exudes absolute class. Such places are beyond luxury – they have a soul. Hence the conclusion that aircraft should be no different. EAD Aerospace Interiors was created to this aim," says Pierre Mauger, artistic director at EAD Aerospace Interiors.

EAD Aerospace Interiors employs Mauger,

EAD Aerospace Interiors employs Mauger, along with an antiquities expert and a contemporary art expert, as its projects often

include modern and antique works of art and antiques – including paintings, furniture and sculptures. "We achieve the fusion of two universes – technology and art. We do not use the sole cost of materials to create a feeling of luxury, we play with subtle arrangements of original antiques, signed furniture, rare sculptures and original paintings," says Mauger

The company works with the taste of each individual owner, without the limitations of a production line process. The company takes pride in personal relationships, confidentiality, and exclusivity. Working with sister company EAD Aerospace for all engineering, manufacturing and certification aspects, the respect of milestones is an obsession

respect of milestones is an obsession.

Recently the company demonstrated its approach at the Aircraft Interiors Expo in Hamburg, displaying original items that could be placed on a private jet – including a Picasso painting, a Napolean III Boulle hanging case, a clock from the period of Louis XVI, and a piece of furniture from the period of Louis XV. The company reports that the reaction to this approach was very positive. "As with many new enterprises, the first reaction is one of pleasant surprise. This has been followed by a clear taste for more," says Mauger. "The interest of the major decision makers in the aeronautic marketplace, and contacts made for future projects, demonstrate that there is a real need for the artistic revival of aircraft interior design."

The company has also thought about the clients' needs when reselling the aircraft, and as such has established a warehouse and stocking area for furniture and other fragile items, so that the aircraft can be refurbished with more conventional decoration.

Reader Enquiry No.502

area for furniture and oth the aircraft can be refurble conventional decoration.

EAD Aerospace Interiors

1. Alabaster, eggshell lacquer, mother of pearl, palm woods and patinated bronze come together in an interior inspired by art deco artists Louis Sognot, Pierre Chareau, and Marcel Coard

Business Jet Interiors International May 2009











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www.ead-aerospace.com









1-4. The after-lounge (1), bathroom (2), lounge (3), and bedroom (4) for a VIP project

familyvalues

Airbus Corporate Jet Centre is aiming to distil the resources and expertise of its parent companies into a friendly, tailored service

The Airbus Corporate Jet Centre (ACJC), which has now successfully outfitted and delivered two single-aisle VIP Airbus aircraft to private customers, is about to deliver its next one, and is currently working on two more, bringing much needed capacity to the top end of the corporate jet market.

Launched in July 2007, ACJC capitalises on almost 200 experienced engineers and craftsmen. As its name suggests, ACJC is a subsidiary that is majority owned by aircraft manufacturer Airbus. It is also part-owned by Comlux, the international expert on cabin design and VIP aircraft operations. The first Airbus Corporate Jetliner (ACJ) family aircraft with cabin aesthetics created entirely by ACJC is due to be delivered in 2010.

"Our cabin-outfitting capability is complemented by the ability to offer customers a creative design approach, cabin upgrades and aircraft maintenance, says ACJC chief executive officer Benoit Defforge. "Our compact size also means that we can offer customers a friendly approach that is tailored to their needs, while also having the resources to tackle sophisticated cabins."

Since its inception, ACJC has invested about €9 million in modernising and expanding its facility, which is co-located with the Airbus assembly lines in Toulouse, France. The investment has gone into and around an existing hangar, where ACJC

has produced nose-docks that provide same-level access to two aircraft in completion, as well as additional office space and a dedicated workshop.

The 9,500m² hangar can accommodate up to four ACJ family aircraft, all within view of, and with easy access from, the offices provided for customers on-site.

Because of the importance and influence of cabin design in VIP aircraft outfitting, ACJC has its own creative designer team, as well as its own sample room, in which customers can see and feel for themselves the colours and materials that are being proposed – from wood, carpets and leather to marble and semi-precious stones.

The company also emphasises the importance of offering the latest in in-flight entertainment and connectivity. ACJC says its technical background and links with Airbus mean that it is well placed to do this, offering solutions for communication via satellite, audio-and-video-on-demand, satellite TV and a fully electrically equipped cabin.

