

SEPTEMBER 2009

Business Jet *interiors* INTERNATIONAL

THE INTERNATIONAL REVIEW OF BUSINESS JET INTERIOR DESIGN AND COMPLETION

digitaldreams

The increasing influence of computer visualisation software and virtual reality technology on cabin design

servicegame

What are the essential skills required for cabin crew on business jets?

silvermachine

ANDREW WINCH TURNS HIS HAND TO THE DESIGN OF AN EXCLUSIVE LIVERY AND INTERIORS FOR SYNERGY AVIATION

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realitycheck

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Here at *Business Jet Interiors International* HQ, the design team and I are frequently to be found huddled round a monitor, debating whether the gorgeous interior we're looking at on the screen is a photo of an actual aircraft or a very clever computer-generated rendering. In fact today's state-of-the-art computer imagery is often better than the real thing – small windows and a lack of space make bizjet cabins notoriously difficult to light effectively for photography. Arranging a photo shoot is also a rather difficult and expensive affair and private owners in particular are often unlikely to agree for security or privacy reasons.

But renderings don't just exist to grace the pages of magazines, although they obviously have a vital marketing role to play. The huge leaps forward in visualisation and modelling software have been driven by the need to slash product development times and costs, with the automotive industry leading the way in the transport sector. However, aviation isn't too far behind, and key stakeholders in the design of an aircraft cabin can now use the latest visualisation tools to hone their ideas to perfection before tooling even begins.

"What's changed is that you can now get from a design that looks quite simple to something that is very realistic, especially in terms of material use and lighting, and spin it round to look at all the angles in minutes," explains Son Tran, a senior designer at Priestman Goode, on page 44. "In the old days you'd press the render button, have to wait a week and it would still not be right."

Of course, as a magazine editor with an eye for the unusual, I adore some of the more imaginative images that can be created, as evidenced by those chosen to adorn our feature on this subject. But then I'm not actually thinking of buying an aircraft. If I was, I'd probably go with the more understated schemes that tend to dominate our pages – how to counteract the ubiquitous presence of beige is another common topic of conversation between myself and the design team! But as our feature on a Learjet 60 for a racing nut on page 70 makes clear, you don't always have to follow the rule book – hopefully the latest visualisation technology will encourage more owners and designers to pursue more ambitious schemes.



Anthony James, editor



Cover Image:
Synergy Aviation
King Air 200

The result is an aircraft featuring a striking, metallic silver paint finish with a strong black slipstream line starting at the nosecone, running down the fuselage, round the edge and on up to the tail

namethatplane

HAVING REDESIGNED ONE KING AIR 200 FOR SYNERGY AVIATION, ANDREW WINCH WAS PERSUADED TO TRANSFORM AND TAKE PART OWNERSHIP OF A SECOND THAT NOW BEARS HIS NAME

Anthony James, Business Jet Interiors International

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namethatplane

Having redesigned one King Air 200 for Synergy Aviation, Andrew Winch was persuaded to transform and take part ownership of a second that now bears his name

Designer of one of the most iconic aircraft interiors in the business jet industry, Andrew Winch has now added another to his portfolio. Having redesigned one King Air 200 for Synergy Aviation, Andrew Winch was persuaded to transform and take part ownership of a second that now bears his name.

“It’s an honour to be involved in the redesign of such a well-known aircraft,” says Winch. “The King Air 200 is a great aircraft and I’m looking forward to working with Synergy Aviation to make it even better.”

Having redesigned one King Air 200 for Synergy Aviation, Andrew Winch was persuaded to transform and take part ownership of a second that now bears his name



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EMBRAER MOVES LINEAGE COMPLETIONS IN-HOUSE AND STEAMS AHEAD WITH A NEW FLORIDA DESIGN AND ACCEPTANCE CENTRE, DESPITE MARKET TURBULENCE
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servicegame

A WELL-TRAINED FLIGHT ATTENDANT CAN MAKE ALL THE DIFFERENCE ON ANY FLIGHT, BUT WHAT ARE THE ESSENTIAL SKILLS REQUIRED FOR CREW ON BUSINESS JETS?

Liz Moscrop, Business Jet Interiors International

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COMPUTER VISUALISATION SOFTWARE AND EVEN VIRTUAL REALITY TECHNOLOGY ARE IMPACTING VIP AND BIZJET CABINS AS NEVER BEFORE – BUT WHAT ARE THE IMPLICATIONS OF SUCH CHANGE NOW AND IN THE FUTURE, AND WHAT ARE THE POTENTIAL PITFALLS WITH THIS AVALANCHE OF NEW DATA?

Guy Bird, Business Jet Interiors International

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Computer visualisation software and even virtual reality technology are impacting VIP and long-haul cabins in never before – but what are the implications of such change now and in the future, and what are the potential pitfalls with this avalanche of new data?

DESIGN

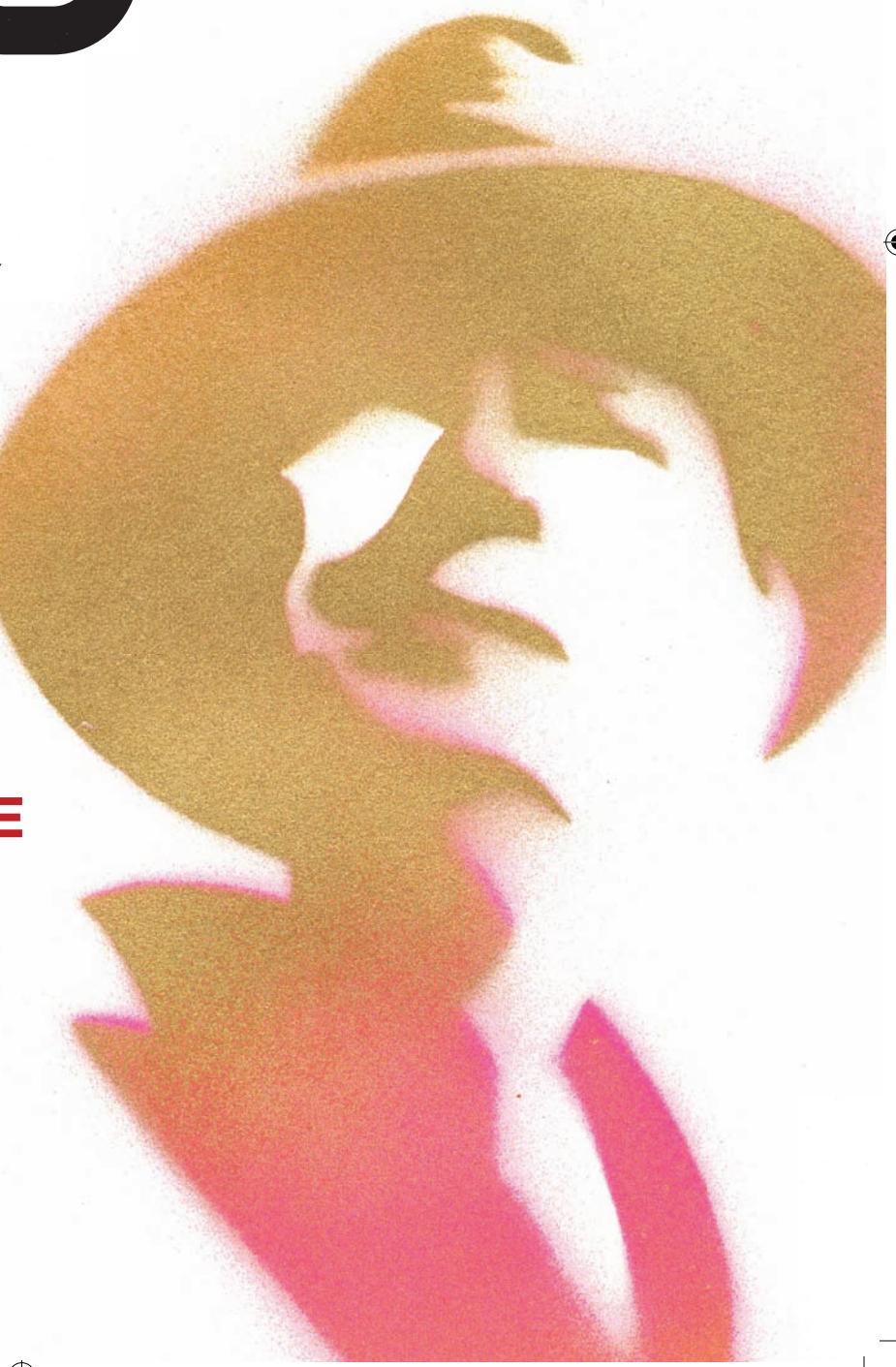
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Brendan Gallagher, Business Jet Interiors International

publicaffair

PORUGAL'S JET REPUBLIC INTRODUCES A NEW LEARJET 60 XR CABIN, DESIGNED ESPECIALLY FOR THE FRACTIONAL MARKET

Liz Moscrop, Business Jet Interiors International



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publicaffair

Portuguese Jet Republic introduces a new Learjet 60 XR cabin, designed especially for the fractional market

Mike K. Henry, Business Jet Interiors International

When it comes to fractional ownership, the Learjet 60 is a popular choice. It's a solid aircraft with a long history of reliability and a good range. But the interior of the standard Learjet 60 is not always the most comfortable or spacious. So Portuguese Jet Republic has come up with a new cabin design that addresses these issues.

The new cabin features a more spacious layout and improved ergonomics. The seats are larger and more comfortable, and the overhead bins are easier to access.

The interior is also more modern, with updated lighting and finishes.

Overall, the new Learjet 60 cabin is a significant improvement over the standard model.

softtouch

SUBTLE CURVES, STAR LIGHTS IN THE CEILING AND A SOFTER, MORE WELCOMING COLOUR AND TRIM PALETTE LIE AT THE HEART OF DASSAULT'S REVAMPED FALCON 7X INTERIOR

Mark Huber, Business Jet Interiors International

racinglines

A CUSTOM LEARJET 60 INTERIOR INSPIRED BY SPORTSCAR STYLING PROVED THE PERFECT TONIC FOR AN OWNER OBSESSED WITH SPEED

Mark Huber, Business Jet Interiors International



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racinglines

A custom Learjet 60 interior inspired by sportscar styling proved the perfect tonic for an owner obsessed with speed

Mike K. Henry, Business Jet Interiors International

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THE LATEST PRODUCT NEWS
FROM OUR ADVERTISERS

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TEMPTING TIMEPIECES TO MAKE SURE YOU NEVER MISS
YOUR FLIGHT

The flight deck features leather, suede, brushed chrome and carbon-fibre accents



MAC Interiors refurb second Egypt Air Falcon 20

MAC Interiors has completed the refurbishment of the second of three Egypt Air Falcon 20 aircraft. The first aircraft was completed at the end of 2008, with the UK completion and engineering firm starting work on the third jet at the end of May 2009.

The latest Falcon 20 was completely refurbished throughout by MAC and Egypt Air - Maintenance and Engineering. Cabin seats were restyled and fitted with new foams and premium quality leather upholstery; and all woodwork, including the galley and pull-out tables, were re-veneered with Burr walnut. Gold trim was stripped, re-polished and re-plated; and new composite structure was designed, manufactured and approved where required. All of the installation work was achieved at the premises of Egypt Air in Cairo.

The timeframe provided for MAC to complete its part in the manufacturing and refurbishment work was six weeks. "The programme has been a challenge for both MAC and Egypt Air, for not only did we refurbish the aircraft interior components, we also fitted the interior at Egypt Air's own facility and trained their team on how to fit and care for the new interiors," said MAC's managing director, Stephen Whittaker.

"This will enable the airline to save massive costs on maintaining the aircraft in future. Due to the outstanding skills demonstrated during the refurbishment of these first two Falcon aircraft, we now have an all-encompassing MoU with Egypt Air meaning we will be partnering with them on many other projects in the future. This is an exciting opportunity for MAC."

First test flight for Bombardier Global Vision flight deck

Bombardier's Global Vision cockpit successfully completed its first Bombardier test flight on a Global Express XRS aircraft on 3 August. Scheduled for availability on Global 5000 and Global Express XRS jets, the Global Vision flight deck incorporates Rockwell Collins's Pro Line Fusion avionics suite.

Improvements to Flight Display Moving Map

Flight Display Systems has upgraded its moving map product with a new worldwide satellite image database and increased video quality. Graphics from NASA's 'Blue Marble' satellite image database are included, giving the maps an accurate, true-colour representation of Earth. These high-quality images are stored on a new 8GB solid-state hard drive – a 200% increase in storage space. Video quality has been enhanced by upgrading to an XGA output (1024 x 768 pixels) – a 64% improvement on the previous SVGA graphics (800 x 600 pixels). New EMI and video filters offer improved hardware installation durability.



328 Support Services orders first WEPPS kit

328 Support Services, an MRO organisation based in Germany specialising in the maintenance and VIP conversion of Dornier 328 aircraft, has ordered five Wireless Emergency Primary Power System (WEPPS) kits from STG Aerospace. These will primarily be installed on VIP conversion aircraft, but this modification can also be retrofitted on standard 30-seat passenger versions of both the 328 Jet and Turboprop.

STG will supply the company with WEPPS and 328 Support Services will certify the product through an STC modification. Through 328 Support Services, WEPPS will be available to operators flying any Dornier 328 aircraft worldwide. WEPPS integrates wireless monitoring, real-time MEL diagnostics, and solid-state operation for managing and powering emergency lighting systems. The system uses new operating protocols and approved 'fit-for-life' non-rechargeable battery modules to replace conventional NiCad battery/charger packs, eliminating the emergency lighting system's entire maintenance schedule.

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Cirrus Aircraft announces Xi individualisation programme

Cirrus Aircraft customers can now opt for various instrument panel finishes (carbon fibre, brushed aluminium, wood burl, sterling, arctic white and piano black); chrome, brushed aluminium and jet-black interior trim finishes and bezels; and seat pattern styles (from either predetermined options or completely new designs) including choice of materials, stitching colour and stitching pattern. They can also choose between embroidered or embossed logos, and request a personalised customer logo.

Synergy Aviation revamps fleet

Charter company Synergy Aviation, based in the UK, has revamped its fleet in line with its new brand image. Designer Andrew Winch developed the new brand from the company's original logo in conjunction with Sophie Fenton Designs and Synergy Aviation founder Glen Heavens. Synergy Aviation has a total of eight aircraft, including two King Air 200s with new interiors designed by Andrew Winch (see page 36). One of the King Air 200s features iPod and HiFi speakers, satphone, 240V laptop power, a Nespresso coffee machine and a refreshment centre; while the other features bespoke cream leather, satphone and refreshment centre.



StandardAero Springfield receives ODA

StandardAero has received Supplemental Type Certificate (STC) Organisation Designation Authorisation (ODA) at its Springfield location in Illinois, USA, from the Chicago Aircraft Certification Office. The designation enables StandardAero to approve design data, tests, and analysis and allows the company to sign a STC on behalf of the Federal Aviation Administration (FAA) for aircraft alterations. As part of this ODA, StandardAero has assembled a team of experienced engineers, technologists, pilots and other industry professionals to provide design and certification services leading to the issuance of STCs for alterations and modifications on a broad range of aerospace products. These include complete interiors, engine retrofits, airframe modifications, cabin entertainment systems, glass cockpits and other major avionics upgrades. An alternative to FAA-direct certification services, StandardAero says it is confident that it can deliver STC certification times from just 45 to 60 days in length.

Natural stone floor installed on Legacy 600

List components & furniture GmbH has installed a floor made of natural stone in a Legacy 600, which was delivered to the customer in June. "Barely a year ago we invested in the research and development of a new flooring design, based on the use of natural stone and weight reduction, and we've succeeded in bringing a world's first onto the market. We've recently received certification, enabling us to successfully conclude the first order," said Franz List, CEO of List components & furniture.

The stone floor product is based on a stone slab, cut to 1.2mm, which is mounted to a backplate and then polished. The use of this ultra-light stone flooring is primarily intended for the entry and bathroom areas. It can however also be partially incorporated in the main cabin. List components & furniture GmbH offers the stone flooring for all business and executive aircraft models. For the installation in the Legacy 600, all qualification requirements, such as flammability, static, wet/dry slip testing as well as RTCM-Do160 were fulfilled and approved by STC. The retrofit was carried out at partner RUAG's headquarters in Oberpfaffenhofen, Germany.

The two companies announced their partnership at this year's EBACE. The aim is to offer aircraft maintenance (RUAG Aerospace) and interior furnishing work (List components & furniture GmbH) in one operation, shortening aircraft downtime.



Project Phoenix worked with Flying Colours on the interior and completion of its first CRJ

'Flying classroom' provides lessons with a difference

A 22m-long Short S-360 aircraft fuselage section that was once used to regularly fly businessmen to Ireland and Spain has been converted into a classroom with a difference by an enterprising primary school in Stoke-on-Trent, UK. Known as the 'King's Wings', the converted aircraft actually cost less than the price of a mobile classroom.

"When we realised we needed an extra classroom we asked the children what they wanted and one little boy said an aeroplane so we went and found one and have effectively recycled it to create the world's first flying classroom," said Kingsland Primary School's head teacher, David Lawrence. "The children have been involved in the design and all aspects of the project management of the King's Wings and will regularly use the aeroplane to help them learn. The children's imagination has been fired up by the idea and they are enthused and motivated, we are sure that this will lead to improved attendance, give us better and more opportunities for our creative curriculum and raise attainment."

The children have worked alongside a wide range of creative professionals and have also been inspired by a recent visit to see a Concorde aircraft. They have also been working with leading aircraft interior designer Howard Guy of Design Q, who has designed customised aircraft interiors for individual celebrities and worked with manufacturers such as Bombardier.

The project first hit the headlines in March 2009 when the aircraft was delivered on the back of a large trailer.



Debut flight of luxury Phoenix CRJ

Project Phoenix's first Phoenix CRJ (Serial No 7211) made its first flight on 12 June. The aircraft took to the air from completion centre Flying Colours' facility in Peterborough, Ontario, Canada. The 15-seat luxury interior includes a cabin management system and in-flight entertainment, with Airshow 4000, iPod stations and full internet and satcom communications.

EMS Sky Connect receives STC for Forte inflight phone

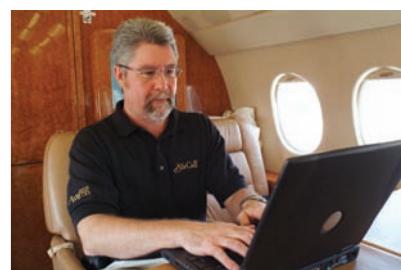
EMS Sky Connect has received a Supplemental Type Certificate (STC) from the Federal Aviation Administration (FAA) for its Forte inflight phone. The STC authorises installation of the phone system on Gulfstream G-IV aircraft. The system features a range of dialling options, including compact wireless handsets, integrated cockpit headset diallers, and standard corded handsets featuring noise cancellation. EMS says Forte delivers full inflight functionality, including email access, for less than US\$20,000, with global coverage through the Iridium network.



Aircell ships first global SwiftBroadband solution

Aircell has received full certification for its new SwiftBroadband solution, and has begun customer shipments. The first installation is being completed by 328 Support Services GmbH at its Oberpfaffenhofen facility near Munich, Germany, on an executive Dornier 328JET operated by Aviando Services, which is based in Venezuela.

Aircell's SwiftBroadband solution allows passengers to use their personal laptops and smartphones for email and light internet services in flight. They can also use the system's integrated cabin handsets to make and receive voice calls. Aircell's SwiftBroadband solution is powered by Thrane & Thrane.





wheels up!