"Our mission is naturally to build and deliver a quality cabin that the customer is happy with, but we are also committed to supporting clients once they have taken delivery of the aircraft," says Defforge. "Aviation is a long-term business, and our aim is to create and build a lasting relationship with our customers that is based on quality and trust."

Airbus Corporate Jet Centre Reader Enquiry No.503





fastforward

Cabin management systems need to be able to keep up with the ever-changing world of consumer electronics, says Rockwell Collins

Cabin Management Systems (CMS) controls, and communications – have always reflected trends in the consumer world, providing the same tools and comforts that a business jet owner expects in the home, century, many of the consumer technologies upon which cabin electronics are based have evolved incrementally, moving in glacial shifts, with such examples as the transition from VHS to DVD, and mobile phones evolving from analogue to digital protocols, taking place over many years. Change was slow, and this was represented in the CMS technology.

Enter today's era of digital media and communications, products and services that have changed the way people interact with their work, with entertainment, and with each other. These technologies seem to go from cuttingedge to obsolete very quickly. From this can a company develop a CMS that is still relevant when it enters service, let alone after several years of use?

"Choose your technology wisely, and be prepared to update your offerings at a much product marketing for Rockwell Collins Cabin Systems. Rockwell Collins introduced its Venue CMS in 2007, and the system has continued to evolve along with the consumer technologies it enables in modern business jet cabins.

'When Venue was first introduced, we focused on the dramatic changes in entertainment technology, envisioning Venue as the world's first high-definition home theatre in the sky," says Mohr. "By introducing Blu-ray Disc, HDMI compatibility, 1080 pixel displays, and new intuitive system controls using worldclass industrial design talent, Venue helped to bring the aircraft cabin experience into the 21st century." Recent evidence of Venue's

> 1. The eXchange connectivity

solution 2. The Venue cabin management system

2009 Red Dot Award for Product Design

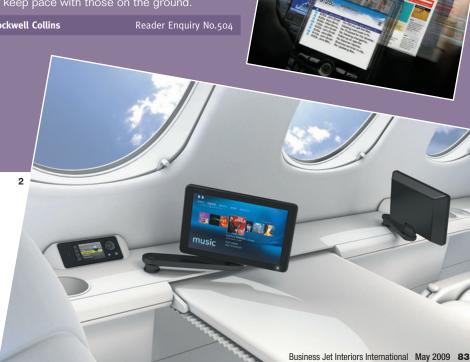
"What seemed like risky bets a couple of years ago – developing a high-definition system using 10in displays, or choosing the Blu-ray Disc standard - have now become table stakes in the CMS world. But we continue to innovate with electronics world, working closely with our OEM customers to define CMS technology unique to their needs," says Mohr.

Rockwell Collins sees the 'connected cabin'

as the new frontier. Many products have already come to market enabling all types of connectivity options, in particular BlackBerry usage and internet access. "Rockwell has been a pioneer in this, with communication products like eXchange. And Venue is designed from the ground-up to enable upcoming connected applications, in particular remote diagnostics and

The era of digital media and connectivity appears established, but Rockwell Collins says that actually, it is just beginning. "New gadgets and services will continue to delight and awe consumers, and those same capabilities will be Mohr. "The pace of rapid CMS evolution shows no sign of slowing, even in these uncertain economic times. New cabin technologies, as represented by Venue, will be the new platforms by which the experience and capabilities in the air keep pace with those on the ground."