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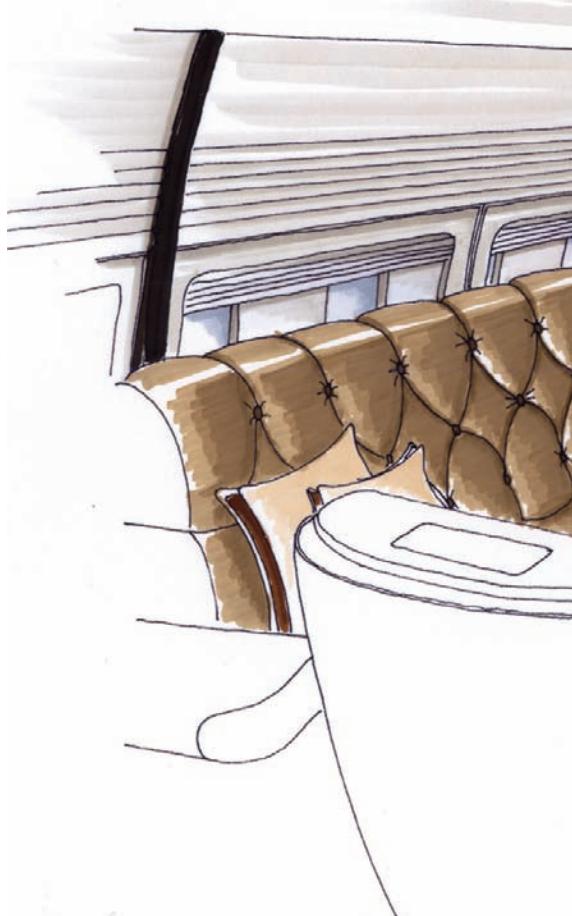


Brief:

Following an order from the Comlux Group for a new Airbus A320 Prestige to complement its VIP wide-body Airbus fleet (two A318 Elites, two ACJs) at last year's MEBA Dubai, Comlux Creatives was immediately appointed to begin work on the cabin design. "The name of the project, Jubilee, is meaningful – a Jubilee is a celebration," says Isabelle Bevilacqua, head of Comlux Creatives. "The design is inspired by a picture from a magazine of an extremely refined man dressed in business attire with the ocean in the background. This mix between business (the suit) and pleasure (the ocean), along with the hint of exotic and faraway destinations was a perfect fit for the aircraft."

Description:

The A320's cabin volume allows for the creation of two distinct areas – private and public – well suited to the needs of the Middle East charter market. The convivial private area features a large lounge with a Chesterfield-style sofa and seating for seven guests around a rectangular dining table. The lounge is easily converted into a highly comfortable bedroom complete with an en-suite luxurious bathroom, featuring a stylish mosaic. "The overall theme is 'understated luxury,'" says Tim Callies, a senior architect at Comlux Creatives. "The idea was to create an elegantly luxurious style and defined contemporary beauty, giving rise to perfect harmony between precious materials, even further refined through sophisticated details," he says. "All the materials were specifically selected for warmth of tone and contrasting textures." The aft section, fully independent from the front section, features 12 business-class seats, a dedicated crew rest with business-class seats and six staff seats, ensuring a very pleasant rest for all guests.



**Verdict:**

Able to draw on Comlux Group's experience as a VIP charter operator, as well as its own insights designing the interior of the first-ever A318 Elite, Comlux Creatives has crafted a contemporary and stylish design in tune with the needs of its customers. Its desert-inspired livery is sure to turn heads, too. The A320 will be outfitted in-house at Comlux Completion, Indianapolis, USA. "This is a major opportunity for both Comlux divisions to work together on a project that is 100% Comlux," says David Edinger, CEO of Comlux Completion USA.



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A preview of this year's NBAA Annual Convention

This year's event will be held in Orlando, Florida, USA, from 20-22 October at the Orange County Convention Center and Orlando Executive Airport - visit the Business Jet Interiors International team at Booth 1421.



Ice lands

Avionics Innovations (AI) will show its Integrated Cabin Entertainment (ICE) system, which comprises Sirius satellite radio, multiregional DVD/CD player, and 7in widescreen LCDs with video amp – all orchestrated by a passenger control unit that also has an auxiliary for a mp3 player. For larger aircraft such as regional jets, AI's foremost product is the DMP-100 Cabin Briefe (mp3). The DMP-100 and -200 are compact, self-contained lightweight units that replay speech and music tracks in mp3 format that are programmed and stored on a common CompactFlash card by the user using the AI CardPrep software. The DMP-100 or -200 can deliver hours of music and speech files (multiple languages) and are initiated by either a push rotary knob or by external discrete triggers. AI says the DMP product line is particularly useful when it is essential for safety briefings to be delivered clearly in multiple languages.

AI designs and manufactures a complete line of FAA/PMA approved video and audio entertainment systems for aviation. Its products are designed with additional RFI and EMI shielding, and the company subjects its equipment to rigorous DO-160 testing.



Make your selection

Flight Display Systems is exhibiting a new cabin management system called Select CMS. The Select CMS is specifically designed to interface with high-definition displays and source equipment, including Flight Display

Systems's popular Blu-ray player. The Select CMS is versatile enough to control the cabins of six-seat turboprop aircraft up to wide-body airliners. Passengers can use it to manage audio, video, windows, lighting, temperature, call functions, galley appliances and more.

Flight Display Systems will also have its full line of high-definition (HD) monitors on display, ranging in size from 17-52in. The 52in HD LCD features 1080 pixel video quality.

A new moving map will also be demonstrated with a worldwide satellite imagery database. The latest version of the Flight Display Moving Map also includes several new inflight pages, such as an aircraft dashboard, world clocks screen, and relative city locator.



Hear no evil with new headsets from Sennheiser

Sennheiser Aerospace will introduce the HME/HMEC 26 family of headsets, which it says provides the same reliability and audio quality of the HME/HMEC 25 family, and includes improvements in comfort,



noise attenuation, power efficiency, and features.

New features included in the modular microphone cable options include all connector interface and battery/panel power options, automatic battery shutoff, and optional auxiliary audio inputs. The modular cable and microphone boom are designed to enable simplified repair and aircraft interface flexibility.

Sennheiser says the HMEC 26 (active noise reduction) is suitable for louder jet and turboprop aircraft, while the HMEC 26 (passive attenuation) is designed for pilots who want exceptional audio, comfort, and noise attenuation without concern for required power.

The 26 series also includes the option of electronic stereo talk-through (STT), allowing the wearer to hear cockpit conversation through the earcups while protecting their hearing.



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What are the most important considerations for entrepreneurs wishing to move up to more capable airplanes? >

What technologies are available to help owners make the least expensive, most effective use of light business airplanes? >

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The OSU provides an option for personal suites and/or lounge areas off the main deck while in flight

One step ahead

Greenpoint Technologies Inc (GTI) is delivering a new VIP BBJ this autumn, ahead of the contracted delivery date. This aircraft is the first to deliver from GTI's new hangar, Cascade Aerospace USA, at Spokane International Airport in Washington, USA.

GTI's current BBJ contracts include deliveries scheduled through 2012. "Our last two projects delivered early, and our next BBJ is also tracking for an early delivery," says Sloan Benson, executive vice president of the company.

In addition to BBJs, GTI is working closely with Boeing on the 747-8 Overhead Space Utilization (OSU), a post-production interior kit installed in the 747-8 crown, above the main cabin ceilings, between doors three and five. This kit provides up to 75m² of additional passenger space. GTI has contracts for two Middle Eastern head-of-state aircraft and two kits for a private Middle Eastern client. Deliveries are scheduled starting in 2011 through 2013.



Rosy view

Rosen will demonstrate its RosenView VX entertainment system (including its new three-channel digital wireless headphone system), as well as its RosenView LX system, which includes a DVD player and audio and video distribution.

The company will also display its high-definition (HD) product line, comprising an HD-format Blu-ray DVD player and a variety of HD displays. The Ultra Cabin Management System will be demonstrated in a cabin mock-up showing full operational integration, including lighting and audio systems from the company's strategic partners, Head's Up Technologies and Altos.



Green giant

Flying Colours Corp will showcase its Challenger 850 completion capabilities. The company has secured four green Challenger 850 completions in 2009 and expects to finalise several other

completions in the near future. Flying Colours and its US operation JetCorp Technical Services have completed seven CRJ 200 executive conversions over the last two years and have other conversions in process at both facilities. "Both the ExecLiner and Renaissance CRJ conversion programmes have assisted our team in all facets as we continue to strengthen our green Challenger 850 completion capabilities," says John Gillespie, president of Flying Colours Corp.



Hot spot

Aircell will feature its entire product line, including the new Aircell High Speed Internet system for the USA, as well as its global SwiftBroadband solution. Aircell's SwiftBroadband solution (powered by Thrane & Thrane) allows passengers to use their personal laptops and smartphones for email and light internet services in flight. They can also use the system's integrated cabin handsets to make and receive voice calls. "The single most effective thing you can do to make an aircraft more productive is to offer a full-scale internet connection to passengers and crew," says Tom Myers, director of marketing at Aircell.



Smooth operator

Actron Manufacturing Inc, which designs and manufactures latch and slide systems for commercial, business and executive aircraft, will introduce its new A5280 Ultralight Slide with EZ-Close damping system. The design criteria for the A5280 were that it had to be lightweight, offer quiet and smooth operation in all flight regimes, with no sacrifice in load-carrying capacity, and no modifications to existing slide-mounting locations. Actron Manufacturing says the A5280's damping mechanism ensures a smooth close with the lightest touch. The A5280 Ultralight Slide with EZ-Close is available in lengths from 8-26in and the company says it can handle loads of up to 120 lbs per slide pair. Actron Manufacturing will also show its A32103 Precision Adjustable Strike.



An Italian leather available in 17 Fiberdyed colours

True colours

Garrett Leather will display Torino, an Italian upholstery leather with a soft hand and a pronounced pebble grain texture. The product is made from Italian cowhides that have a uniform grain, providing consistency and high cutting yields. All 17 colours of Torino are Fiberdyed. With Fiberdye, the aniline dyes penetrate all layers of the hides to produce vibrant colours designed to withstand the test of time. Garrett Leather says Torino has a durable finish and is therefore suitable for high-traffic areas. Torino also passes the ASTM D 6014 Dynamic Water Absorption test and may be treated to pass FAR flammability requirements as well.



Nice work

Lufthansa Technik will present new features of its networked integrated cabin equipment (nice), an in-flight entertainment (IFE) and cabin

management system. Alongside nice, the company will show niceview, an inflight moving map system offering high-resolution 3D satellite imagery.

Lufthansa Technik provides interior completions and maintenance solutions in which it takes care of the entire lifecycle of VIP aircraft from all manufacturers. The company's large facilities have the capacity to work simultaneously on six customer installations. Lufthansa Technik is officially authorised by Airbus, Boeing and Bombardier for all maintenance, refurbishment and completion activities.



Clever leather

Moore & Giles's interactive booth at the show will be a reflection of its modern vision and decades of experience in leather design. A leather floor will be juxtaposed against curved aluminium walls, while a vast array of colours, textures and patterns will be presented, along with a custom-designed jet seat covered in a variety of the company's leathers. All Moore & Giles aviation leathers are treated to meet aviation technical specifications.

Additionally, many of its more fashion-forward leathers can be treated to meet these standards.



Home grown

Jet Works Air Center recently completed its new 43,000ft² hangar expansion in Denton, Texas, USA. Similar to the existing Jet Works facility, the new hangar

accommodates long-range business jets including Bombardier Global Express and Gulfstream GV models. In addition, the company now has the capacity for VIP airliner refurbishment projects up to a Boeing 757-200, and recently completed a Boeing 727 refurbishment. The new hangar includes 40,000ft² for additional aircraft maintenance, repair, inspections, interiors and avionics installations. The remaining 3,000ft² will provide additional offices and back shop space.

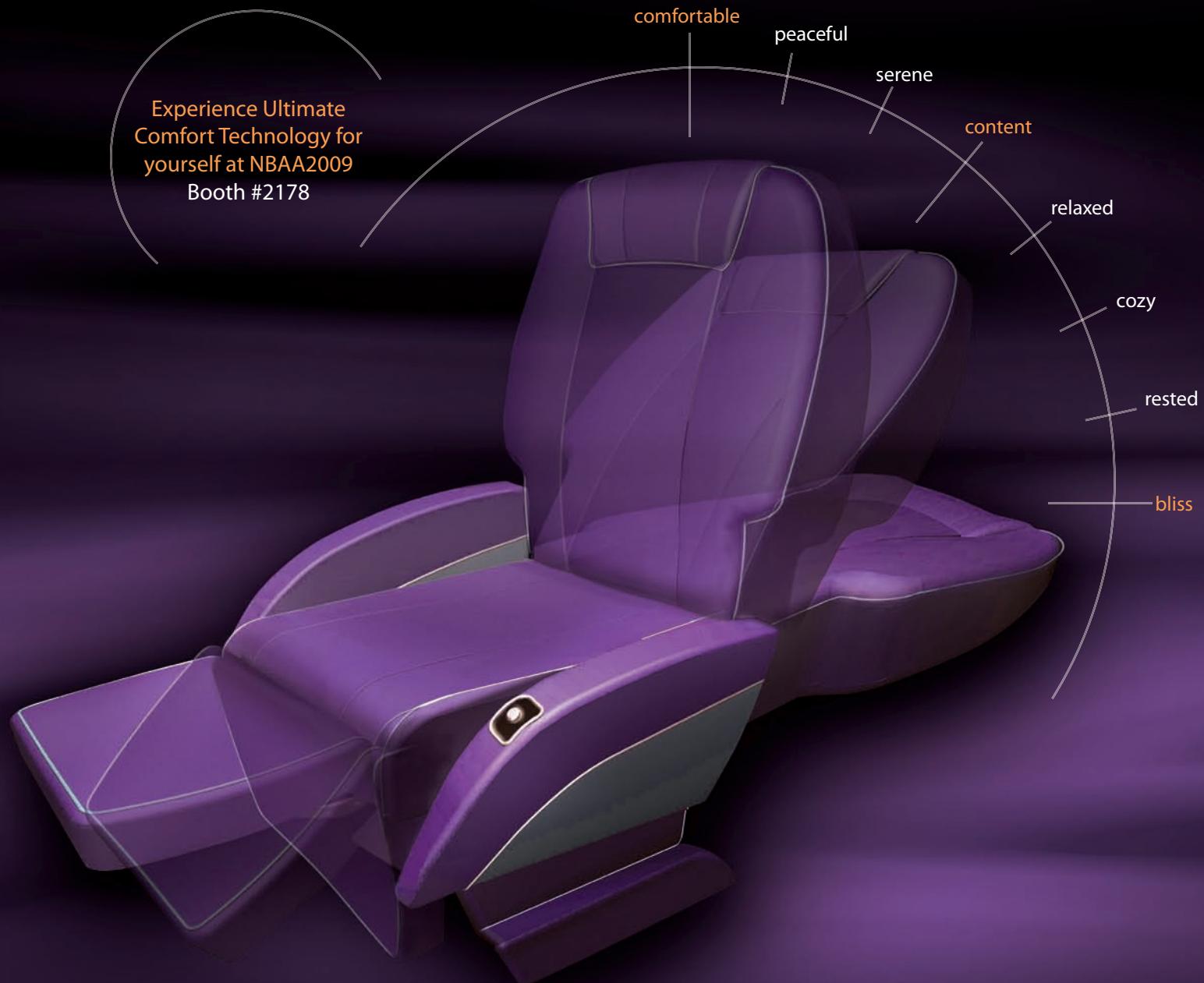


Master and commander

Aero Seating Technologies (AST) will show its new 16g Master Class VIP aircraft seat, which is loaded with features designed to ensure ultimate seating comfort, including

vertical adjustment. Fore, aft and lateral translation – including 360° swivel – is standard on all AST 9g and 16g Master Class VIP seats. The pivot point placement of the integrated seat pan lifter and articulating seat bottom allows the seat to move from full upright position to lie-flat sleep mode with the touch of a single lever. The ergonomically designed seatback structure and recline mechanism allows the seat to transition into its cradle position for rest mode. The bottom cushion tilt feature allows additional adjustment for personalised comfort.

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The interior bits and pieces of Embraer's ambitious corporate jet programme are beginning to fall into place even as order cancellations erode the company's impressive backlog. Despite an expected difficult market for new corporate jets over the next two years, Embraer still intends to become a major player in the industry and its completion strategy is becoming clear: bring it in-house, either at its main plant in Brazil or at its new facility in Melbourne, Florida, USA.

Earlier this year Embraer announced that it is ending its contract to have DeCrane's PATS unit complete the cabins of its large Lineage 1000 flagship after the fifth shipset. Sources at both companies said the deal made less and less sense as it required Embraer to fly the green aircraft to the US for completion, then return them to Brazil, remove the cabin floor, install the auxiliary fuel tanks, and then re-install the interior. Under the new arrangement, Embraer will continue to buy DeCrane cabin components but do the completions itself in-house in Brazil as it gradually steps up production to one per month over the next three years.

Based on the company's 190 series large regional jet, with full seats (19), the US\$46 million Lineage has a range of 4,000 nautical miles. Its cavernous 4,085ft³ cabin is more than twice the volume of both the Gulfstream G550 (1,669ft³) or a Bombardier Global Express (2,022ft³), but about 75% that of the Airbus Corporate Jet (5,300ft³) or a Boeing BBJ (5,390ft³). Embraer divided the Lineage's interior into five distinct zones with modular installation options in terms of seats and monuments. The modules maximise flexibility and utility, simplify installation and hold down costs. Customer-specified interiors are available for an additional charge. The cabin's main entry way is an

house rules

Embraer moves Lineage completions in-house and steams ahead with new Florida design and acceptance centre, despite market turbulence

**EMBRAER DIVIDED THE LINEAGE'S
INTERIOR INTO FIVE DISTINCT
ZONES WITH MODULAR
INSTALLATION OPTIONS IN TERMS
OF SEATS AND MONUMENTS**



1



2





excellent example of how this plug-and-play modularity works. Finished in light-coloured Ultraleather and metallic laminates, it looks open, airy and inviting. However, this area can instead be fitted with an enclosed crew rest area with oversized single reclining seat for privacy, keeping the curved monument to the right of the entry door.

On 7 May, Embraer delivered its first completed Lineage 1000 to Dubai-based Prestige Jet on behalf of owner Aamer Abdul Jalil Al Fahim, a leading industrialist and member of the United Arab Emirates' Federal National Council. The second Lineage was delivered in August and Embraer has plans to make two more deliveries before the end of 2009. As this nascent fleet builds hours, Mauricio Almeida, vice president of programmes for Embraer Executive Jets, says the company will be watching carefully to "see what we need to improve".

1. Embraer delivered its first Lineage, complete with stylish mono-chromatic interior, to Prestige Jet in time for this year's EBACE show
2. Lineage customers can choose from a range of modular options, including this stylish cabinet

Legacy update Ameida says Embraer also plans continuing incremental cabin improvements for its first business jet, the Legacy 600, including better cabin sound insulation. The Legacy is sold with either executive or corporate shuttle cabins, and is based on Embraer's Model 135 regional jet platform, which in airline configuration features 37 seats. More than 1,000 135/145s are in service worldwide. The shuttle version knocks about US\$6 million off the US\$26 million price and can be outfitted with 19 business-class style individual seats. US companies including Conoco Phillips and Pfizer operate Legacy shuttles. Announced in 1999, by June 2006 there were 26 US-registered Legacies out of 74 sold. This year Embraer plans to deliver 16 Legacies.

The Legacy 600 offers a simple value proposition: A capacious cabin on par with a Gulfstream G550 for about the price of a Challenger 605, or roughly half the price. The 600 will haul 10 passengers and lots of luggage 3,500 statute miles at 500mph. Although priced like a super-midsized, the 600's cabin volume is almost 60% greater, measuring 1,410ft³. This translates into a spacious environment that is 43ft long, 6ft high, and 6ft 11in wide with seating for up to 13 passengers.

When Legacies began arriving in the USA in 2002 they were plagued by interior fit and finish and cabin noise problems and a series of airworthiness directives that covered everything from the passenger seats' floor tracking to inadequate drainage of leaking fuel. Most of these issues have been resolved.