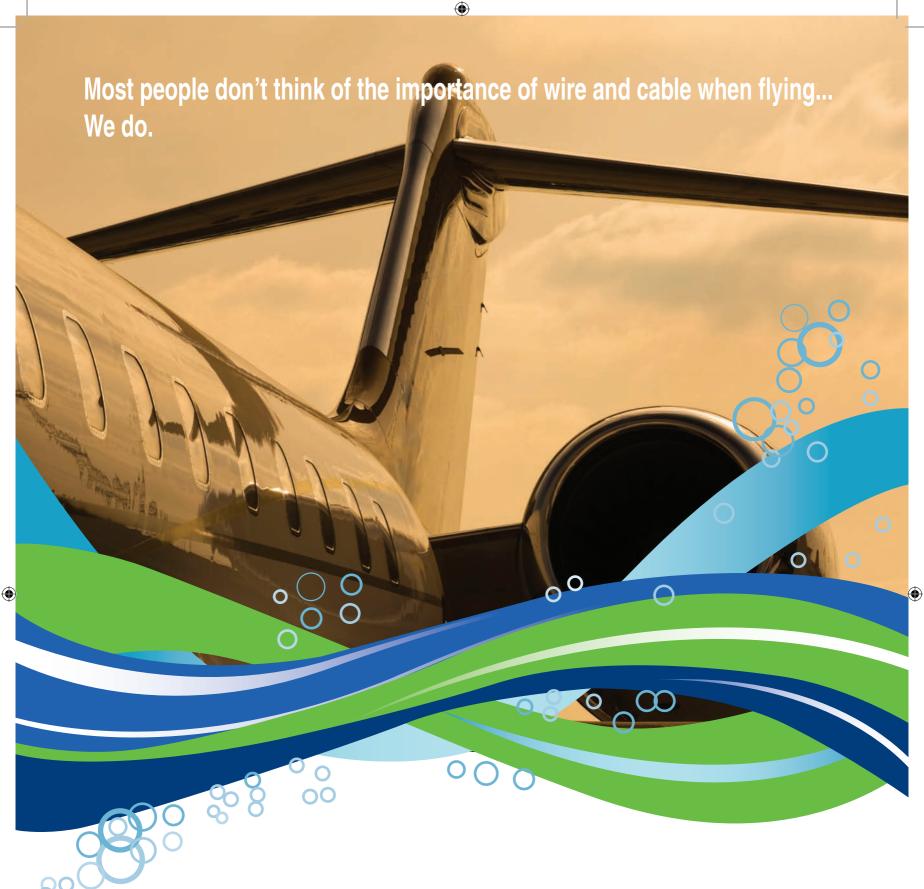
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businessplan

Edése Doret shares his action plan for designing and completing a VIP aircraft interior successfully and on time

In design school, students learn the forms and function of idea development, but Edése Doret (president of Edése Doret Industrial Design) says they are rarely taught how to systematically break down a large-scale process such as developing and implementing the full design programme for a VIP aircraft interior. Doret likes to divide the process into four phases once the contract is in place.

Phase one commences with research and development on the aircraft. It is vital to ascertain the aircraft's mission, as this will automatically dictate the weight requirements of the interior. The designer also needs to ask the client about their noise level and water capacity requirements.

Proceeding with the interior, the designer should update the client on developments in equipment and fittings. This is the time to meet with key personnel from the client's flight department to review operating criteria and liaise with their preferred equipment suppliers.

In phase two, the designer starts to generate design concepts of the layout, cabinetry, seating and exterior markings. Design concepts can be presented to the client as CAD drawings, renderings, computer animation, material boards or a scaled model. "This is where most

designers take flight and relish the time to experiment and move the client to strive towards the most innovative concepts, while still adhering to the client's basic needs,' says Doret. "Let alone the idea that presenting may sometimes take you and your associates to some extravagant and far away places. This is where a lot of the fun in experiencing the project first-hand lies." But although experiencing the client's culture can inform the design and reinforce the client's needs, Doret warns against getting carried away: "Don't let the travel and design lead you or your client's needs astray. Time is always working against you.

During phase three, the designer should develop a package including all the written specifications, interior identification drawings, renderings and collected data. This is where the designer must look more carefully at the detail and the technical and aesthetic requirements.

Lastly in phase four, once a completion centre has been selected, the completion schedule is established. "This is a job within itself that must always rely on your firm's key personnel to stay focused on on-site inspection of fabrication and installation at the selected completion centre," says Doret. "This is where your director liaisons



with contractors and vendors, making sure that all suppliers meet needed deadlines."

When the interior has been installed and the aircraft has gone through various flight tests, any discrepancies are addressed and rectified. Once the aircraft has been certified by the applicable governing body, operations personnel are familiarised with the new interior, and finally the completed aircraft is delivered to the client. If all the steps above have been complied with, the interior should conform to all the client's desires and requirements and be delivered on time.

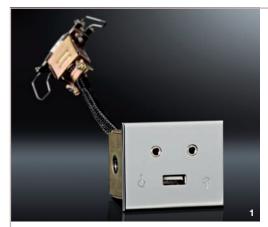
Edése Doret

Reader Enquiry No. 505



- 1. The entrance lounge on the main deck of a B747
- 2. The upper deck of a B747









- 1. An audio jack panel
- 2. PSP6, a personal switch panel
- A touch-screen personal control unit
- An operator control panel

simplepleasures

A system offering various ways of controlling the cabin management system, in-flight entertainment and connectivity

The AlsterAero System, which can be configured according to customers' preferences, incorporates in-flight entertainment (IFE), connectivity (CCS) and a cabin management system (CMS).