The noise problem was not entirely unexpected and has already been partially addressed. The Legacy's Rolls-Royce engines are tweaked to provide more power – a total of up to 7,987 lb of thrust each – than those used on the airliner versions of the aircraft, as the Legacy is typically flown higher and faster than its commuter cousins. On

early models passengers reported noisy forward cabins. In 2003 Embraer began a major campaign to improve the cabin and quiet it using isolators to absorb vibration from cabin wall and ceiling panels, cabin partitions, and furniture, including galleys, cabinets, credenzas, and the lavatory. The new insulation package will make the cabin even quieter. Legacy completions will continue to be done in Brazil, but Embraer recently established a new major factory service centre for the aircraft in Mesa, Arizona, USA.

Family values But Embraer was not content with simply appealing to the upper range of the business jet market. Its grand strategy is to create an integrated business jet family with product offerings in all sectors, from light jets to near big iron, with business jets someday accounting for 20% of total company revenues.

Up until now, Embraer has been almost completely reliant on its defence and commercial airline aircraft sectors, but has still managed to establish itself as the world's fourth-largest airframer – behind Airbus, Boeing, and Bombardier. Today, the company maintains a dedicated engineering department for its corporate jet division that employs 1,200, according to Almeida, and in January, the company took a giant step toward a true integrated product line when it began deliveries of the Phenom 100.

Through July, Embraer had delivered 20 of its new US\$3.18 million, 390kt Phenom 100 light jets. The company plans on delivering 110 Phenom 100s through the end of the year and the 65th jet is already on the assembly line, according to Almeida.

The Phenom 100's interior gives customers more features and choices than you would expect to find in a light jet, including a real aft lavatory. It also features enclosed, pleated window



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shades; Ultraleather upper sidewalls; carpet or wood floors; laminate, gloss or veneer cabinet finishes; and carpet or fabric lower sidewalls. A diverse choice of colour palettes is available, including agate, citrine, obsidian, onyx, quartz, topaz and tourmaline. The cabin can be configured to seat four or six. The seat cushions are 18in wide, have longitudinal tracking, recline from 8-20° and have integral three-point seatbelts and inboard armrests. The headrests, offset from centre slightly, are designed in a way that provides support when a passenger naturally tilts his head toward the sidewall while napping or looking out the window.

Later this year, Embraer will introduce an improved DeCrane 21g cabin seat for the Model 100, with design input from BMW Group DesignworksUSA. The turnkey upholstered seat has a frame manufactured completely from machined elements and has a fold-down armrest that stows in the seat back. A partial folding capability in the

seat adjacent to the aircraft entrance aids entry and exit from the cabin. Customers who already have Phenoms fitted with the original Aviointeriors-supplied seats will be offered special commercial conditions for retrofitting the new seats from early next year.

Development of the slightly larger US\$6.65 million six-nine passenger Phenom 300 is also progressing well according to Almeida, with four aircraft currently in the flying test programme and certification and customer deliveries still expected for late this year.

The Phenom 300 has a range of 1,800 nautical miles with six passengers, a maximum operating speed of 0.78 Mach, and a ceiling of 45,000ft. Both Phenoms employ a common fuselage diameter (61in on the interior), but the Phenom 300 has a 5ft-longer cabin and 3in more legroom between the seats compared with the Model 100. It also offers a few more options for galley and lavatory layouts. Customers can choose either a full wardrobe or a sink in the lavatory. The

3. The Phenom 100 cabin can house four or six seats
4. The new DeCrane-supplied 21g cabin seat features a distinctive off-centre headrest design

EMBRAER WILL INTRODUCE AN IMPROVED 21G CABIN SEAT

300's galley also can be equipped with a wine rack. The 18in-wide cabin seats in both aircraft have a common appearance but are not interchangeable between aircraft. In addition to their unusual offset headrests, they feature longitudinal tracking, adjustable recline from eight to 20°, integral three-point seatbelts, breakover backs and inboard armrests. Maximum seat pitch in the 100 is 35in, while in the 300 it is 42in. Phenom 300 customers have more choices when it comes to colours, fabrics, and plating, with 14 seat colours available for the seats alone.

The IFE suite of options includes XM Radio, seat power outlets, audio



5. Legacy 500 lavatory
6. Legacy 500 cabin looking aft

source for MP3 players, speakers, subwoofers and a VIP control panel. Both aircraft have separate passenger and cockpit environmental controls.

Embraer fabricates the seat tracks, window frames and flooring as well as the cabin monuments for the Phenoms, while a variety of well-known vendors do the rest: cockpit seats come from Goodrich; cabin seats are from DeCrane and Geven; headliners and shades from C&D and Fischer; cabin insulation from EAR Specialty Composites; power converters from Avionics Services; environmental controls from Enviro; and cabin pressurisation units from Honeywell.

Mid-size make-over Despite the uncertain global economy, Embraer is still forging ahead with two more business jet development programmes, the mid-size Legacy 450 and 500 models. According to Almeida, the joint definition phase on those aircraft was completed in April and the critical



design review should occur sometime in the fourth quarter of this year. The two aircraft will share the same wings, empennage, cabin cross-section, engines, and avionics, but the 500's fuselage will be approximately 6ft longer than that of the shorter-legged 450. Embraer says both aircraft will have a 6ft (1.82m) stand-up cabin, a flat floor, a fully-equipped galley, and an externally serviced aft lavatory and that both will have 'best-in-class' cabin volume, baggage space, and cabin noise levels. Embraer has selected Honeywell's Ovation Select audio/video and cabin management system (AVCMS) for both aircraft. The 500 will have a range of 2,800 nautical miles with eight passengers at Mach 0.80, while the 450 would have a range of 2,300 nautical miles with four passengers. The US\$18.4 million (2008) 500 is expected to enter service in 2012 and the US\$15.25 million 450 in 2013.

As with the Phenoms, Embraer collaborated with BMW Group DesignWorksUSA on cabin design for the 450 and 500. In late 2007, BMW unveiled an innovative mock-up design featuring moulded bucket and full-berthing single executive seats with cylindrical pedestals that swivelled at the floor attach point and LED lighting.

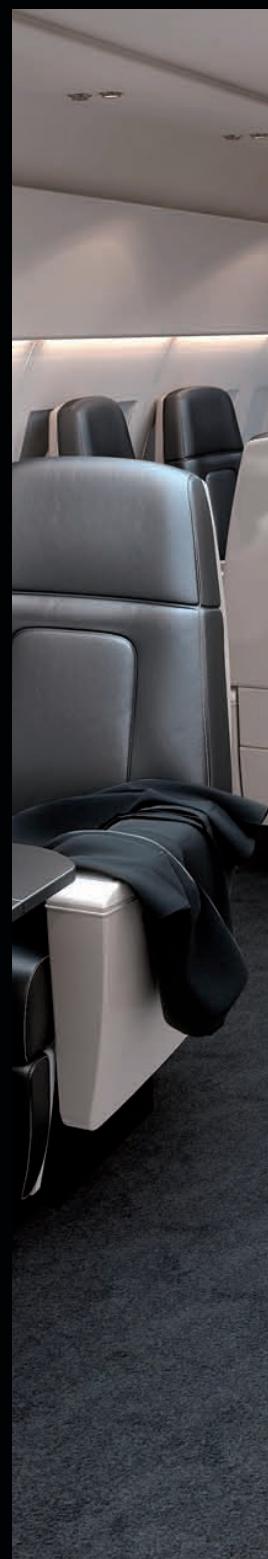
Almeida says the seat and table designs have since been changed after

feedback from customers, with a new style armrest for the seats and a different folding mechanism for the sidewall tables. But it remains to be seen if the innovative seat design, with its small cylindrical pedestal, will withstand the rigours of being thrown down a test sled during the dynamic testing required for certification.

Embraer is expected to offer an unprecedented amount of interior colour and fabric choices on the 450 and 500. That is where the new Florida customer design and acceptance centre comes into play – the facility will also be used to assemble the Phenoms. The US\$51 million, 150,000ft² plant, located at Melbourne Airport, Florida is expected to employ 200 staff. The site will feature a customer delivery and acceptance centre, as well as a customer design centre for the company's entire line of business jets, not just the Phenoms. The design centre will house dedicated designers for each Embraer executive jet type, as well as full-scale cabin mock-ups and 3D computer design systems. The plant's design received the necessary approvals in May and construction is expected to begin this August. Almeida says Embraer will deliver the first aircraft from the facility in 2011. **END**

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servicegame

A well-trained flight attendant can make all the difference on any flight, but what are the essential skills required for crew on business jets?

What's the point of flying a potential customer in a US\$50 million jet and then putting inexperienced cabin crew on board? Charter firms and fleet operators know the value of the unflappable presence that adds to the magic of the flight. They need to find someone who can prepare a six-course dinner at 10,000ft, and who also knows how to store a million-dollar pearl necklace.

Sales teams are waking up to the fact that in this economic climate they have to offer something extra. This year's EBACE saw two private flight attendant training institutions make their mark: Swan Heights from Amsterdam, and Swiss operator PrivatAir's PrivatTraining division.

Ex-butlers Andre Seijbel and Heidi Smale established Swan Heights last year. The school is doing brisk business with owners who want to train their crew properly and individuals who are looking for a career change. Seijbel says, "The job is more than 90% completely different to crewing commercially. We approached owners and made a list of their needs, and found out what they find important." Armed with that information they set up shop.

Smale also runs her own travel PA company where she accompanies families and businessmen on their journeys abroad. She is an expert on different cultures, etiquette and hospitality, and brings this to bear during the training. Swan Heights trains its students to put cocktail ingredients on board, for instance, rather than just champagne.





Illustration by Gabriella Bianca

Regulatory changes due to take place to private jet operations in Europe will mean that every operator will be required to provide mandatory and regular training to flight crew, regardless of the type or number of aircraft they manage. PrivatTraining includes safety, medical, dangerous goods, security and crew resource management training in its curriculum. "Training has always played a key role in PrivatAir's success," says Victor Grove, vice-president, selection, training and customer service. "As an operator ourselves, we recognise that each organisation has a unique client base, so we ensure that all training is tailored to suit both the exact customer needs, as well as the individual company culture."

In the US, Susan C. Friedenberg set up the Corporate Flight Attendant Training academy eight years ago, after several years as a private flight attendant. Courses take place in various locations, including Teterboro and Long Beach. "The responsibility is vast," she says. "You have to ensure the aircraft is immaculate and be cognisant with food safety and passengers' medical problems."

1



1. Smart, well-trained crew can really make the difference on a bizjet flight
2. Food preparation is a key element of the skills required by bizjet crew



A matter of taste Attention to detail is critical: "It is essential to establish guest preferences beforehand," says Seijbel. "For example, if an Englishman requests a curry, it is different from when an Indian wants a curry. The Indian guy wants several curries, rice and 5-7 side dishes. The English guy expects one curry, rice and bread." Swan Heights teaches 18 different styles of cuisine including: gourmet, Italian, Japanese, Russian, Indian, Spanish and religious catering (Jewish/Kosher, Halal and Hindu).

Meanwhile, PrivatTraining uses external partners including Lausanne Hospitality Consulting, part of the world-renowned Swiss hotel school Ecole Hôtelière de Lausanne.

Catering is the single most important thing in terms of service. It is also the most expensive part of the piece. At both schools students are trained on what to order beforehand. They need to know what the purpose of the flight will be – business or leisure – and whether passengers want to pass the time away, or impress guests.

Seijbel has a philosophy of "food as entertainment" and brings his onboard experience to the table. "I have made five-course dinners for eight passengers on a Challenger over one hour and 45 minutes," says Seijbel. "If you plan correctly it is not an issue. Lots of people have no background in cooking, which creates a bottleneck."

2





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Friedenberg elaborates: "You have to check the oven shelves, racks and dimensions. Check what size the microwave is. If it is small you cannot order a litre of soup, you have to order two half-litres." She adds that even when a handler has been tasked with ordering the catering, she still checks the list to ensure she can cook it on board.

All food has to accommodate the galley space and menu items have to fit the size of the oven. Friedenberg likes to see a book on board a new aircraft, written by the regular flight attendant, detailing everything from how to operate the systems, to passengers and pilot profiles. She flew four years full-time on a Falcon 2000 and says her own book ran to 100 pages.

Techno logical It is crucial that crew know how to activate cabin systems, says Friedenberg: "Prepare in advance,"

she says. "The pilot doesn't know the back of the aircraft, so ask the mechanic or head of maintenance." Crew also need to know how to purge (empty) the water system at the end of a trip by leaving the taps on. It is vital to turn the taps back off before the aircraft is refilled, otherwise there is the risk of 20 gallons or more of water flooding the cabin. Crew must also close the sound screen and ensure they put the water heater on when the aircraft reaches altitude.

Other parts of the training course at Swan Heights include how to repack an employer's suitcase after he or she has changed and how to prepare beds so that they are comfortable for all guests.

Swan Heights also offers safety training, including fire and smoke drills, as well as setting up specific service standards on board BBJs and ACJs, as well as crew training on location. Additionally, the company designs and implements standards for private charter operators.

The courses last for 28 days and take place at a boarding school near Schiphol Airport. Modules include safety, security and the paparazzi, hospitality and service and how to serve a six-course meal at 10,000ft. There is also a shorter 15-day course on offer. Corporate Flight Attendant Training offers four-day courses on site. Both schools say their courses are well subscribed.

Demonstration purposes Debbie Franz heads a rare breed. She is Bombardier's senior customer care coordinator and formerly was in charge of flight crew recruitment for the OEM's demonstrator business jet division. There are only 30-40 qualified Bombardier demonstrator personnel in the world. All the manufacturers have a pool of these highly skilled individuals.

ALL FOOD HAS TO ACCOMMODATE THE GALLEY SPACE AND MENU ITEMS HAVE TO FIT THE SIZE OF THE OVEN



YOU HAVE TO BE DETAIL ORIENTED AND ABLE TO DEAL WITH 'TYPE A' PERSONALITIES

Franz says, "Demonstrator flight attendants have to know far more than normal corporate flight attendants. You have to be detail-oriented and able to deal with 'type A' personalities. Our attendants know far more about each aircraft than ordinary cabin crew. We are part of the sales team, so we have to know the aircraft's technical specifications, range, price, and missions as well as about its competitors. It takes about a year and a half of training before someone is fully capable of performing the role."

Her role is crucial in developing new aircraft: "I work with the product line research and development

department for innovative cabin amenities and design," she says. "Working for 20 years as an inflight coordinator I am now able to take the experience from flying on board with our customers and constantly look for ways to improve our product and deliver the best possible customer experience on the demonstration flights."

Franz has been able to observe first hand how passengers use interior features, and note their comments. She has witnessed a steady increase in long-range flights feeding emerging markets. She says, "Combining seat design and comfort with quick conversion to flat berthing capabilities, plus extended leaf dining tables, with state-of-the-art technologies means it is imperative to connect the people working on board to the head designers and programme managers in the completion centre."

Franz attended the Corporate School of Etiquette to learn about different cultures and menu choices. "Extensive research before a demo trip is a must," she says. "All our flights have flower arrangements in designated locations on the aircraft. I coordinate with the floral designer on the colour sensitivities. Meanings of the use of

various flowers in an arrangement could complement the passengers' beliefs or insult them." She continues, "Some cultures are number sensitive as well. Therefore, placing a lucky number of finger desserts on a desert tray would be service minded."

Swan Heights runs an agency for its graduates and says it is currently in discussion with two manufacturers about supplying personnel. It only trains staff for larger jets, i.e. a Challenger and up. Its courses start at €4,950 for the basic and €8,750 for the advanced module. Salaries start at around €2,500 per month to €6-7,000 per month, excluding expenses.

Million-dollar question So how would you store a million-dollar pearl necklace? Seijbel cautions: "Never hang it, but always lay it down, preferably in a closed box, never on a hot place. If the necklace is dirty because of, for example make-up, it must be cleaned by a moist cloth."

Knowledge like this makes a good corporate flight attendant a priceless onboard asset. **END**

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namethatplane

Having redesigned one King Air 200 for Synergy Aviation, Andrew Winch was persuaded to transform and take part ownership of a second that now bears his name

Desperate to cut time lost on motorways or trains when travelling to yacht projects in Plymouth or Cherbourg, leading nautical and aviation designer Andrew Winch stumbled upon Synergy Aviation, a charter firm based in Fairoaks, Surrey, a short drive from Winch's Mortlake, Surrey-based headquarters on the banks of the River Thames, and just 45 minutes from central London. "It was taking me about four hours to get to Plymouth by car or train, and at least nine hours to get to Cherbourg on the train via Paris or by car on the overnight ferry," explains Winch. "By chartering some of Synergy's aircraft, we were able to cut these times down to just 45 minutes."

In 2008, Synergy Aviation, which boasts an eight-strong aircraft fleet made up of three King Air 200s, two Cessna Citation Jets, a CJ2, a Navajo and a BE20 Air Ambulance, approached Andrew Winch Designs to see if the design firm would be

interested in refitting two of its King Air 200s with new interiors, as well as developing a new livery for both aircraft. "I was happy to do it, as it would mean I would then be sitting in the plane that I designed, which I thought would be fun," says Winch.

The first King Air 200 (G-SYGA) to receive the Winch treatment had started life as an air ambulance before being converted for commercial charter. "I took the seats apart completely," he says. "We stripped them down to their frames and then redesigned their shape and came up with a new cream leather finish with dark leather piping to hide any wear and tear – we completely transformed their appearance." Winch also developed a new carpet design and replaced the previous dark mahogany gloss finishes with a lighter, more contemporary satin wood.

In terms of inspiration, Winch says G-SYGA was informed by the interior of the Range Rover he drove

1. G-WNCH combines classic good looks with the latest technology





2



3



4



I WIDENED OUT THE
SHOULDERS OF THE
SEAT AS MUCH
AS I COULD, TO THE
POINT THAT THEY
ARE RIGHT UP
AGAINST THE
FUSELAGE



to and from the airport. "We really wanted a more comfortable feel – the old seats were quite pyramid-like, with the backrests tapering in to meet the headrests," he explains. "So I widened out the shoulders of the seat as much as I could, to the point that they are right up against the fuselage – there's still clear aisle access, but far more comfort for guests on board." The seats also feature retractable headrests, increasing the sense of ceiling space.

"At the same time as doing this aircraft, we were actually working with Range Rover on a project for a new custom car design, so developing the seats for the car and developing the seats for the aircraft went hand in hand, and we ended up with a far more contemporary-looking King Air interior," notes Winch.

Second time around Synergy was so impressed with the result, it asked Winch to consider another King Air 200 interior overhaul, only this time he was also invited to become a partner in the business. "It made sense as they could charter the aircraft when I wasn't using it, making for a much more cost-effective business travel solution," says Winch.

The project was made all the more personal when Synergy was able to secure G-WNCH for the tailfin: "They said they'd found G-WNCH for the registration and that it would cost only £150," explains Winch. "I didn't realise it would become such a statement, to have a tail number with one's initials on it. It was just a bit of fun, but it's also become something of a signature."

As for the interior, the second King Air was fitted with even older seating: "It had these chairs with very thin legs without any frame skirt around them – the challenge was to make these almost Tupolev-style chairs look contemporary. We stripped the chairs back to their frame and sand-blasted and epoxy-coated them with a dark brown paint to match the leather of the armrests and piping, helping protect the legs from the inevitable wear and tear of passengers' shoes – it's actually quite nice to have that extra space under the chair to stretch out into."

In terms of style, G-WNCH has more of a classic Italian sports car feel, rather than Range Rover: "The chairs are more Maserati or Ferrari," says Winch. "In fact

2. Winch also designed a striking silver livery for both King Air 200s
3. Turboprops such as the King Air 200 may be slower than jets, but they can land at a far greater range of airports
4. The cream tan leather seating of G-WNCH was inspired by classic Italian sports car designs



when I went with a client to Maranello to watch him race his Ferrari, they had this new soft, open-topped Ferrari there with a similar diamond-pattern leather to the one we opted for on the King Air – I thought it was quite funny that I'd chosen a design that actually represents some sort of Ferrari, having been inspired by Range Rover for the first project."

However, like G-SYGA, Winch opted for a lighter and altogether less 'shiny' choice of wood: "Both King Airs feature a light satin wood finish, so there's no gloss in the interior of either aircraft – we took the bling out but made it more beautiful and more comfortable," says Winch. Both aircraft were also fitted with new window shades, but rather than opt for electric shades, Winch installed a manual circular, rotating lens design similar to the original system. "It's just so simple and everyone goes, 'Oh isn't that clever!' when they see it."

All the metal fittings were also retouched to bring them more up to date: "The belt buckles, the light fittings, even the hinges on the table – they're all original, but they've all been replated in a black nickel finish. So again, they look much more contemporary even though they're over 20 years old."

Recharge your batteries The more modern look and feel is matched by some rather nifty gadgetry – G-WNCH features 240V power for laptops, and there's a dock that allows passengers to charge their iPhones or iPods – not bad for an aircraft of such vintage. "Lots of clients seem to have them and they like to drop it in and charge it, so when they get off the aircraft, their phone is charged," says Winch. "We have seen a definite rise in bookings because we can offer iPods," confirms Synergy's Paddy Magan. "Customers and their children plug them in and play music as they fly down to their holiday destination."

A KING AIR CAN SAVE TIME BY GETTING PASSENGERS CLOSER TO WHERE THEY WANT TO GO

"We've also got an espresso coffee machine running off the inverter and a hot water boiler for tea and hot drinks," adds Winch. "There's a large stainless steel ice box for champagne and wine and we've got a complete set of wine or champagne glasses, water or whisky glasses, a set of espresso glasses, and coffee cups – all loaded in a display cabinet."

Synergy offers a simple food service on board: "There's no hot food, it's all tray food, but I'd much rather have a nice croissant and a good quality smoothie than a poor quality hot meal, so we've made sure we only stock really fresh items. It's a catered, self-service aircraft, although the second pilot will come back and help, because it's always flown for charter with two pilots."

In terms of challenges, getting the iPod dock to work and finding an espresso machine that fitted the small galley are top of Winch's list: "Electronics are never easy on any aircraft – it was quite complicated finding a coffee machine, and we ended up borrowing about half a dozen and trying to squeeze them in and out to try to get them to fit," he says. "But I was adamant that I wanted the lovely

5. The G-WNCH registration was a snip at just £150!

Icing on the cake

"When I first went to view Synergy's King Air 200 to discuss the exterior livery design, I recognised that the de-icing system included a line which travelled along both the leading edge wings and tail edge and up to the black rubber inflatable nose," remembers Andrew Winch. "I decided that whatever I did to the paint scheme, I was going to recognise this feature.... I thought if we could integrate the black rubber in the Synergy line, we could create a unique and contemporary livery for the aircraft, as well as the Synergy fleet."

The result is an aircraft featuring a striking, metallic silver paint finish with a strong black slipstream line starting at the nosecone, running down the fuselage, round the edge and on up to the tail.

"In contrast to Synergy's King Air 200, most similar aircraft have a much lower undercarriage," observes Winch. "All three Synergy aircraft are equipped with Raisebeck technology allowing them to land on both short and grass runways. When approaching the Synergy King Air 200 you immediately see that not only do they stand higher but their silver exterior paint schemes increase their visual dominance when standing next to an aircraft of a similar size."

aroma of espresso coffee in the cabin." Winch worked with Farnborough Aircraft Interiors and GAMA Aviation on the completion of both aircraft.

Close the deal Synergy's Magan says its seven-seat King Air 200s appeal to customers looking for the convenience of a solution that gets them as close as possible to where they want to go. "We can get people closer to their final destination without having to land at major airports and the reason why we can do that is the King Air can land on runways of 900m or less, and on grass, whereas a jet will need 1,500m of tarmac," he explains. "Across Europe, there are hundreds and hundreds of airports with 900m runways, but far fewer airports with longer runways, so a King Air 200 can save you a lot of time by getting passengers closer to where they want to go."

Another advantage identified by Winch is a larger cabin compared to jets offering a similar seat count: "The nice thing about the King Air fuselage as opposed to some jets is that it feels more roomy," he says. "There's lots of leg room and the tables are generous and comfortable. I recently flew to Genoa in G-WNCH for a project meeting with two of my colleagues where we carried out a complete design review in just two-and-a-half hours using full A1 drawings rolled out on the aircraft's two tables."

Obviously it takes a little longer to arrive in a turboprop than in a jet, but customers benefit from more competitive pricing: "A jet from London to Nice will take two hours and a King Air will take two and a half hours," explains Magan. "However, in a jet you will be looking to pay around £8,000, while in a King Air, you'll be looking to pay around £6,000."

A turboprop also offers more baggage space: "The King Air has almost 90ft³ of baggage room, and weight is less of an issue compared to jets," adds Magan, who notes the aircraft are particularly popular with customers keen on country pursuits, "looking to go hunting, shooting and fishing in Scotland."

For those in search of a trophy, arriving in an aircraft bearing the name of one of the aviation industry's most pre-eminent interior designers simply adds to the occasion. **END**

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Guy Bird Business Jet Interiors International

digital dreams

Computer visualisation software and even virtual reality technology are impacting VIP and bizjet cabins as never before – but what are the implications of such change now and in the future, and what are the potential pitfalls with this avalanche of new data?

The way EON Reality's business development director Pierre-Julien Barraud tells it, only a decade or so ago he knew of an aircraft manufacturer that would make up to 30 physical models before its flying machine would be deemed ready for manufacture.

How things have changed – in an age when computer software systems are now so advanced that whole aircraft interiors can be sketched in 2D programmes, designed, engineered and analysed for safety in 3D and marketed to the client in an immersive virtual reality environment before a

single part ever gets made, the time-consuming and costly old way of making things seems nothing short of antiquated.

Son Tran, senior designer at product design expert Priestman Goode, which has worked on projects including the Embraer Lineage and the Airbus A350, remembers the 'old ways' well. His first job for the firm in the early 'noughties' was a private jet commission. "Back then it was all 2D," he recalls wistfully, before snapping out of the nostalgia and declaring, "but with today's technology I can reduce the time the design process used to take by half, easily." In his view the business jet



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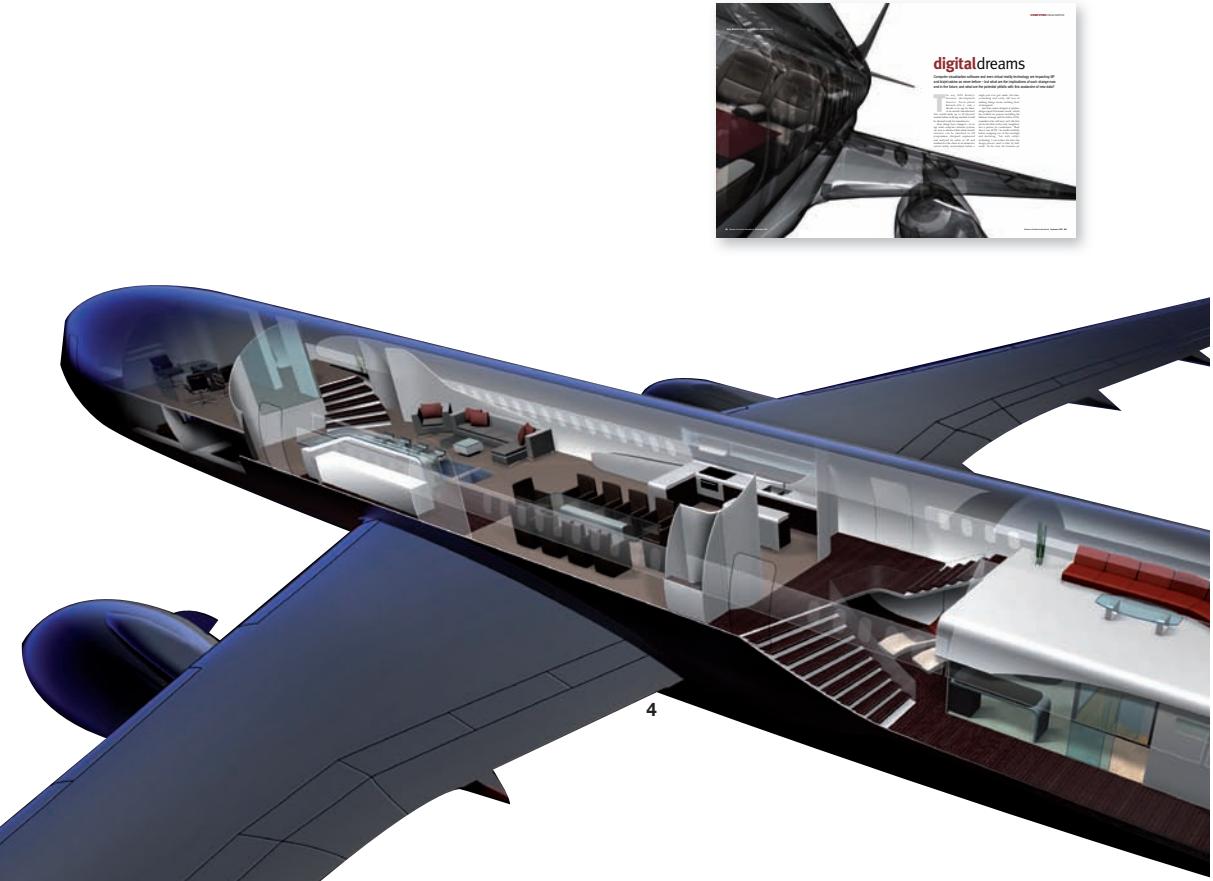
interior client often viewed the role of the designer back then as more of an "artist or decorator" and says design consultancies only started being asked to get involved in the last five years or so.

Tran believes much of the change is simply down to a better customer awareness of all types of design. Oliver Zeplin, head of virtual reality in cabin and cargo engineering at Airbus agrees, but reckons good inquisitive designers seeking out new methods of working has also been a factor.

Faster, stronger, clearer So what does all this advanced technology mean for the customer? In simple terms it allows them to see what they're buying much more clearly. Tran explains: "What's changed is that you can now get from a design that looks quite simple to something that is very realistic, especially in terms of material use and lighting, and spin it round to look at all the angles in minutes. In the old days you'd press the render button, have to wait a week and it would still not be right."

Tran uses Autodesk Alias Studio software – widely used in the car industry – for much of his work because he says it is "the best for complicated shapes and it's easy to quickly model something with colour and shading that is 90% ready for tooling. The engineers can run their engineering programmes from our data, take the A-surfaces and sort out what's behind them without much change. It's mainly refining." In comparison, Tran





IN THE OLD DAYS YOU'D PRESS THE RENDER BUTTON, HAVE TO WAIT A WEEK AND IT WOULD STILL NOT BE RIGHT

believes more engineering-based software programmes can only show "a 3D grey blob spinning around" – a less appealing image to inspire important business jet customers with millions of dollars to spend.

One step further on from photorealistic designs and animations are interactive virtual reality (VR) environments where the customer can don VR goggles and 'step inside' their future business jet. EON Reality manufactures and sells the software tools that provide the ability to convert CAD data into an interactive 3D stereo model. It can also be configured in real time and viewed on the internet or via a display as big as a 3D stereo theatre.

Current bizjet clients include Bombardier and EON is also involved

1-4. Boeing 787 renderings from BMW Group DesignworksUSA, which uses 3D CAS/CAD for concept generation, visualisation, animation, interfacing with OEMs and suppliers and for creating full-size show models



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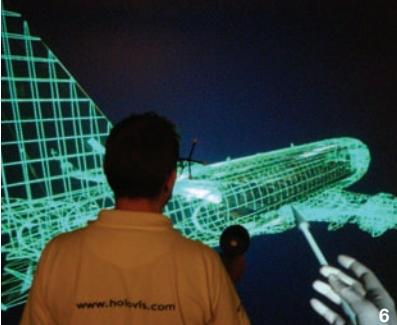
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Step inside

The design created by Design Q for the image at the start of this article was visualised in Autodesk Showcase 2010 and displayed in Stereo on a four-sided CAVE at HoloVis International in Leicestershire, UK. CAVE systems can be configured in up to six-wall setups (including rear-projection ceilings and floors) to allow visualisation of datasets and applications in true 1:1 scale with projector options up to 4,000-pixel definition, giving a near photo-realistic resolution. HoloVis's multi-wall CAVE solutions are particularly popular with automotive clients, including Jaguar and LandRover. Using the latest 4,000-pixel resolution projectors, it is almost impossible to see pixels on screens of this size, and driven at such high resolutions using custom-built PC cluster systems, these CAVEs deliver a quality of imagery not seen before.



in the hardware side of things, able to design bespoke immersive VR caves for clients to use in marketing to end users, as well as for internal staff training purposes to reduce the cost of having to ground real aircraft.

EON's Pierre-Julien Barraud says not all business jet clients use VR yet but reckons it will increasingly become the norm, and not just for the benefit of the customer: "The end result is a customer who is very happy upon delivery because he experienced the aircraft in the virtual world before it was built, and a builder who is very happy with the extra profits realised by containment of construction costs and time savings."

Joined-up thinking As Priestman Goode's Tran has already pointed out, the compatibility between computer-aided design and styling (CAD/CAS) and computer-aided engineering (CAE) software systems is becoming much better but the ability of the various partners involved – from the design consultancy to the supplier and assembler – to effectively transfer shared data between them can still sometimes be an issue.

Software and hardware costs are reducing every year, so Tran believes the biggest obstacles remaining are the time and hassle involved in connecting to older systems and the investment in training.

- 5. Rendering of a private jet project for an undisclosed customer, by Design Q
- 6. CAVE systems allow designers and owners to literally 'walk through' a 3D visualisation

It's an area VIP aircraft completion specialist LufthansaTechnik is looking at closely now. Its aircraft interior architect Michael Reichenecker concedes that in the past most 3D rendering issues were contracted out but that it's now looking at implementing in-house modelling and is keen to find software that is "quickly accessible to unskilled new staff members and offers the best performance" in terms of compatibility.

This ability to manage lots of complex data seamlessly and rapidly while "protecting the purity of the design" right up to preproduction is a skill Joe Molloy, CEO of Concept Group International says has helped his firm recently win a major contract for a first-class jet interior for a major airline customer.

The Coventry-based firm has an automotive background, specialising in quick concept car builds for the likes of Aston Martin and Cadillac. Beyond the usual industry-standard software systems, it also utilises a suite of customised software from one of its technology partners, Tecosim Simulation (a UK/German consultancy), for all its CAE requirements. "It offers a rapid model-meshing tool called TECODM (OneDayMesh), normally used for larger scale complex vehicle body structures so it is able to handle interior systems and components with ease," says Concept Group's business development director, Paul Raindle.

Rindle also cites the Group's work for Nissan's 2009 Qazana concept car as a good example of its ability to fuse many seemingly disparate elements: "On that job we had the Alias math data for the Qazana concept design and a carryover production Micra using Catia data to fit it to before we built the concept itself. A timeframe of just four months from the receipt of the Alias data to delivering a running preproduction vehicle is typical for us."

Future trends With today's 3D technology already able to offer so many endlessly 'whizzy' solutions, what more can tomorrow's software add? Refinement, enhancements and further compatibility provide the short answer. Priestman Goode's Son Tran is clearly a fan of the photorealistic effects he's able

7. A volumetric CAD model combined with a 2D sketch for early artistic concept visualisations, from BMW DesignworksUSA
 8. Detail from a miniature model crafted by Paris-based atelier, Alain Pras

Mini marvels

Away from the sort of high-tech design software that can create photorealistic animations to tempt clients, smaller scale and seemingly more handcrafted 3D model making is still in evidence – at aircraft trade shows at least. Many of those amazing cutaway models are the work of Paris-based atelier Alain Pras. According to CEO Marc de Laubier, most of his team is drawn from the fine arts, although he says they become very competent in the engineering fields through their work.

His studio has been using 3D data for 8-10 years and now uses Rhino CAD software, which he considers to be more engineering-oriented. However, he says this is a good thing given the models must ultimately be credible to engineers as internal training tools, as well as communications tools to assist sales at public exhibitions.

He describes his studio's work thus: "We're the builders not the designers, although we can make proposals if needed. Our business involves a lot of handcrafting but at the same time a lot of 3D work too. If the model to be made is of an aircraft about to be sold, you will have the actual 3D data to work with but perhaps not the photographs. But when the model is of an aircraft already built you can gain help from actual photos to get an idea of colour and trim."

He's also got faith in the longevity of mock-ups as design enablers, as he says: "In the last ten years people thought 3D would replace models and mock-ups but between 3D and the first pre-series models you still need to have a mock-up stage. I see a growing importance to the full-scale 1:1 model. We can do models between one-tenth and one-fiftieth scale as well, but no smaller – under that the models are too tiny to be interesting."



8



7

to achieve with current software but says as much of it originates from the car industry, it tends to be geared more towards exterior renderings with hard surfaces like metal and glass. What he'd like to see is software that could help with 'softer' colour and trim decisions for aircraft interiors in real time by simulating exact lighting conditions in natural daylight, as well as night-time artificial strip lighting.

EON's Barraud sees future improvements to the configuration process so that "adding, removal or moving of assets and monuments can be controlled by weight and balance limitations. Effects of weight and drag on operational characteristics will be calculated in real time as the configuration process is taking place. Once the virtual aircraft is created and accepted by the customer, plans, parts lists and order placements can be completed automatically."

In addition, VR quality will improve too: "Models will be even more photorealistic, and the models will utilise other enhancing processes such as the addition of life-like avatars," says Barraud.

For Bombardier's Sandra Henry, in charge of core integration, and Sean Johnson, director of completions definition, the move to a completely 3D process will also be significant: "Paperless is the trend over the next five years as all the information should be available on the 3D model, including installation instructions, to the point that having paper records and 2D layouts become unnecessary."

VIRTUAL REALITY CANNOT REPLACE REALITY BUT YOU CAN SAVE TIME AND MONEY USING VR IN THE PROCESS

Mock-up no more? But in the highly bespoke arena of bizjets and VIP interiors will every aspect of design eventually go 3D and virtual? Not quite. Airbus's Oliver Zeplin explains why not: "The customer will still want to touch and feel what they're getting so physical mock-ups will remain important, and also stay useful in answering specific safety, ergonomics and equipment handling questions."

Even virtual reality evangelist for EON Pierre-Julien Barraud agrees, concluding sagely: "At the end you still need to make one or two prototypes. Virtual reality cannot replace reality but you can save time and money using VR in the process, that's the point." **END**

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gleaming blades

Except when the airworthiness authorities have to say no, the customer is always right when it comes to putting the latest gadgets and amenities into VIP helicopters

1. VIP interior on board an executive AW101 helicopter

David McRobert has seen a few things in his time. As managing director of PremiAir, the British VIP helicopter charter, management and refurbishment provider, he leads an expert team that has done some fabulous things with cabin interiors – and one that proved not to be such a good idea.

"If it's practically possible we will give our customers what they want," he says. "One owner, a rich young man very interested in music, asked us to fit his Sikorsky S-76 with the most elaborate speaker system I've ever seen in a helicopter, with woofers and tweeters all over the place. But there was no getting away from the background noise in the cabin, and I always wondered if the resulting experience was exactly what the customer had in mind."

The next owner of the aircraft had no doubts: "The first thing we did for him was rip the whole lot out again," recalls McRobert. "It was a huge installation and it weighed a lot. The new owner wanted the weight back, so the speakers had to go."

The PremiAir boss is much more enthusiastic about the interior that his designers helped to develop for the AgustaWestland AW139 owned by London-based property magnates Candy & Candy. "Besides looking beautiful, with superb colour coordination and the finest materials, the cabin features a central oval table from which a huge flat-screen display can rise at the touch of a button – it's really very special."

Modern VIP helicopters can boast a dazzling array of amenities, including full audio/video-on-demand entertainment and satellite communications. With money often no

**NOISE REDUCTION IS
VERY IMPORTANT –
EVERYONE WANTS
THE CABIN TO BE AS
QUIET AS POSSIBLE**



2



object, airworthiness requirements and the aircraft's payload-range performance are the only physical limiting factors. But most of the time, says McRobert, two things determine what goes into the cabin – comfort and average trip duration.