Usually an operator control panel (OCP) is installed in the entrance area or galley to give flight attendants full control of the CMS and IFE.

Passengers can also control the IFE and CMS from a touch-screen personal control unit (TPCU) installed at the seat. Any TPCU can be equipped differently, but AlsterAero says that most customers decide on a master/slave configuration. Master seats have full functionality as opposed to slave TPCUs, which offer reduced functionalities.

At master seats, passengers can (among other functions) manage video or audio play lists, dim lights, control window shades, play media from a USB device, and call a flight attendant. The unit can also function as a mouse pad for internet applications.

The CMS (controlling lights, window shades, speakers and attendant call) can also be accessed via a personal switch panel, available in four types – PSP2, PSP3, PSP4 and PSP6. AlsterAero also offers two miniature switch panels.

Passengers can plug in their own personal media players via USB connectors. An audio jack panel (AJP) can also be installed at every seat for headphones and microphones.

The IFE can be viewed on a 42in display, which has very flat housing to allow it to be integrated flush in a standard partition. The standard surface of the shroud and housing is polished nickel-plating or chrome-plating, but the company can also produce other surface treatments (including gold plating or wood veneer) on request.

AlsterAero has also developed a full digital amplifier (AMQ6) to guarantee AC3 surround sound (six channels of sound) when used with loudspeakers or exciter speakers (placed behind the sidewall panels). The amplifier is designed for highpower audio with 6x100W RMS.

All AlsterAero's hardware is designed to save weight and space and be easy to install, maintain and remove. All wiring is kept as short and simple as possible. The standard configuration of the system is designed to be very flexible. Updates and additional functionalities can be added throughout the aircraft's lifetime via software update.

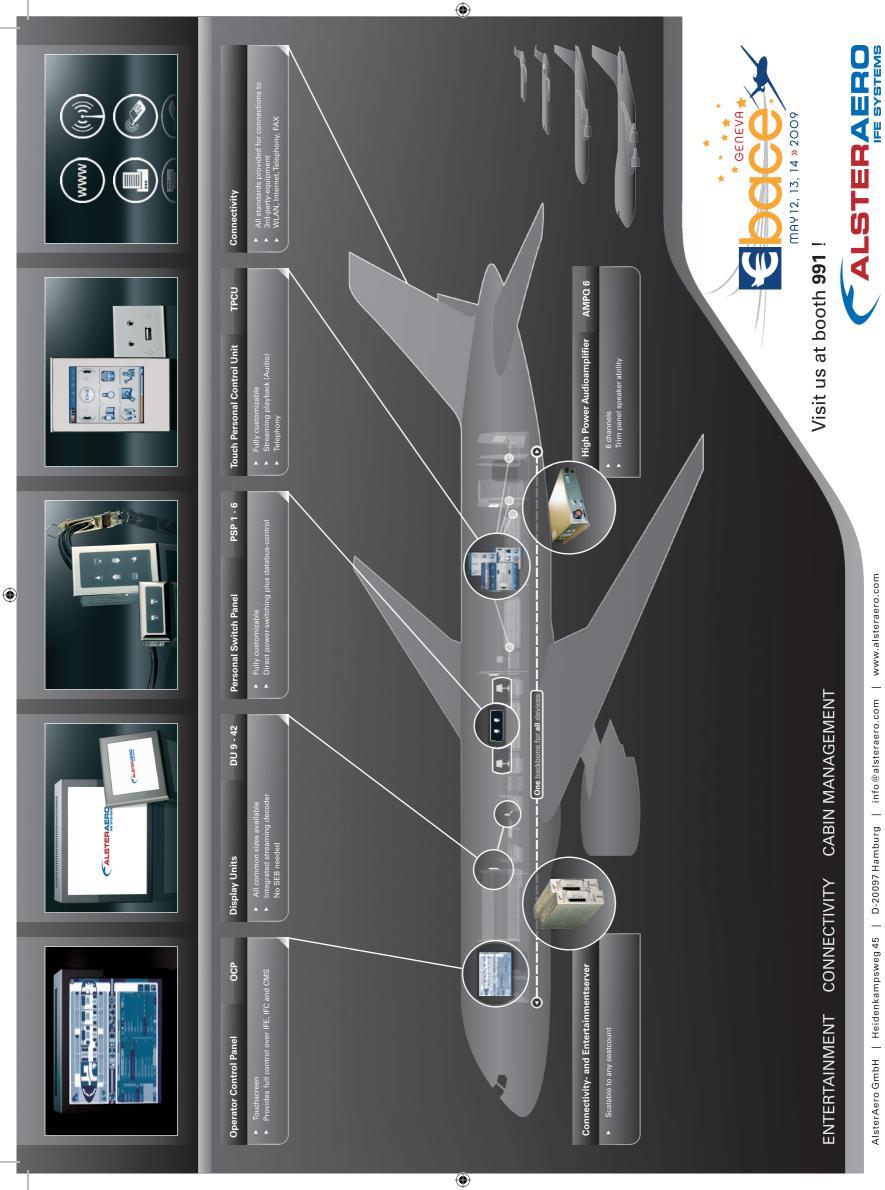
AlsterAero provides personalised support during the design, production and service phases and can train customers on how to use the system, although it also provides detailed handling manuals.