Sound approach Coming before all else in the VIP's hierarchy of needs – ahead of IFE, a phone, internet access or a cocktail cabinet – is freedom from the noise and vibration that used to blight helicopter travel. "Noise reduction is very important – everyone wants the cabin to be as quiet as possible," says McRobert. "The technology to insulate the cabin from the engine and gearbox has come a long way and the latest generation of helicopters is a lot quieter than its predecessors. So a lot of our customers want us to put in the latest sound-deadening materials when we're refurbishing older types."

Once he can hear himself think, the VIP's thoughts usually turn to a little

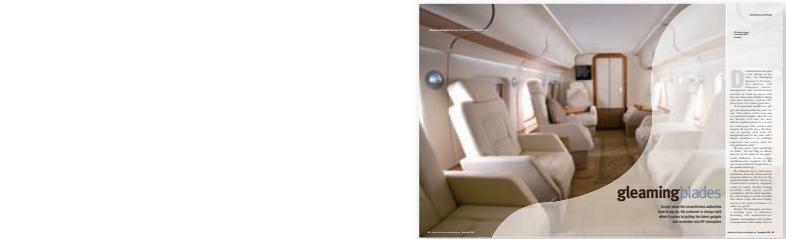


2. Rendering of a front passenger area for an EC225, by SEI
3. VIP cabin scheme rendering for an AW101

light refreshment. "Food and drink really do matter," McRobert reports. "Passengers want access to tea, coffee, perhaps a bottle of wine, and something to eat, even if it's just a chocolate bar or a sandwich. Squeezing the necessary cabinetry into the cabin can take some doing. Big aircraft like the AW139 and AW101 have lots of space, but storage is normally at a premium."

Next on the VIP agenda is entertainment, though the form it can take is strongly influenced by trip duration. "In our operation flights vary from 20-minute short hops to the two hours it takes to go from the UK to central France, for instance," McRobert explains. "Two hours is a long time in a helicopter – anyone who does such trips regularly will certainly want something to keep him occupied."

PremiAir has fitted VIP helicopters with IFE systems as elaborate as anything found in a business jet, according to McRobert. "But we do tend to question how much they are



Top of the VIP parade

Big is beautiful in the world of VIP helicopter interior design – here, in rough order of cabin volume and maximum gross weight, is our Top Ten of currently available helicopters most likely to get the full-on VIP treatment:

1. AgustaWestland AW101

The imposing triple-engined AW101 is the leader of the pack. Though the ultimate prize of the US Presidential helicopter contract was recently snatched from its grasp, the AW101 has been selected for VIP duties by Saudi Arabia and is in the running for an even bigger order from the government of India.

2. Sikorsky S-92

AgustaWestland's misfortune could prove to be Sikorsky's big opportunity. The big twin is tipped to take the honours in the new programme to replace the ageing Presidential fleet. S-92s are in service as VIP transports with a number of governments, and PremiAir has studied the feasibility of a private version.

3. Eurocopter EC225

Latest in the proven Super Puma line, this roomy workhorse can carry up to 24 passengers in a high-density layout. VIPs like their elbow room, however, and the version ordered by the governments of Algeria and Japan features a lounge with seating for eight and provision for a flight attendant.

4. AgustaWestland AW139

Subject of a spectacular completion for London-based property and interiors company Candy & Candy, the nominally 15-seat AW139 is in government VIP service in India, the Lebanon and Namibia.

5. Sikorsky S-76

With its notably large cabin and quiet ride, the S-76 comes with one of the most powerful celebrity endorsements on the planet – from regular passenger Queen Elizabeth II of the UK.

6. Eurocopter EC155

This nominal 13-seater wins high marks from aerospace style purists for its elegant 'fenestron' shrouded tail rotor. VIPs like its good looks, but are even more impressed by a cabin 30% larger than those of earlier aircraft in the long-established Dauphin family, not to mention a 130% boost to baggage volume.

7. Bell 429

A new-generation light-medium twin that first flew just over two years ago, the 429 combines the classic Bell look with a cabin that's spacious for its class. It's already set to make something of a splash in the VIP world – more than half of the current 300-aircraft order book is destined for corporate operators.

8. AgustaWestland AW109 Grand

The AW109 Grand is a major upgrade of the original 1960s-vintage Agusta design, featuring a bigger cabin and more power. A current order book of more than 230 aircraft includes at least one for a Russian private owner.

9. AgustaWestland AW109 Power Elite

With slightly less horsepower than its Grand cousin, the Power Elite makes up for it with a host of VIP-pleasing features: new soundproofing measures; a moving-map display; larger rear windows giving passengers a better view; and a satellite communications antenna neatly built into the base of the fin.

10. Eurocopter EC135

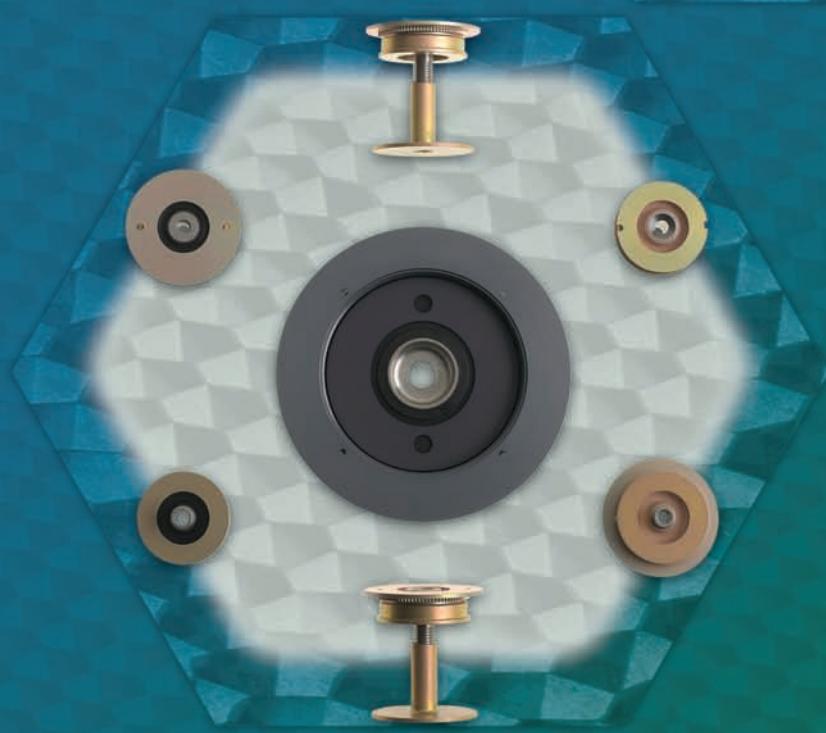
In service with dozens of police forces and other first responders around the world, this chunky little light twin was recast as 'L'Hélicoptère par Hermès' two years ago – a special-edition VIP model styled up by the French fashion house. With a four-seat luxury cabin, sliding glass partition and corporate baggage hold, 'L'Hélicoptère' could be the first in a fabulous new line of EC135s.



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4. An LED screen emerges from an oval coffee table – Candy & Candy's slick interior for an Agusta AW139

OUR PRINCIPALS LIKE TO KNOW WHERE THEY ARE AT ANY TIME AND WHEN THEY ARE GOING TO ARRIVE

Heights of luxury?

The wildest dreams of the vertical VIP seemed to have come true earlier this year with web reports of the imminent first flight of the 'Hotelicopter'. Pictured here, the world's first flying hotel was supposedly based on the gigantic Mil V-12 twin-rotor heavy-lift helicopter developed in the Soviet Union in the 1960s. According to the web stories, an example of the 137ft-long V-12 had been acquired by a Western entrepreneur and tricked out with 16 cabins plus a pair of suites featuring queen-sized beds, heated toilets and whirlpool baths.

Alas for the VIP who has everything, the whole thing turned out to be an April Fools' Day joke by Yotel, the British-based airport 'capsule hotel' provider. Launched at London Gatwick in 2007, Yotel now also offers its Japanese-style miniaturised cosy nooks at Heathrow and Amsterdam Schiphol. "We agreed to take part in the spoof because we're all about luxury design in small spaces – so this really isn't outside the realms of possibility for us," said Yotel's marketing director.

By then the hoax had been spotted by aviation buffs familiar with the V-12's history. Two prototypes were built and took to the air, but nothing came of the programme because its original military rationale evaporated. The prototypes survive to this day, though firmly glued to the ground – one in storage at the Mil factory, the other as an exhibit in the Monino Air Force Museum near Moscow.



actually used," he says. "It's just not the same as flying in a business jet for six hours or more and being able to watch a couple of films – a two-hour trip is scarcely enough time for one."

More appropriate to the helicopter environment, McRobert believes, is the current trend to accommodate iPods in the cabin: "Once an owner knows he's got somewhere to plug in an iPod, he's content because he can bring his own entertainment along with him. And it's even more valuable if there are children in the party."

Keep in touch Communications are also in demand, though once again the most basic needs must be met first. "The most important thing is the ease with which the passengers can talk to the pilot," McRobert emphasises. "Owners insist on a good intercom system that's easy for the passengers to use and allows them to talk to the pilot in comfort and security. There's nothing worse than sitting in the back of a helicopter and not knowing what's going on."

VIPs want to talk to the outside world as well – satellite phone is standard at the top of the market – and to understand what they are seeing as that world rolls by beneath them at 150mph. "Helicopters generally travel at low level, giving passengers a good view of the ground below. They tend to be curious about what they are seeing and we can meet the need with a



moving-map display. There are systems based on detailed Ordnance Survey-type maps that show the name of every village and feature, giving passengers a far more interesting ride."

Moving-map technology is also high on Nigel Watson's list of top amenities. Former Royal Navy officer Watson is the chairman of Cannes-based HeliRiviera, which specialises in the management of helicopters operating from the superyachts that line the jetties of the swish French resort.

"Our principals like to know where they are at any time and when they are going to arrive," he says. "They also want intercom and a phone – we make it possible for them to use their mobiles – as well as iPod integration and the best possible protection against noise and vibration. This is a continuing problem, to be solved with a combination of improved insulation and active noise cancellation."

On the operational side, Watson says, many owners require the security assurance provided by a flight-following capability combined with inflight voice and data communications for the pilots.

Silent partner Headquartered in Monteprandone in central Italy, Servizi Elicotteristici Italiani (SEI) is AgustaWestland's preferred interiors provider, specialising in the AW109 and AW139 and providing luxury interiors for about 180 aircraft a year. The company's capabilities include a



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5. AW109 Grand reading light
6. Storage for food, drinks and personal items is a particular challenge on helicopters

full design service drawing on the expertise of a number of leading Italian automotive styling agencies, the new SILENS noise and vibration-absorbing cabin liner for the AW139, and systems integration for a wide range of IFE and communications facilities, including satellite phone.

"Top requests from owners include various levels of IFE, intercom and air-to-ground connectivity, and provision for refreshments," says senior VP commercial Massimo Isidori. "When it comes to larger aircraft like the AW101, Eurocopter EC225 and Sikorsky S-92, it's not uncommon to be asked to provide a spacious toilet, provision for a flight attendant, and a full-size galley with microwave and coffee machine."

And the demands can get wilder still, Isidori confides. The small size of helicopters compared with the biggest fixed-wing VIP aircraft means that some of the most legendary extravagances – fireplaces, marble tables, crystal

chandeliers, stabling for horses and fully equipped operating theatres – are out of the question. But VIPs are nothing if not ambitious, and some of their specifications have pushed the boundaries.

"We have been asked to investigate the possibility of carrying hunting falcons and other wild or semi-wild animals in cages," recalls Isidori. "One owner wanted to be able to watch satellite TV, not an easy thing to engineer in the rotary-wing environment, and others have called for fully equipped galleys on very small helicopters."

Nigel Watson also has a story or two to tell: "We have heard of a principal who wanted a bathroom complete with shower," he says. "Another demanded a galley equipped for the *sous vide* method – an elaborate technique calling for vacuum-packed food to be cooked for up to 24 hours at low temperatures."

Giorgio Bendoni, sales and marketing director for operator Sloane Helicopters of the UK, recounts the story of a request that could one day come to the attention of the airworthiness authorities. "We were asked to integrate a Nintendo Wii electronic games console to replace the existing PlayStation 2 as part of an integrated IFE system that already included two LCD screens and DVD, CD and MP3 players," he says.

Allowing players to vigorously simulate tennis, baseball, golf and boxing, the installation could have presented the pilots with some interesting weight-and-balance problems. "The project's on hold for now," says a relieved-sounding Bendoni. "Wii has wireless remote controls and doubts have arisen about possible interference with the aircraft's safety-critical systems."

Approach with caution From sandwiches to haute cuisine, from moving-maps to mini-menageries, the things that VIPs want in their helicopters range from the everyday to the extraordinary. The completion centres and operators pour time and ingenuity into accommodating the whims and fancies of their customers. But HeliRiviera's Nigel Watson has a final word of caution for anyone tempted to overdo it. "If you're going to be clever, make sure it meets the owner's expectations," he advises. "In a small space like a helicopter cabin the amenities are right in his face. If you've got something right he'll love it. If you haven't, it can be a constant irritation." **END**

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publicaffair

Portugal's Jet Republic introduces a new Learjet 60 XR cabin, designed especially for the fractional market

With its distinctive black livery, featuring a blaze of gold on the winglets and tail, a Jet Republic aircraft will demand attention on any ramp. That is entirely in keeping with everything the Lisbon/Geneva based company does. This June it unveiled the innovative design for its fleet of 110 six-seater Bombardier Learjet 60 XRs aimed squarely at the European market. A year ago this fleet accounted for the largest European private jet order ever, valued at US\$1.5 billion. Jet Republic is now breaking new ground by creating the first Learjet interiors designed exclusively for the fractional ownership sector.

As a result of the size of the order, Learjet was happy to work with Jet Republic to customise both the look and feel and the cabin layout. Renowned aircraft designer José Luiz Monteiro spearheaded the team that created the new product. He says: "The interior is an extension of the bold exterior and raises the bar for cabin design for Europe. We are bringing the large cabin concept into a mid-size jet." Monteiro is a trained industrial

designer, who has worked on aircraft interiors for 13 years. A former director of cabin appearance at NetJets Europe, he also put in a 10-year stint at Jet Aviation working on a range of VIP aircraft. He now owns his own company, Jet Domus, in Basel.

To maximise space, Monteiro has created a layout that centres on a lounge area with club seating and large tables. The seats are a key feature. B/E Aerospace in Miami built a bespoke 'Sleeper Seat' for Jet Republic that reclines to 175° and can be adjusted in almost any direction. The lightweight comfortable chair uses the smooth lift and shift pan mechanism more commonly found on BBJs and other widebodies. Skandia added a soft cushion that also reclines and raises the level between the back and the seat. Monteiro says: "We redesigned the structure and introduced other features geared to our market. The arms and sides get a great deal of wear and tear, so can easily be replaced separately on a continuous basis. We constantly looked for innovative touches."

Despite the engineering involved, there is no compromise on style. The seats are aesthetically integrated into the overall design with streamlined side ledges for better ergonomics and a



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To enhance the customer experience Jet Republic offers the services of a highly skilled multilingual flight attendant on every journey. The company says it is the first to have cabin crew on a mid-size aircraft as standard. The aim is to provide a flight attendant who speaks the same language as the passengers on each flight, although Monteiro says the firm is a few years off that ideal today. However, it is a goal. The cabin design had to allow room for this vital extra crew member as an essential element in the company's overall service philosophy.

Continuing that service philosophy, Jet Republic also offers a 24-hour concierge to deliver an end-to-end travel itinerary. For those wishing to sign up, the firm offers two programme options: a jet card scheme; and a fractional ownership scheme. Card members buy blocks of 25 hours on a range of jets in any category – light, mid-size, large or global, which costs from €115,000. There are three routes into Jet Republic's fractional programme: share partnership where members buy 50-hour annual blocks of flight time at €6,500 per hour; share ownership, where participants purchase 1/16 or more of a new Learjet 60 XR, starting at US\$843,750 with reduced hourly fees of €4,900. The last option is 'Free to Fly'. Members buy a new aircraft outright at a special negotiated price of US\$13.5 million (compared to a list price of US\$14.6 million) and fly up to 200 hours per year without paying hourly fees.

THE AIM IS TO PROVIDE A FLIGHT ATTENDANT WHO SPEAKS THE SAME LANGUAGE AS THE PASSENGERS ON EACH FLIGHT



WE LOOKED AT THE DETAILS AND REMOVED ALL SUPERFLUOUS TOUCHES TO KEEP THE LINES CLEAN

harmonious cabin flow. They are also installed to ensure passengers' feet do not touch when seated opposite each other.

Creature comforts Other onboard amenities include BlackBerry and video iPod connectivity, which had to be designed into the structure of the aircraft at the drawing board stage. Monteiro elected to save some cash on the lighting, opting for a gentle downwash and toe kick lights at the bottom of the galleys and lavatory to create a comfortable atmosphere, especially in the evening. He says: "We changed the PSUs styling slightly. They were too bright, so we created a downwash above the window panel, for a relaxed environment." He adds that the company may well include mood lighting down the line if the market changes.

The rest of the interior uses textures and colours aimed at pleasing the senses. The colours were chosen to foster a sense of calm. The wood veneer is dark, bringing elements of the exterior into the understated cabin. To ensure it does not seem too bland, strong accents come from the flight attendant's uniform and table napkins

and tablecloths. These will most likely be Jet Republic's own distinctive bright tones. Monteiro points out that most mid-size cabins today are typically beige featuring floral patterns.

Jet Republic has aimed for a clean design, making the cabin space appear as large as possible. The dark wood complements the wool carpet, which is manipulated between loop and soft pile, with loop on the centre aisle and a woven pile down the sides and underneath the seats, so it is soft to the touch. The carpet also blends comfortably with the leather panels. Sightlines are well defined to give simple, relaxing profiles. Throughout the cabin, edges are streamlined to maximise space and all unnecessary clutter is removed. Monteiro says: "Elegance is a key issue for Europeans. We looked at the details and removed all superfluous touches to keep the lines clean."

The lavatory, too, was redesigned to maximise the available space. It comes with bigger flat surfaces, rather than the traditional curved edges found in most washrooms. It also features a large mirror and basin and additional storage.

What's cooking? Another key feature is the extra large galley. Especially designed for Jet Republic by Hiller in Wichita, it is an integral part of the company's brand identity. Monteiro says: "Our flight

MOST PASSENGERS FLY IN THE MORNING AND WANT A GOOD HOT BREAKFAST WITH COFFEE



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3. A large table provides plenty of room to work – BlackBerry connectivity is standard
4. Jet Republic's XR 60 fleet will feature Iacobucci coffee makers on board

attendants can make excellent food on board, making the aircraft a ‘flying restaurant.’” He selected a Iacobucci coffee machine, explaining that although this was an extra cost, coffee is an essential part of European culture. “All these little touches when added together form something bigger and enhance the onboard experience,” he says.

With typical flights ranging from between 1 hour 45 minutes and 2 hours 15 minutes, the food and beverage service is a critical factor in the rationale behind the cabin layout. In the mid-size market, food is frequently served cold ‘picnic-style’, with coffee prepared on the ground, hours earlier. The new layout means that the flight attendant can serve a hot meal on porcelain plates with fresh Nespresso coffee. Monteiro adds: “Most

passengers fly in the morning and want a good hot breakfast with coffee. We can also offer full meals at lunch or later in the afternoon. This improves the experience, as well as making the flight more time-efficient.”

The entrance door leads directly into the galley, meaning it is ideally situated for easy loading and access. Simple logistics are crucial in the high-use fractional market. The aircraft have been designed to cope with wear and tear. Monteiro says: “We can replace lots of the panels overnight. We created them specially that way. If someone scratches one with a pen or spills wine, it makes the aircraft look dirty and doesn’t look good.” Usually panels take two or three days to recover, which is costly in a business that likes to keep its aircraft flying. The company is now working on

how best to manage and distribute bulk supplies of napkins and crockery.

Bombardier is performing the installations in Wichita and the first Jet Republic Learjet 60 XR is due to land in Lisbon in September. The Portuguese authorities should sign it off shortly afterwards. The company is expecting to take delivery of three more aircraft by the end of 2009.

Jet Republic’s chief executive Jonathan Breeze, a former RAF pilot, is convinced his business is hitting a sweet spot, even in today’s depressed economy. He played a major role in identifying the concept for the aircraft redesign, in particular the cabin layout. He says: “For too long, private jet interiors and service have lagged behind other technological advances, which are now standard on this class of aircraft. We knew we needed a complete rethink of what our members expect and how to deliver it.” Monteiro also hopes passengers will love the new jet. He says: “I want someone to enter and say ‘Wow this is different’ and then go on to enjoy the entire flight experience.” **END**

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softouch

Subtle curves, star lights in the ceiling and a softer, more welcoming colour and trim palette lie at the heart of Dassault's revamped Falcon 7X interior





Most Americans first laid eyes on Dassault's new Falcon 7X long-range business jet in a very unflattering way. Last January a photo of the aircraft ran beneath a giant "Plane Crazy!" headline on the front page of the *New York Post*. The article detailed financial behemoth Citigroup's acquisition of a new, US\$50 million 7X in the wake of the company accepting US\$45 billion in emergency federal government bailout money. Citigroup had ordered the jet two years before its business went over the cliff, but that fact mattered not to the *Post*. Craven politicians began piling on the pressure, eventually persuading chastened Citigroup executives to put the jet on the market.

It probably did not stay there long.

Dassault announced the 7X in 2001 and the advanced, 5,900 nautical mile range trijet quickly built a big order backlog of more than 100 aircraft, 24 of these ordered by NetJets Europe. The first was delivered in 2007. The 7X is the first aircraft completely designed on a virtual platform, the first fly-by-wire business jet, and the first business jet concurrently certified by EASA and the FAA.

The aircraft has a service ceiling of 51,000ft yet the cabin altitude is only 6,000ft at that height. While the cabin shares the same cross-section of its smaller Falcon 900 and 2000 siblings, it stretches an impressive 39ft long. This length provides comfortable seating for 12 and the option of creating a rear stateroom with either one or two three-place berthing divans. It also means more room throughout the nine possible cabin configurations – there's space for a forward lavatory, a 50in-long galley area, a more spacious cockpit, and a crew rest area.

FALCON^{7X}

THE NEW LOOK
FEATURES
SUBTLE CURVES
THROUGHOUT –
ON THE BULKHEADS,
IN THE GALLEY,
ON THE FURNITURE,
AND EVEN THE
CABINETRY LATCHES





Compared to the Falcon 900, there are more cabin windows – 28 for the 7X – and they are larger and placed higher along the fuselage, providing more natural light and a better field of view. Isolators and noise dampening surfaces keep the interior noise down to levels below that of many luxury sedans and an advanced climate control system provides uniform temperature throughout the cabin.

Aircraft bound for customers in the Americas, Australia and Asia are first flown from France to Dassault's Little Rock, Arkansas completion centre for custom avionics, IFE, paint and interior.

Time for a refresh While the 7X's cabin is very clean and functional, it was designed nearly a decade ago – so earlier



this year, Dassault took the wraps off a refreshed look designed in collaboration with BMW Group's DesignworksUSA. The new look features subtle curves throughout the interior – on the bulkheads, in the galley, on the furniture, and even on the cabinetry latches. The curved bulkheads create a feeling of increased space while preserving privacy and demarcation. The aft lavatory was redone with star lighting, backlit window panels, and a pull-out vanity with more room for sundries storage. Controls for the new IFE system can now be hidden in the side ledges and new light and gasper controls are easier to use. Dark veneered panels, lower sidewalls, and carpets are contrasted with lighter-coloured upper sidewalls, valance panels, and headliner. A carpet with a single arc visually stretches the cabin and connects front-to-back. DesignworksUSA calls the look "familiar and classic, yet modern and elegant", with an overall feeling that is "clean, calm, and crafted". The BMW-Dassault collaboration began on the 7X in 2005 and Thomas Ward, DesignworksUSA's



A LOOK THAT COMBINES SOFTNESS WITH A HARD EDGE AND VISUALLY OPENS UP A VERY ATTRACTIVE CABIN

project director for it, says the agency was inspired by the design of the BMW Z4 roadster. According to Ward, the Z4's "exterior shapes and interior really have a directional way about them that really fits well with that car"; and that the design philosophy "transplanted well" into the aircraft.

Chris Chapman, DesignWorksUSA's director of transportation design, says the look created for Dassault went beyond geometry and into the philosophical. Again, borrowing from the firm's automotive heritage, Chapman says the look was about "replacing arrogance with assertiveness."

According to Ward and Chapman, that meant combining the cabin's very directional, hard edge with a complementary softness of colours and textures. The arc-designed carpet facilitates this transition from the main entryway opposite the galley all the way back to the lavatory. The one-piece carpet has two distinct and different textures and a higher loom and higher



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3. Dark wood finishes and light cream sidewalls and seats provide a "classic yet modern" finish
4. Curved cabinetry in the executive section to the rear of the aircraft

ply that emphasises curvatures throughout the aircraft. The arced look is accentuated in the furniture and sidewalls. This is most apparent in the new curved galley and the cabin dividers. Opposite the main cabin entry door, the newly shaped galley not only provides more working room, it also creates a more visually inviting atmosphere when you first walk onto the aircraft.

Another visual treat when you first enter is the backlit wine rack with opaque doors. This frosted glass look carries through to the galley's upper cabinet doors, doors for the entertainment system, and also in the rear lavatory.

This soft opaqueness contrasts nicely with the dark horizontal grain veneer, used on the cabinetry, ledges, and cabin dividers. It is a bold walnut, but it has a satin finish with silver brushed trim and plating. The satin finish is more subtle than the traditional high gloss. Chapman says it complements the lighter leathers, upper sidewalls, and headliners.

Light touch These type of subtle transitions also carry through to the aircraft seating and cabin lighting. The seats are finished in two different

shades and grains of leather. Chapman says the colour and texture changes are subtle – and so is the lighting. Long 'Linule' linear strip lights along the overhead valance panels combine with adjustable upwash and downwash lighting that more evenly fills space. The star lighting in the washroom ceiling comes on with a subtle gradient. "It's less interrogative, it doesn't look like you are coming into a police station," says Ward.

The new look 7X interior also features several new small, but thoughtful touches such as concealable IFE and cabin controls in the side ledge and a drawer-mounted, pop-out make up/shaving mirror in the bathroom that deploys at eye-level when a passenger is seated on the belted potty. (You'll still cut yourself when the aircraft hits turbulence, but at least your head won't bounce off the ceiling).

DesignWorks and Dassault are looking at developing a few more colour palettes for use with the new look – a look that combines softness with a hard edge and visually opens up a very attractive cabin. **END**

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4

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racinglines

A custom Learjet 60 interior inspired by sportscar styling proved the perfect tonic for an owner obsessed with speed

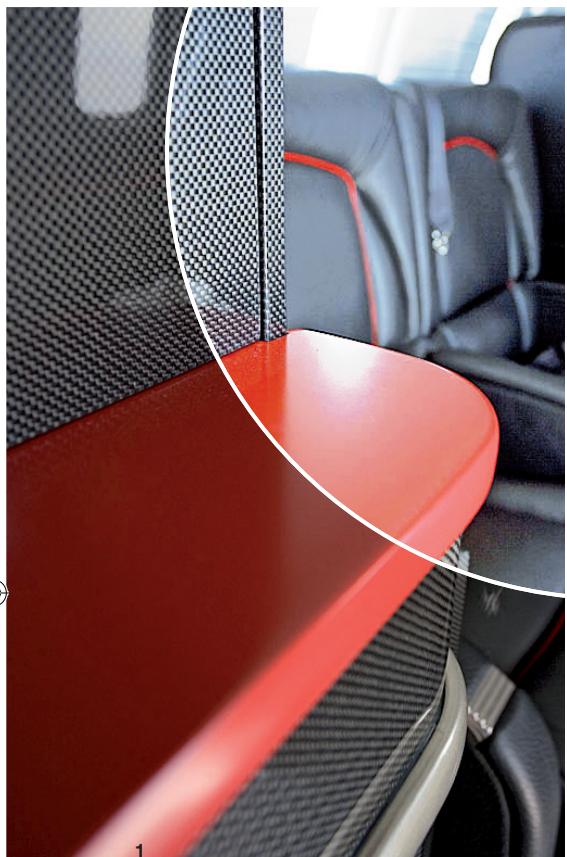


Up until now, my favourite Learjet was a 1965 Model 23 that resides in the Pima Air & Space Museum in Tucson, Arizona. It's painted in 'arrest me' red and the interior looks like it was stolen out of a sports car. Nothing beige, nothing brown, no veneer, no muted shades suggesting mediocrity, boredom or blah. The old 'straight pipe' turbojet Lears were unapologetically loud and sucked down obscene amounts of fuel. They were sleek and sexy. They had the lines of jet fighters and were insanely fast – almost 600mph. The people who flew them were dynamic and bold risk takers. If not flown just right, an old 23 could kill you. It was easy to push one above supersonic when descending from

altitude and inadvertently stumble into 'mach tuck', an abrupt and terrifying dive and control reversal, the crescendo of which usually involved a big smoking hole in the ground – unless remedial pilot action was swiftly taken.

Newer Learjets have an excellent safety record, but they are still fast. That speed was the main factor that attracted Scott Tucker to his 1996 Learjet 60 is no surprise. Tucker runs a private equity firm in Kansas and on weekends races Ferraris and other high-performance supercars on some of the world's most demanding race tracks: from California's Laguna Seca to Quebec's Mont-Tremblant to Italy's Monza and its diabolical 'Curva Parabolica'. After only five years of professional racing, he has already established himself as a top finisher in the Grand Am Rolex GT and Ferrari Challenge racing series and has 25 podiums and 14 wins. When you think of the lore and lure of Learjet, you think of guys like Scott Tucker. "Other than a Citation X, this is just about the fastest business jet you can buy," says





TUCKER WANTED THE LEAR REDONE TO REFLECT HIS PASSION FOR MOTORSPORT, IN TERMS OF COLOURS, TEXTURES, AND FINISHES

1-2. Carbon fibre detailing and red trim around the galley countertop lend a sportscar feel to the Learjet's interior

Tucker, who views speed as essential to balancing the needs of family, business, and racing. "I have two young children at home – if I can get back 30 minutes faster and spend more time with them, that's huge."

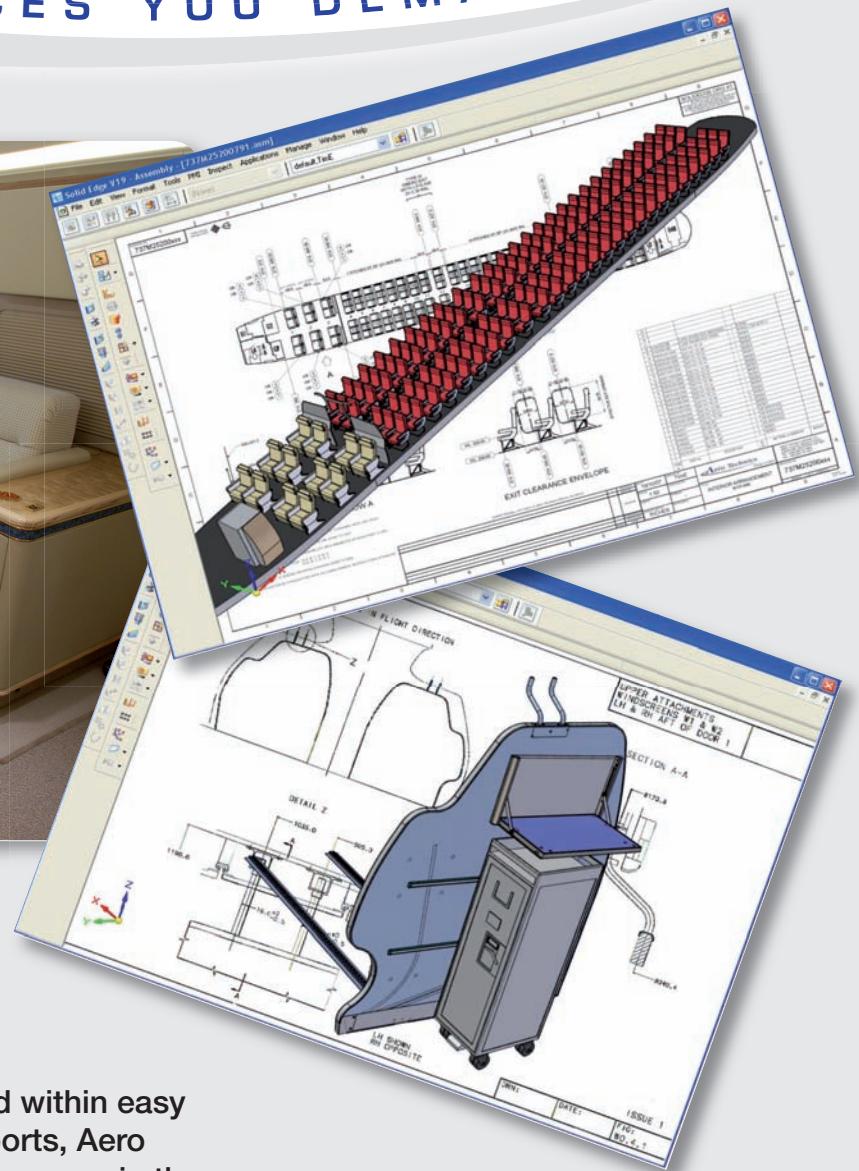
Bombardier Learjet has been making the Model 60 since 1993 and produced 274 until the 2005 block change to the Model 60SE. The 23,500 lb aircraft is powered by a pair of Pratt & Whitney 305A engines, each of which blows out 4,600 lbs of thrust, giving this hotrod one of the highest power-to-weight ratios in its class. It can climb to 41,000ft in less than 20 minutes and down low will climb as fast as 4,500ft/min. This rocket just doesn't take off, it blasts off. With a crew of two and four passengers it can fly 2,100 nautical miles unrefuelled at speeds up to 535mph.

Inside, the cabin is almost 18ft long and the height and width is just short of 6ft for both axes. The cabin floor has a trenched centre aisle. A typical layout features five single slide/swivel executive seats and a two-place, side-facing divan opposite the entry door. There is a forward closet, a small forward galley with room for chilled storage and a microwave oven, and an aft lavatory with a small baggage hold behind it.

As luck would have it Before he bought it, Tucker's Model 60 had flown since new for a Wisconsin company and had only 4,000 hours on it. "I just got kind of lucky," he says. But the aircraft was finished in classic "corporacy" and Tucker wanted the Lear redone to reflect his passion for motorsport, in terms of colours, textures and finishes. He



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3. The galley's smart black carbon fibre finish makes an instant impression upon boarding

IT'S ABOUT GOING FAST AND MOVING PEOPLE – THAT'S WHAT THE LEARJET BRAND WAS FOUNDED ON



contacted Infusion Design, the well-known Bonner Springs, Kansas-based industrial and aviation design firm, which has worked on a variety of cutting-edge aircraft including the Adam A700 and the new Spectrum series jets. Infusion's Sean Elsner already knew Tucker's aircraft – when he worked at Bombardier Learjet in Wichita, he had specified the interior of the very same aircraft (Serial No 6048) when it first came down the line over a decade ago. For Elsner, instantly "this became one of those projects close to my heart."

The year-long conception from design to completion of this Lear 60 became more than just investing the aircraft with the Scott Tucker 'brand' – Elsner says it also became a homage to the lineage of those early Lears like the Model 23 back in Arizona: "It's about going fast and moving people – that's what the Learjet brand was founded on," he explains. "This airplane is all about emotion and the culture speaks for itself."

Tucker and Infusion worked with Hillaero, a completion centre in Lincoln, Nebraska, to come up with a complete new look for the aircraft – outside and in. It began with a bold exterior paint scheme of metallic silver over white with high-gloss black engine nacelle covers and black and red racing stripes down the fuselage sides. The look was carried through to the inside with the extensive use of fire-rated, high-gloss Dragon Plate carbon fibre on the cabinetry and fold-out tables, and Spinneybeck Ducal black leather and Sabrina red piping on the seats and arm ledge caps. The seats were taken down to the frames and rebuilt with sculpted and restyled foam. Tucker had wanted to move the seats around and reconfigure the cabin until the associated intricacies and expense of the related STCs were made clear – suddenly the idea became far less appealing.



4. Black leather seats with red leather piping reinforce the racing car theme

ledge lower trim, cabinetry trim, window bucket, and shade handles to match. Red anodised aluminium trim on the table, lav, and galley match the seats' red leather piping. A Kalogridis black floor diffuser in the cabin and cockpit, and a custom Kalogridis premier loop with tip shear for the main cabin carpet completed the look. The lav also received a new pull-out make-up mirror behind the vanity. All of these components were accentuated with new Heads Up Technologies' LED downwash lighting.

In addition to a high-tech, racing look, the cabin got a new, iPod-compatible, Alto 12-speaker surround sound system and a Skandia acoustical sound kit to increase its impact. Swigart says installing such a high-powered system in the Lear 60 presented special challenges to tastefully conceal the speakers in way that did not diminish the surround sound quality.

Hillaero was able to use the existing monitors and a modernised and refurbished OEM cabin management system, but did install wiring to support a new Aircell Broadband system for subsequent installation later this year. Swigart said the makeover took 12 weeks.

Finishing lines Tucker, who will compete in 26 races this year, is looking forward to spending more time on his made-over aircraft, both for his racing and business trips. From his base near Kansas City, the jet will reach anywhere in the continental United States, the US Virgin Islands, and Mexico. "The custom carbon fibre made for a look that reflects exactly what we are doing. Every little thing we could think to do to it, we did to it," he says. "We think it is pretty tricked out."

Swigart says Hillaero enjoyed the one-off project and the collaboration between its personnel, Infusion, and Tucker and the constant "bouncing of ideas off of each other".

For Infusion's Sean Elsner, the new interior is all about "having a Learjet done the way a Learjet should be done – not all beige and tan", he says. "This airplane is all about emotion and the culture speaks for itself – racing Ferraris and flying Learjets." **END**

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EVERY LITTLE THING WE COULD THINK TO DO TO IT, WE DID TO IT – WE THINK IT IS PRETTY TRICKED OUT

The black carbon fibre and leather were contrasted with a silver pearl headliner and oyster upper sidewalls and cockpit curtains (all from Tapis). Frosted nickel plating from High Tech further tied things together, as did painting the arm

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Pacific Airworks Group covers all aspects of VIP aircraft completion on-site, with a particular focus on customer service

Pacific Airworks Group (PAG) is an FAA 145 certified maintenance and turnkey completion centre specialising in VIP and head-of-state aircraft.

At its base in the San Bernardino mountain range in California, USA, the company performs VIP completions, green aircraft completions, cargo conversions, in-flight entertainment (IFE) and interior installations, and aircraft paint management programmes. It has 122,000ft² of hangar space, so can fit up to a B747 and A340.

The company also boasts 30,000ft² of office space, and 20,000ft² of back shop space – including back shops for sheet metal working and interiors.

At your service PAG has full interior design capabilities in house, and uses computer-generated rendering to walk customers through their aircraft before construction begins. In fact, PAG assigns a project manager to each aircraft. "The project manager is available 24 hours a day, seven days a week, to answer any questions the customer might have about their aircraft," says Don Cardenas, vice-president of sales and marketing at the company.

PAG's experienced engineering staff includes dedicated structural, electrical and mechanical systems engineers and analysts. An on-site designated engineering representative (DER) ensures all work is in compliance with FAA requirements.

The company also has a certified machinist in house so that customers don't

have to wait for parts to be purchased and fabricated off-site, and installers who finish the interior completion process. "Our experienced staff and technicians have decades of experience in industry, allowing us to take your project from design to completion," says Cardenas. "A customised aircraft is the ultimate blend of art and utility and our entire team strives for aesthetic perfection and peerless function."