The system can be installed on many types of aircraft, from general aviation, single-aisle corporate jets or BBJs, to longrange twin-aisle jets.

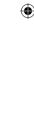
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lightandshade

TISCA TIARA's new carpet contrasts dark and light colours and matt and glossy textures to create an interesting but understated effect

The award winning Swiss company TISCA TIARA mobility textiles has introduced a new

carpet for business jets – TISCA FORUM.
TISCA FORUM is available in geometric patterns or playful florals, produced with a clever combination of loop and cut pile. Patterns are produced by the contrast of the darker cut pile against the lighter loop pile, the matt texture against the glossy. "The composition creates a stimulating yet soothing effect, which is bridged by the soft and sensuous nature of highest quality pure new wool from New Zealand," says Matthias Tischhauser, division manager, TISCA TIARA mobility textiles.

While giving designers extensive variation and design possibilities, TISCA FORUM is designed to be discreet, leaving plenty of room for designers to integrate other elements into the cabin interior furnishing. Custom made, the carpet can be produced in any colour and various widths, exactly according to the aircraft's

The new carpet has already captured the attention of designers and completion centres one executive jet charter company installed it across its entire fleet. The carpet has also been of which were delivered in March.

Another of TISCA TIARA's recent VVIP projects was the refurbishment of a private B747, owned by one of the Middle East's royal

families. For this project, 770m² of hand-made carpet was produced per ship-set, customised exactly according to the client's specifications. Founded in 1940, TISCA TIARA designs,

develops and manufactures a broad range of premium-quality textiles for aircraft interior furnishing - all kinds of fabrics and carpets are available in coordinated designs and colours.

By using a wide range of highly specialised carpet and fabric production technologies, the company says it can satisfy any textile requirement for business jets. Its in-house design and development department promises to realise the most extraordinary customer request delivery times and even for small minimum order quantities. The company also maintains a vast range of aircraft fabric and carpet collections in stock, available with no minimum order quantity, and ready for immediate shipment. Its product range encompasses upholsteries, curtains, tufted carpets, hand-woven and hand-tufted carpets, as well as embroidered carpets.

. The company converted machines originally built for manufacturing embroidery to make its WARON range of embroidered carpets. These one piece without seams, up to a width of 13.5m. Customers may choose any shape, size, colour and colour mixtures.

TISCA has already won several prestigious awards this year - including Best Woven Carpet 2009 and Best Colour Line 2009 from Wool of New Zealand; an iF Product Design Award; and

1-2. TISCA FORUM is available in geometric and floral patterns







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Gore Design Completions says the best way to do an interior completion is to do as much work as possible in-house

Aircraft interior completion and refurbishment projects require the teamwork and interaction of multiple groups of skilled artisans such as upholsterers, woodworkers, engineers and designers. This work is often conducted away from the completion centre's hangar or by third-party contractors. "In times such as these, when business is strong for wide- and narrow-body completions, it can be difficult for a company to internally meet all the demands that developing and building these aircraft will take," says Jerry Gore, who founded Gore Design Completions Ltd (GDC) with Kathy Gore-Walters in 1988. At any one time a completions centre might have upwards of five aircraft in the hangar. To sustain this kind of workload requires not only increased manpower, but also manufacturing and storage space for each project.