PAG also offers maintenance services, including aircraft airframe A/B/C maintenance checks; military aircraft maintenance programmes; major structural repair and inspection; scheduled and unscheduled maintenance services; flight and fuel services; aircraft on ground (AOG) services for drop-in maintenance; deep cleaning for airlines; engine storage and engine stand maintenance; and aircraft storage programmes. Security at the facility is secured with 24-hour video surveillance, and ID is required for entry to sensitive areas. The company is an FAA authorised repair station for most Boeing and Airbus aircraft and can also add capabilities for other aircraft per customer requirements.

Pacific Airworks Group Reader Enquiry No. 501



1-4. PAG's facility at San Bernardino, California, USA

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- FAA Certification Experts
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silentpartner

Silentium Air shares its expertise on how to reduce cabin noise levels

Noise levels in business aircraft can be an important factor in passenger comfort, and Silentium Air, which specialises in soundproofing these aircraft, says it is seeing the issue become increasingly important to both aircraft owners and aircraft manufacturers.

Materials "There are many factors that play a role in cabin noise levels, and these include the floor plan, the materials chosen for the interior, and the structure of the aircraft itself. Typically, soft substances such as cloth will absorb sound thus making the cabin quieter, whereas harder substances such as leather or wood will repel sound, making the cabin noisier," says Nick Houseman, president of Silentium Air. "Two identical aircraft in terms of the cabin layout could end up with very different cabin noise levels based on the materials selected. Therefore material selection should be a key area of focus when thinking about noise levels."

Customisation Given that the interior of most business aircraft are customised to a particular owner's tastes, any attempt at noise level reduction will also require some customisation in the soundproofing. "The soundproofing should address the specifics of the aircraft type, the cabin layout, cabin materials, and weight considerations," says Houseman. Once these issues have been identified and translated into the composition of the soundproofing materials to be used, the next issue becomes installation.

Installation "Most facilities are familiar with noise reduction materials as they exist in some form on all aircraft, but typically maintenance technicians are not experts in noise reduction," says Houseman. "Therefore ensuring that the noise reduction kit is installed correctly will be a key success factor in any noise reduction effort. Installing the materials incorrectly or haphazardly can seriously reduce the effectiveness of the materials being installed, therefore it makes sense to ensure you have an acoustic expert on site to assist with the installation."

Silentium Air always sends its acoustic expert on site no matter how many times it has installed the product on a particular aircraft. Even with its kit installed on 25 Bombardier ultra-long-range Global Express aircraft, the company is always

on site at installation, and makes adjustments to maximise noise reduction.

Measuring noise Sound quality measurement has moved beyond decibel (dB) level and is now increasingly measured in speech interference level (SIL), which measures how effectively a passenger is able to hear another passenger talking. "The largest business jets delivering today, such as a Global XRS or a Gulfstream 550, will have SIL levels in the low 50s, and as the aircraft get smaller the SIL level typically gets higher," says Houseman. "Older business jets using older noise reduction materials can have noise levels as high as the 70s, and could potentially be carrying a lot more weight than needed, given the age of the noise reduction material and the condition it is in." Houseman says replacing older noise reduction material could result in a dual benefit for the owner – a much quieter and lighter aircraft.

"Today solutions exist that can significantly improve the cabin noise level," says Houseman. "Therefore next time you are in the market for a new or pre-owned aircraft or considering refurbishing your existing aircraft, put the cabin noise level you want on your wish list."

Silentium Air

Reader Enquiry No. 502

1. Soundproofing material installed in an aircraft's fuselage



swelltheranks

Flying Colours has acquired JetCorp Technical Services as part of its expansion efforts

When adding another company to the corporate family, a business must always feel comfortable with the assets and skilled technicians they are forging a partnership with. This was very evident to Canada-based Flying Colours when it acquired JetCorp Technical Services earlier this year as part of its efforts to expand Flying Colours into a mainstream brand in the aircraft completions and maintenance industry.

JetCorp, headquartered in St Louis, Missouri, USA, provides a number of similar services to its now parent company, including completions, maintenance, refurbishment, and avionics. "The two companies' capabilities and strengths complement each other extremely well, directly enhancing our ability to provide high quality, comprehensive service offerings to our customers," says John Gillespie, president of Flying Colours.

The key reason for the acquisition was that Flying Colours now has skilled technicians at two distinct locations, and the two entities can share knowledge, allowing both to flourish.

The acquisition of JetCorp also greatly enhances Flying Colours' MRO profile. JetCorp is an FAA class III and IV Part 145 repair station, and over the past 25 years has established a global reputation for heavy maintenance, routine inspections, avionics, structural repair and overhaul, component services, and engine line



services. This coincides with its completions and refurbishment capabilities.

Both companies hold Supplemental Type certificates for executive interiors in CRJ 200/CH 850 aircraft. As part of this partnership JetCorp will also install an auxiliary fuel system from Flying Colours in its future CRJ executive conversions.

Green completions Recently Flying Colours has won numerous completion contracts for green Challenger 850 business jets, and intends to take advantage of its new partnership on these projects. "The ability to complete aircraft at both facilities is going to be a key factor in our growth into green completions," says Sean Gillespie,

sales director for Flying Colours. The company has established industry veteran Danny Farnham as president of JetCorp, saying that he has an immense amount of experience on all types of green and pre-owned aircraft completions and refurbishments.

"The age-old philosophy that a successful corporation is defined by the sum of its parts couldn't be more accurate for Flying Colours," says Sean Gillespie. The addition of JetCorp to the Flying Colours team puts it in a favourable position as it continues to expand its services to a global market across the aviation industry.

Flying Colours Corp Reader Enquiry No. 503

2



1. JetCorp's Renaissance series CRJ

2. A CRJ ExecLiner completion by Flying Colours



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

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D-28865 Lilienthal
Tel: +49 4298 466132
Fax: +49 4298 466136

fancythree

Airbus Corporate Jet Centre has outfitted a VIP cabin for an Airbus Corporate Jet – its third ACJ Family delivery

1. An Airbus ACJ
- 2-3. ACJC's first completion, an A320 finished in April 2008

Airbus Corporate Jet Centre (ACJC) has successfully completed its third VIP cabin for an Airbus Corporate Jet (ACJ) Family aircraft.

The ACJ cabin, which is for a private customer who wishes the interior not to be shown, has an elegant arrangement of VIP features, including a lounge, rest area and bathroom. It seats just over 30 VIPs, guests and support staff.

Designed for the customer by Studio E/motions, the cabin makes full use of the space afforded by the ACJ's wide and tall cabin. The cabin, outfitted by ACJC, features electrically operated seats and tables, new touch-screen technology, and advanced passenger entertainment and communications – including satellite communications, audio/video on demand and WiFi internet.

Other equipment on board includes a tail-mounted camera that passengers can use to keep track of their flight, the latest mood lighting, and an anti-intrusion system to ensure security when the aircraft is parked on the ground.

This ACJ will be operated on behalf of the customer by Comlux The Aviation Group.

ACJC has now booked a total of 10 contracts for cabin outfitting, from customers in Asia, Europe and the Middle East, the latest of which

calls for a delivery in 2011. The company attributes its success to a strong technical background, a highly skilled workforce that had already outfitted more than a dozen VIP cabins before its three latest ones at ACJC, and access to upgraded facilities at the Toulouse site of parent company Airbus.

ACJC has invested around €9 million in expanding its facility with nose-docks that provide same-level access to two aircraft in completion, additional office space and a dedicated workshop. The 9,500m² hangar can accommodate up to four ACJ family aircraft, all with easy access from offices provided for customers on site. ACJC also has a sample room, where customers can get a feel for the colours and materials used to outfit their aircraft.

Dedicated to providing quality cabin outfitting and associated services for ACJ Family aircraft, the Airbus Corporate Jet Centre is backed by the full resources of both its shareholders – aircraft manufacturer Airbus, and VIP aircraft operation and cabin design expert Comlux.

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

Airbus Corporate Jet Centre

Reader Enquiry No. 504



Airbus S.A.S 2008/exkm company/P. Masclet

businessasusual

A configurable suite of communications applications can turn an aircraft cabin into a globally connected boardroom

In the past, the amount of business an executive could conduct in the air was limited by an aircraft's airborne telephone. TrueNorth has developed its OpenCabin communications system to overcome these limitations and remove the need for heavy single-purpose hardware boxes.

Installed on TrueNorth's Simphone (pronounced 'symphony') airborne telephone system, OpenCabin is a configurable suite of applications that lets the aircraft owner add or remove capabilities to best suit their needs. For example, an executive could use the flight time to check internet reviews on the company's latest product, catch up on email, hold a conference call with financial analysts, monitor the company's stock price, review faxes about a pending acquisition, upload a new iPhone application, text, and send a Twitter tweet to reschedule an upcoming staff meeting.

Voice calls Traditional hardware systems offer satcom or terrestrial voice links. "However in most cases, equipment is either antiquated or adapted from other applications (e.g. car handsets), and limited to a single purpose. Voice quality is poor and service interruptions are common," says Mark van Berkel, president and CEO of TrueNorth Avionics.

OpenCabin uses TrueNorth's menu-driven handsets, which are designed for aviation use. Incorporating ClearCall, a voice-enhancing application, OpenCabin connects the aircraft to an IP-based office telephone system via its airborne voice over internet protocol (VoIP) application. Thus passengers have direct access to office voicemail, directory, extensions and other phone services.

The OpenCabin system works with Iridium and Inmarsat's Classic Aero, Swift64 and SwiftBroadband voice services.

Internet connectivity "In terms of internet connectivity, current satcom options abound, though most systems don't integrate all the necessary broadband router, networking, Ethernet and WiFi links with your phone hardware," says van Berkel. Also not all systems work globally.

OpenCabin provides a fully integrated suite of broadband applications, including advanced data routing, data acceleration, data compression and

VPN interfacing. Open Cabin delivers global ramp-to-ceiling internet coverage from take-off through touchdown on any Ethernet- or WiFi-enabled device.

Smartphone data over Iridium Another trend is for passengers to use their smartphones (such as BlackBerrys or iPhones) to send and receive email and text messages via Iridium. "However, current implementation is cumbersome, requiring additional aircraft equipment and, in some cases, smartphone modification" says van Berkel.

OpenCabin includes a 'Smarter' software application, compatible with all WiFi smartphones. Passengers can simply connect to the OpenCabin WiFi hotspot and begin texting, with no smartphone modifications required.

In short, OpenCabin is designed to enable executives to carry on with their work as if it was just another day in the office. "Using software applications to provide voice, data, fax, internet, email, real-time datalink, WiFi, smartphone connectivity and network links, OpenCabin makes telecom convergence a reality, turning the aircraft into a globally connected boardroom," says van Berkel.

TrueNorth Avionics

Reader Enquiry No. 505

1. OpenCabin is a suite of communications applications



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Letting natural light into the cabin can increase a passenger's enjoyment of the flight

Aerospace Technologies Group, Inc (ATG) has created the Powertech Shade System (Powertech) to address an area of the aircraft cabin interior that it says has seen little advancement in the last 20 years. While there have been jumps forward with in-flight entertainment (IFE), communication systems, and the ability to control ambient cabin lighting, ATG says that virtually nothing has been done to address a key area directly in the passenger's line of sight – the cabin windows.

"With the advent of advanced lighting systems, less emphasis was placed on natural light as a primary source of illumination. Aircraft windows became smaller and less important," says Linna Falzone, vice president, corporate aircraft sales at ATG. "Though huge advancements with artificial lighting have been made in recent years, the harsh reality is that it is still artificial light. Until recently, the benefits of natural light were based largely on anecdotal evidence but studies conducted in the last few years now offer hard data that aircraft designers and OEMs can no longer ignore."

As nature intended ATG says that natural light not only makes interiors more attractive to passengers, but also stimulates the brain to release serotonin, a chemical neurotransmitter that increases

feelings of wellbeing. The challenge is to balance providing natural light while blocking harsh direct sunlight, and also providing total darkness when needed. Incorporating two separate functions into a one product is ATG's answer.

Two in one Firstly, Powertech's pleated, light-filtering fabric provides natural lighting ambience, much like sheer curtains in homes. The product is designed to give the elegant and sophisticated aesthetic finish expected in high-end aircraft interiors, providing a pleasing ambient lighting feel while eliminating solar glare. This enables passengers to read or view IFE video monitors easily. Secondly, when total cabin darkness is required, passengers can

deploy Powertech's blackout pleated fabric. Passengers can control the shade easily at their seats from a single switch. Groups of shades, for example in a bedroom, can be controlled from a single location. Similarly, all shades in the aircraft can be controlled by the flight crew from a central location – a single command will open all shades for takeoff and landing, or close them when parking the aircraft. A lock-out feature ensures the shades remain in the crew-selected position.

ATG has also incorporated technology to protect interior surfaces from high levels of UV light. Special coatings are employed



in Powertech's lenses to filter the UV rays, while still allowing in the sun's natural light for passengers to enjoy.

ATG uses technologies such as laser digitising, fused deposition modelling (FDM) rapid prototyping, and 3D computer-aided design to allow it to offer a rapid design-to-market timeframe.

"Though artificial light will always be needed, aircraft interior designers and OEMs should not ignore the benefits resulting from passenger exposure to natural light," says Falzone.

ATG

Reader Enquiry No. 506

1-2. Powertech allows passengers to control the amount of sunlight coming into the cabin



highwire

The issues to consider in building a network in the sky – and the backbone to support it

Avionics and in-flight entertainment (IFE) systems are driving the need for networks that mimic ground-based Ethernet systems. Like home and work-based systems, data transmission requirements continue to increase as systems require more and more bandwidth to support burgeoning application requirements. Thermax, a wire and cable manufacturer, says this has driven the need for continued wire and cable improvements, as well as multiple cable types to support various applications.

The first key requirement of an aircraft-grade Ethernet-based wire system is that it must transmit data at the desired protocol speeds. It must also be very durable and constructed with materials that meet industry standards, supporting the rigours of the aerospace environment (temperature extremes and vibration). Lastly, it must be reliable, ideally over a period of many years. As if this was not enough, while the cable may meet all of these requirements, it must also be very light in weight. To further challenge design engineers, different applications require different types of cable.

"We have experienced a need to increase data transmission requirements a thousand fold in approximately 10 short years," says Don Slutz, senior product manager at Thermax. Looking back to the implementation of the first aircraft database systems, engineers worked with Mil Standard 1553, which had a data rate of 1Mps. This was the industry standard for many years until it slowly evolved to an Ethernet-based protocol for higher data rates. Initial implementations consisted of 10Mps. Even as the initial systems were being implemented in the late 1990s, the trend began moving towards 100Mps, a ten-fold increase. "Today, most applications are based on the 1,000 Base-T standard, which requires a 1Gps data rate.

1-2. Thermax's products help to support myriad IFE applications

Future applications will require 10Gps and much of the cable being installed today should be capable of operating at this speed," says Slutz.

There are several issues to consider when designing an aerospace-grade Ethernet cable. The first is the aerospace environment, however, there are several obstacles to overcome in attempting to translate the transmission characteristics of commercial-grade cable to an aerospace environment. "The most important of these obstacles is the need to use a stranded conductor to survive the high vibrations encountered in flight," says Slutz. "Solid copper conductors do not fare well in the aerospace environment, so engineers had to implement a stranded conductor without sacrificing electrical properties. The result is a product that can meet and exceed 1,000 Base-T requirements to distances close to 100m. Today's systems are now typically based on the highly capable 1,000 Base-T standards transmission rate. In addition, these cables are capable, in many cases, of meeting many 10G requirements as well."

But environment is not the only issue. In the sky, unlike in homes and offices, one

design does not fit all applications. "For many applications, a cable that is highly electrically shielded and durably jacketed is desired. But, for other applications such as in IFE seat applications, where routing through tight spaces is required, a much smaller, flexible version is needed," says Slutz. Thermax and other manufacturers have responded with a lightweight, flexible standard design.

A final consideration is customisation. "While standard cable designs fit most needs of the aerospace industry, there will almost always be a need for customisation. Wire and cable manufacturers' goal should be not only to create standard cables, but also to create building blocks that can be customised for a specific requirement," says Slutz. In many cases, it is desirable to combine several functions into a single cable – USB, Firewire (IEEE 1394), docking for portable media players, and power and ground lines. "Whatever the application, wire and cable manufacturers have the products available to build a network in the sky," says Slutz.

Thermax

Reader Enquiry No. 507



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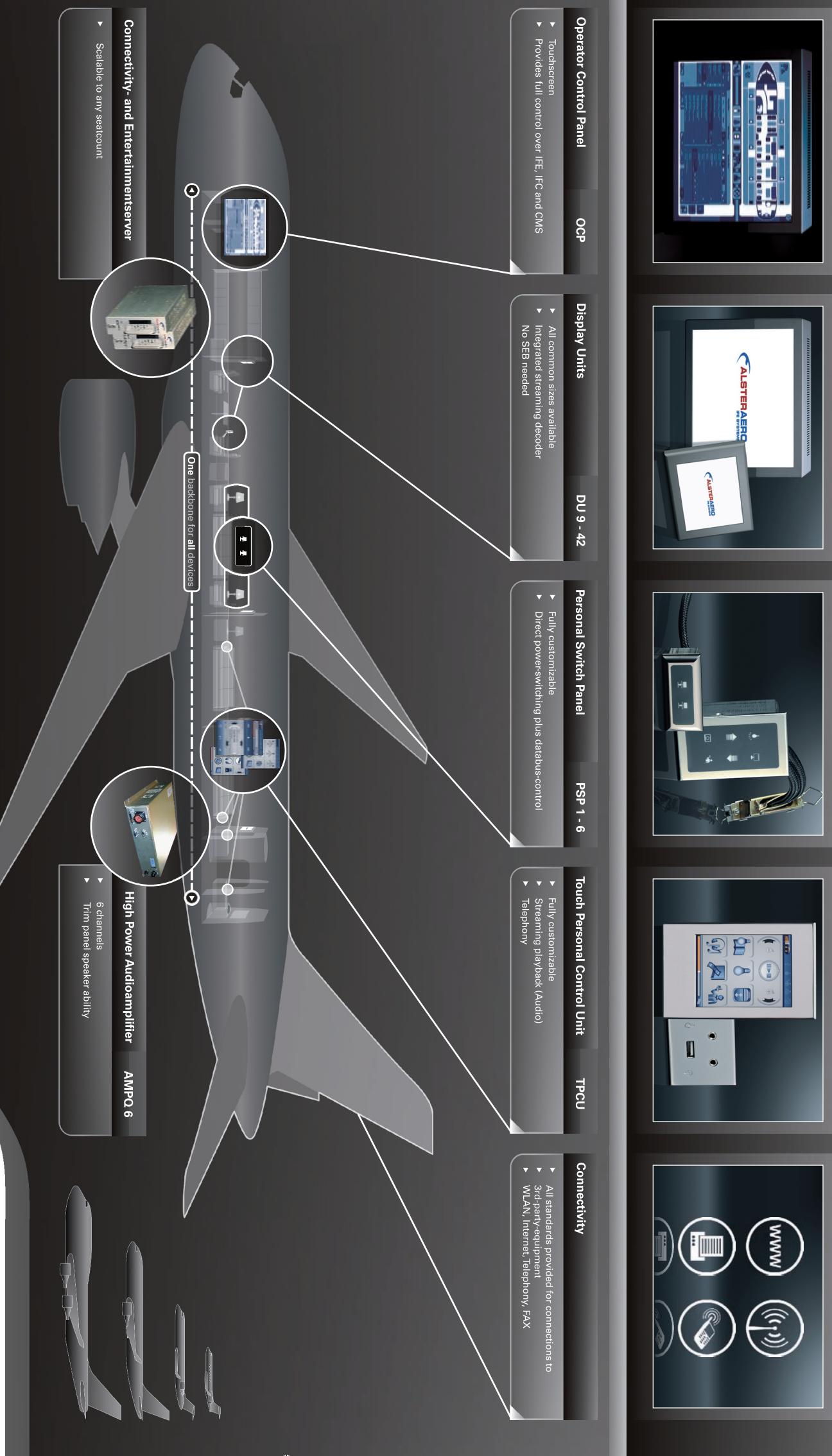
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builttoscale

AlsterAero has expanded its capacity to produce its scalable, customisable system that allows passengers to control all aspects of in-flight entertainment and cabin management

AlsterAero has moved its facilities – and now has new offices, a laboratory, engineering and production units in one place, in the heart of Hamburg, near the Elbbrücken. It has also doubled its team to support its business developing fully integrated in-flight entertainment (IFE), cabin connectivity and cabin management systems (CMS).