Supply and demand GDC is working hard to keep up with the demand on resources that these projects entail. Its 200,000+ft² facility in San Antonio, Texas, includes not only the hangar and the installation teams required to put the interiors together, but also manufacturing shops to build all the required components for each interior. These shops include engineering, design, sheet metal, upholstery, cabinetry and also a finish shop. A team devoted to cabin avionics is also a part of the expertise GDC is able to provide on-site. According to Gore and Gore-Walters, one of GDC's strengths as a completions centre is its ability to produce so much of an aircraft's interior surfaces on-site in San Antonio. They report that demand is so high at the moment that the company is soon to

embark on an ambitious expansion plan adding 85,000ft² of office and manufacturing space to its existing hangar and offices.

GDC, still a family owned and operated

GDC, still a family owned and operated completions house, employs just over 500 people and expects to deliver five wide- and narrow-body aircraft in 2009. "The amount of work we currently have has necessitated that we team up with some outside contractors to provide the level of quality we expect in all our interiors, but at the same time meet customer deadlines. In the end though, it best benefits the customer to keep control over all aspects of production here in San Antonio. We do everything we can to build an interior from A to Z with our resources and our craftsmen at GDC," says Gore-Walters.

To begin, GDC says a typical project requires extensive avionics work as most cabins are completely re-wired to meet the specifications for in-flight entertainment, lighting and data systems. Then there are all the components that must be fabricated by the metal shop to accommodate every installation in every room of the aircraft. Upholstering includes not only the seating surfaces, but also wall and ceiling panels. The amount of cabinetry provided for each project can vary, but at GDC typically includes three or more low and high surface areas per room. "The man-hours and labour are intensive, but the end result is customer satisfaction," says Gore. "To the team at GDC, providing all areas of service in an aircraft completion is just a way of doing business."

Gore Design Completions

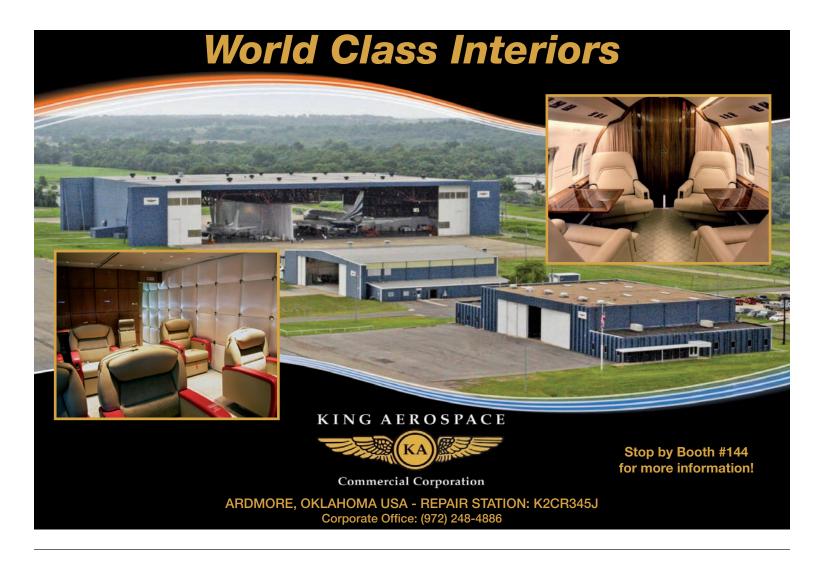
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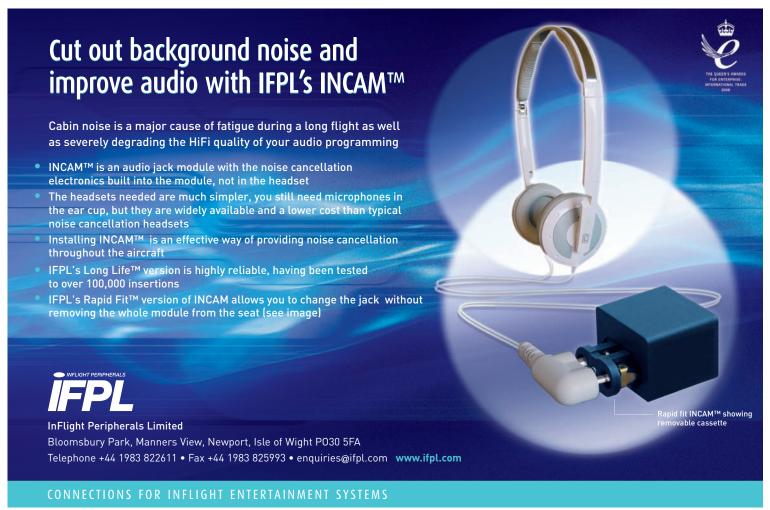


1-3. GDC's on-site facilites include upholstery, finish and cabinetry manufacturing shops











takingoff



With prestigious contracts and several new facilities, JCB Aero is enjoying a period of steady growth

JCB Aero recently won a 10-year contract to provide interior cabin equipment for all Eurocopter's VIP aircraft. With this and other contracts (including making the upper bridge for Emirates' A380 fleet) JCB Aero – founded by CEO Jean-Claude Beaudet in the early 1980s – reports that it is pursuing a very healthy development. "We very much appreciate the confidence that our customers lay in the *savoir faire* of our company," says Beaudet. "We consider these new contracts as the recognition of our craftsmanship and service focus over

many years in the aeronautic industry.

From the Cessna Citation to the Airbus A380, the company services the entire aircraft interior, from project conception to final delivery – designing in-house, selecting materials and equipment from a wide range, performing professional engineering and systems integration, and painting. "The essentials of our job are based on our engineering expertise and our skills in monitoring and controlling our product during its entire lifecycle," says Pierre Mandelli, sales programme manager at JCB Aero. "I think that we distinguish ourselves by our flexibility and reactivity, as well as by our capacity to evaluate our customers' needs very precisely at the beginning of the project. Consequently, we maintain a very high level of quality control."

The company is certainly enjoying a period of expansion. Its staff has grown from 20 to 150 people in only a few years, and it has just invested €3 million in expanding and improving its facilities. Part of this investment went into a new building in the European Aerospace Valley in Toulouse, France, to house the company's corporate headquarters as well as its design and R&D departments.

R&D departments.

JCB Aero has also updated its existing production lines and tools, and acquired a 'hautecouture' saddle workshop complete with skilful craftsmen, which will now take care of upholstery for aircraft interiors.

This new saddle and upholstery workshop complements existing aircraft interior-specialised production units, including paint shops, composite shops and thermoforming machines, and cabinetry wood workshops. All of JCB Aero's workshops have received certifications for the repair of aircraft restraint systems and crew restraint systems

JCB Aero will also be inaugurating a brand new and fully owned completion platform at an international airport within the next few months. The hangar is being conceived to welcome and service any type of business and VIP jet.

JCB Aero

Reader Enquiry No.509



1-3. JCB Aero prides itself on the skills of its workforce, and has just acquired a new upholstery shop











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Delta Interior Design attributes its success to a wealth of local skills

Nestled in an industrial district a few miles north of Milan in Lombardy, Italy, Delta Interior Design specialises in aircraft and helicopter interior design and refurbishment, providing a turnkey service from concept through design, production, certification of components, installation and Supplemental Type Certification (STC).

Although a relatively young company, Delta Interior Design boasts extensive experience in a wide range of aircraft and helicopter types. The company believes its success lies in bringing together technical





expertise and creativity. The Lombardy region has a long-standing tradition of interior architecture and furniture design and manufacturing. The company says the region is therefore home to a wealth of craftsmanship and skills.

All the company's projects are designed and developed in close relation with the customer, using digital design tools to produce 3D renderings of the various options. Once a design has been agreed with the customer, it is transferred to the production team in digital form.

Aircraft refurbishment works range from the provision and installation of upholstery, carpets, seatbelts, 'flying office' equipment, window shades and in-flight entertainment systems, to noise reduction and thermal insulation projects.

Delta Interior Design prides itself on its expertise in communication technologies,

and has experience in installing datatransmission systems (download and upload) and Live TV via IP, including system architecture and specifications definition.

The company also supervises interior refurbishment and modification projects for customers. As well as making sure customer's specifications are complied to, this involves supervising the quality and safety of the work.

The company's recent projects include developing new interior settings for customers based in the Middle East. For these projects, the idea was to blend traditional Arab flavours with modern Italian style. To this end, the colour schemes were black and white, and gold and white. These combinations were designed to create a feeling of lightness and cleanliness.

Delta Interior Design

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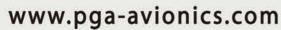




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