The system, which can be configured according to each customer's requirements, is designed to maximise entertainment in flight. Passengers can manage individual video or audio playlists, dim separate lights, control cabin humidifiers, open and close window shades, check emails and make phone calls, all from a touch-screen personal control unit (TPCU) installed at each seat. Flight attendants can also control the cabin environment from an operator control panel (OCP).

AlsterAero has also developed a digital amplifier to provide AC3 surround sound through six channels in connection with loudspeakers or exciter speakers, which are placed behind the sidewall panels. The amplifier is designed for high-power audio with six 100W RMS.

Simple but effective The company says that the system's main advantages are its easy installation, flexibility, and intuitive usage. With one screen, numerous heavy-weight and

confusing items of equipment are made obsolete. AlsterAero has designed each part of the system hardware to save weight, to save space and to be easy to install, maintain, and remove. The wiring also is designed to be as short and as simple as possible.

AlsterAero's standard system configuration is designed for flexibility, and can be scaled from a six-passenger aircraft to single-aisle VIP aircraft. The company also plans to extend the system for retrofit use in twin-aisle aircraft.

Pick your own The company offers a large degree of customisation – and allows customers to choose the configuration that suits them best. Another example of this design freedom is the range of finishes that are available for the IFE monitor shroud and housing. AlsterAero offers a 42in display with super-flat housing (so it can be integrated flush in a standard partition), which can be finished in polished nickel, chrome, wood veneer, or even gold.

The company also pledges to provide detailed and personalised support during the design and production stages, as well as after installation. Besides providing clear and detailed manuals, it can, on request, provide training on how to use the system.

AlsterAero

Reader Enquiry No. 508



1



2



3



4

1. An audio jack panel
2. Flight attendants can control the cabin environment through the OCP
3. A personal switch panel
4. A touch-screen personal control unit, installed at each seat

outofafrica

How a small start-up company got the profile boost it needed to send its antenna business sky high

At the end of the last century, a small company was established in Cape Town, South Africa, to manufacture antennas for Inmarsat satcom systems. "Omnipless Manufacturing (today operating as Cobham SATCOM Cape Town) burst onto the scene with an intermediate-gain antenna (IGA) for Aero-I and Mini-M systems that was significantly smaller and lighter than anything available at the time," says Willem Kasselman, marketing director at the company. "The antenna was installed on more than 1,500 aircraft before Iridium quelled the expansion of Aero-I and Mini-M systems."

Still available today, the antenna has been given a new life by SwiftBroadband (SBB) Class 7. It has been approved for SBB, and existing Aero-I and Mini-M users can upgrade to Class 7 SBB without having to replace the antenna.

The antenna's success did not go unnoticed and in 2001 Cobham, a British aerospace company, acquired Omnipless. "Cobham provides industry pedigree and profile, removing normal industry fears of doing business with small start-up companies," says Kasselman.

In 2003, a phased-array high-gain antenna was presented to the industry. "The HGA-7000 was so small compared with existing industry standards that many questioned whether this

was even possible," says Kasselman. "Not only did thorough assessment by several OEMs confirm the antenna's performance claims, but it became the basis for ARINC 781 performance and mechanical recommendations. Today, all serious HGA manufacturers either offer a product of similar size or are attempting to develop something similar."

In the same period, Cobham SATCOM Cape Town also produced the mechanically steered HGA-6000, which was adopted by Gulfstream. "With more than 300 of these antennas deployed, it surpassed the wildest mean time between failure (MTBF) expectations for mechanically steered antennas, and was recognised by Gulfstream's supplier of the year accolade, awarded for three consecutive years," says Kasselman. The antenna is also used by Dassault and other manufacturers that prefer mechanically steered tail-mountable antennas.

The HGA-7001 (an ARINC 781 compliant derivative of the HGA-7000), which is also available for retrofit, has been selected by Boeing and Airbus for air transport aircraft. Cobham SATCOM Cape Town says that a Boeing 737 TSA is in process

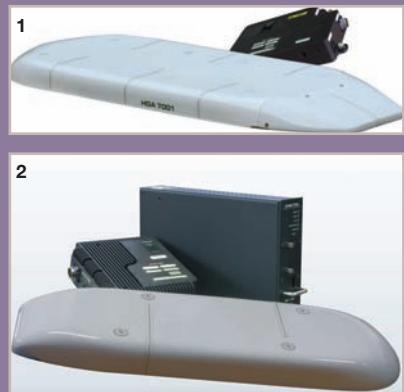
"The HGA-7001 not only offers advantages in weight and size, but was the first Inmarsat product to receive general airworthiness approval under TSO-C132," says Kasselman. The antenna also complies with the Inmarsat SBB seventh order PIM interference suppression target.

Cobham SATCOM Cape Town's next product release (later this year) will be the IGA 5001, which it is billing as 'the world's smallest IGA phased array'. The company also produces Inmarsat radios, allowing a range of cabin communication options. The new SBB radios received Inmarsat type approval with deliveries beginning in May. The SBB solutions include single- and dual-channel options, designed with compactness and performance as priorities.

Both the Swift64 and SBB systems allow connectivity for a number of communication solutions. "From fax to encrypted audio, and SMS to broadband data, all office in the sky applications can be connected to terrestrial systems," says Kasselman. "Applications such as email, VPN, Skype, internet access and FTP are all supported."

Cobham SATCOM Cape Town Reader Enquiry No. 509

1. HGA-7001 ARINC 781 high-gain antenna
2. Single-channel SwiftBroadband system
3. Multichannel SwiftBroadband system



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sweetdreams

Two companies are partnering to offer a sumptuous bed finished with luxurious linen for the ultimate sleep in the clouds

Dahlgren Duck & Associates and JetBed have partnered to create a luxury bed complete with custom-made Italian bed linen, designed to offer the ultimate sleeping experience in the sky.

The JetBed product is a portable bed that is suitable for private jets such as Cessnas, Bombardier Challengers and Globals, Dassault Falcons, and Gulfstreams. The original concept for JetBed founder Gary Bosstick was to enable the owners of jets without berthable seats to be able to stretch out and rest during long flights. JetBed is a completely horizontal bed that fits between two seats and on top of the two seat cushions. It is designed to be comfortable yet firm, and easy to install – generally taking less than 90 seconds to inflate. Each model comes in its own carrying case and includes the necessary accessories. When not in use JetBed shrinks by vacuuming down to a size of less than 33 x 24 x 6in, with the largest model weighing less than 20 lbs.

JetBed's custom-sized bed linens are made of 100% pure Egyptian combed cotton with a satin finish. These Italian-made linens are combined with luxurious down pillows and comforters provided by Dahlgren Duck.

Dahlgren Duck has supplied luxury bed, bath and table linens for private jet aviation, yachting, and palaces since 1983. Its list of previous clients is extensive, and includes the Pope, Michael Jackson, the Sultan of Brunei and Oprah Winfrey.

Dahlgren Duck designs its ultra-fine throw blankets for comfort and warmth. With quality levels beginning with a micro-processed European Beachwood to cashmere/silk/wool blends, standard cashmere, luxury cashmere, 100% sheared beaver fur, or cashmere trimmed on all sides with natural fox fur, there is a price point and quality to cover every preference.

"Utilising its long relationships with elite manufacturers in Monaco, Germany and Canada, Dahlgren Duck's throws are made from the finest natural materials and are woven using techniques that have been passed along through the ages," says Allan Duck, one of the co-founders of Dahlgren Duck. "Choosing from a pallet of rainbow colours, the beauty of the throw's native materials can dramatically complement the aircraft cabin's interior décor. Whether one's preference is a solid colour trimmed in silk satin or ultra suede, a jacquard two-tone colour blend or a colourful printed pattern, there is an answer for everyone's sensual and visual appeal."

To store these luxurious throws Dahlgren Duck offers ostrich leather cases, which are custom produced by the company's South African manufacturer of leather goods and available in numerous colours. The cases can be personalised with an embossed coat of arms, crest or other mark.

Dahlgren Duck emphasises the importance of understanding not only the functionality of linens, but also the unique



parameters in business aviation (such as limited galley space and engineering timetables for cabinetry fittings) that impact the design of the other galley equipment that the company supplies, which includes china, crystal, flatware and trolleys.

Dahlgren Duck

Reader Enquiry No. 510



1. Examples of custom embroideries
2. A customised blanket cover in ostrich leather
3. Cashmere throws
4. The JetBed

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lighten the load

Tapis has designed its Ultraleather faux leather product to help aviation customers save weight

Tapis, which specialises in aviation fabrics, believes that in the current global economic climate, business jet operators need products that offer it all – durability, availability, a light weight, and value.

Perhaps of special importance to customers looking to cut fuel costs is the issue of weight, and Tapis says that while genuine leather weighs 700-800g/m and most imitation leather products weigh 370-400g/m, its Ultraleather faux leather product weighs just 310g/m.

Ultraleather is available in various colours, patterns and textures, including Contour, a multi-stretch fabric that extends around curves for a tight, seamless fit. Then there is the new Promessa variant, which was created for high-wear use, for example for seats on regional jets and in economy class, and for cabin crew.

Broad choice Tapis also offers a range of other fabrics, including TapiSuede and Ultrasuede – suede products that are available in a range of textures. The Ultrasuede Embossed collection includes three embossed patterns that the company says satisfy aesthetic demands without sacrificing performance. TapiSuede Strie, the latest in a long line of TapiSuede variants, is a patterned suede with the look and feel of a fine-wale corduroy. Customers can also take advantage of unlimited printing options on Ultrasuede and

TapiSuede with the company's Optique printing programme.

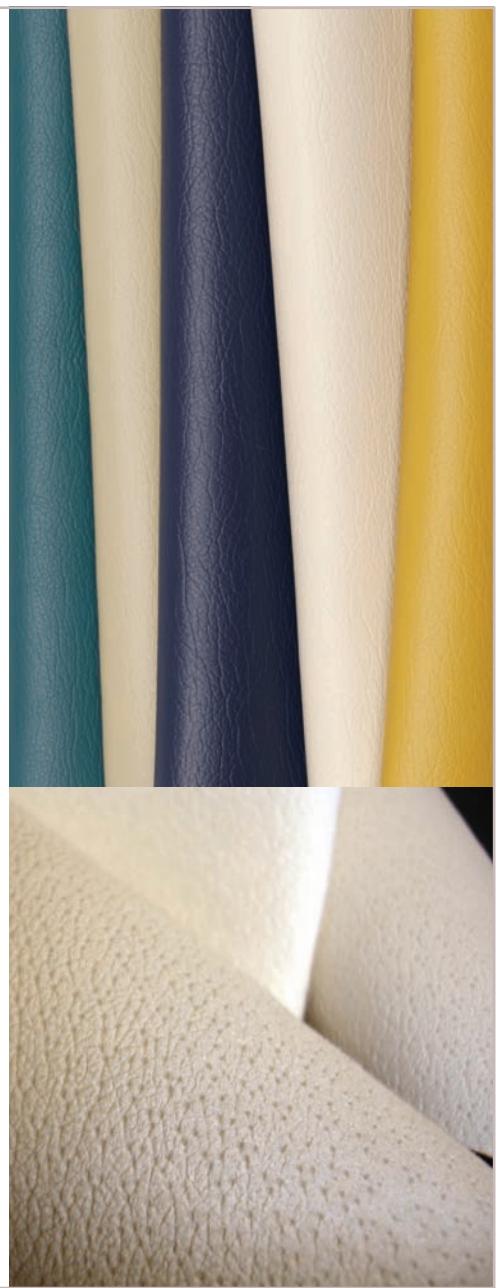
Despite the economy, the company has avoided cutting its inventory – and has maintained an extensive range in stock to facilitate quick turn-around. It also offers to customise any fabric to match any colour a customer should choose.

Quality control The Tapis team prides itself on quality control, including colour matching, product consistency and flame-retardancy expertise. Its products are designed to comply with FAA flammability requirements for many applications on commercial, VIP and corporate aircraft. These applications include seating, headliners, bulkheads, upholstery, sidewalls, headrests, trim and more.

The company was founded in 1977 by Al Caputo, and is still family owned – run by Caputo's daughter Karen (now president) and son Bob. As well as recently achieving ISO 9001:2000 (w/o design) certification for its operations, the company is also a qualified vendor for Bombardier, Falcon, Gulfstream, Hawker and Lear. Tapis's fabrics can be found in VIP and regional aircraft around the world, as well as on airlines including Singapore Airlines, Japan Airlines, ExpressJet, Emirates, Qantas, Korean Airlines, Etihad and more.

Tapis

Reader Enquiry No. 511



1. Ultraleather
2. Galaxy, from the Ultrasuede Embossed collection
3. A Challenger 605 interior



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startup



RAMM Aerospace has set up business in Montreal with the aim of becoming recognised as a turnkey cabinetry shop for business aircraft

A new company is aiming to become recognised as a turnkey solution for business aircraft interiors. Set up in March 2008, RAMM Aerospace began operating in November 2008 and is now in the process of acquiring AS 9100 and ISO 9001 certification.

"We realised that the big problem (at that time) was that all the completions centres were full and many were facing delivery delays and backlogs," says Mario Calcagni, vice president of the company. "This is where we saw ourselves fitting in; we wanted to offer full service turnkey solutions (engineering, manufacturing, finishing and upholstery) for our customers."

With the ability to service a global market, RAMM Aerospace chose Montreal, Canada, as the location for its 21,000ft² facility with manufacturing, finishing and upholstery divisions. "Since Montreal is the second largest aerospace hub in North America, it is well recognised for the depth and breadth of its experienced workforce," says Calcagni. "Our partners and staff are all experienced tradespeople that bring many years of quality craftsmanship to the operation. There is no limit to what we can build; we can produce whatever our customers can envision."

The company's president, Andrew Ehrenspurger, has 20 years of experience in

traditional cabinetry and has worked at all levels of production in aircraft interior manufacturing for the past 10 years. Calcagni himself has also worked for 20 years in the cabinetry trade, as well as 10 years in the aircraft industry. Together, Ehrenspurger and Calcagni run the day-to-day manufacturing operations at the facility.

"RAMM Aerospace is a forward-thinking company that continually looks for new products and process improvements to enhance our product quality. We have an aggressive research and development programme focused on bringing green technologies and products into our interiors process. We are able to handle anything from small modifications and refurbishments all the way to full wide-body interiors. At RAMM Aerospace, our employees play an integral part of our operations; their continual input is a key to our success," says Ehrenspurger.

Market expansion | The company is even eyeing up the possibility of expansion both physically (it has more space available at its current location) and into other markets. "Once we have established ourselves here in Montreal, looking at overseas markets is not out of the realm of possibility," says Calcagni. "Europe and the Middle East – where the vast majority of business aircraft sales have increasingly been going over the last few years – will all be due for refurbishments and/or new cabinetry.

The company is receiving a lot of orders for refurbishment at the moment. "Given the current state of decline in new business aircraft sales, the refurbishment market has now become a central focus for our operations. At RAMM Aerospace we focus on what we do best. We offer our customers quality, on-time delivery and support for all their interior needs. By focusing on these key items, RAMM Aerospace will continue its success to be a leading supplier of custom aircraft interior solutions," says Calcagni.

RAMM Aerospace

Reader Enquiry No. 512

1-2. Workshops at
RAMM
Aerospace's
Montreal facility

3. The company is
working on an
A320 mock-up

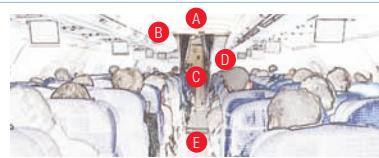
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survive and thrive

Aeristo is defying the state of the global economy by focusing more than ever on development

On 1 January 2010, aviation leather specialist Aeristo will celebrate the 20th anniversary of its incorporation. Despite the current state of the global economy, the company says business remains strong. And it's putting its money where its mouth is by opening a new facility, launching a new leather product and investing in inventory.

"Over the years we have developed a solid customer base – in North America and abroad – of over 400 aviation businesses who understand and appreciate the long-term benefits of our products and the ease of working with them," says Christian Schmidt, president of Aeristo. "In addition to introducing a new product in a fragile economy and backing it up with substantial investment in inventory, we are in the middle of expanding our business to a 50,000ft² facility less than 10 minutes away from Dallas/Fort Worth International Airport's terminals [in Texas, USA] – a multimillion dollar investment in our company's future in the aviation industry."

The new product is 'Belvedair', a luxury leather made in Italy and named after Vienna's famous Belvedere Castle. Schmidt says the name reflects the company's focus on traditional leather-making techniques – which are combined with the state-of-the-art processes used by Aeristo to ensure its products meet stringent aircraft specifications.

Rather than using top coats and impregnations to improve its leathers' durability, Aeristo has always worked closely with a few carefully selected

tanneries early on in the production process to ensure its leathers meet flame-retardancy specifications from the outset. "This eliminates the need for topical application of flame-retarding chemicals and results in softer, lighter weight, better looking and performing leathers," says Schmidt.

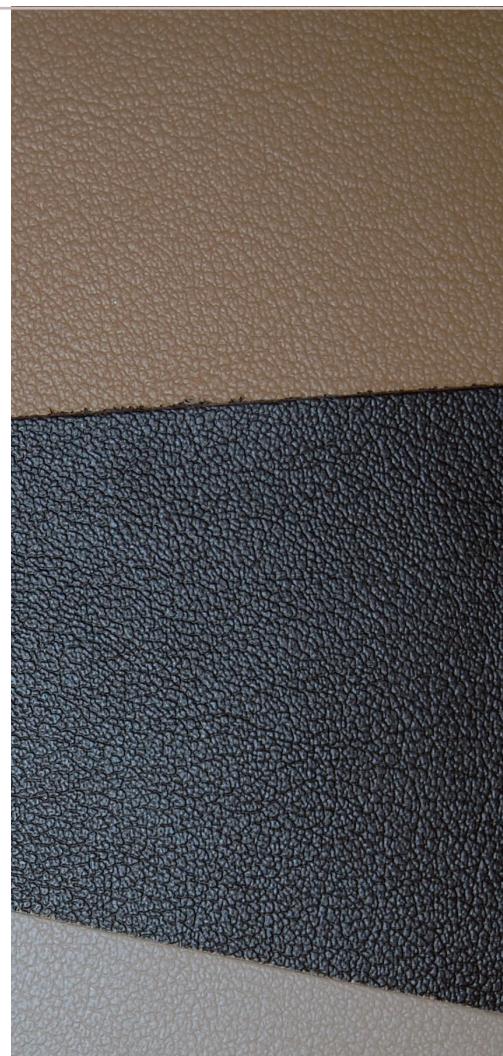
Aeristo spent around eight months researching and developing Belvedair, drawing on the company's market knowledge and production technology, and enlisting hands-on input from aircraft interior designers.

Starting out with top-quality South German bull hides selected for their tight grain structure and cutting yield factors, Aeristo has built a collection of 15 designer colours based on technical principles honed in creating its Aeronappa, Volero and Aerolino brands.

Belvedair has a silky finish and subtle satin sheen to bring out the rich character of the natural full grain leather. It is available in a range of colours that reflect the current trend towards natural, warm, yet clean hues, and that lend themselves to the creation of soothing combinations across the range. Custom colours will also be available, produced to customer specifications, as well as a leather maintenance kit developed and tested by Aeristo specifically for its products.

Aeristo

Reader Enquiry No. 513



1. Belvedair has a soft satin sheen
2. Development of Aeristo's new facility is currently underway
3. Belvedair leather is available in a range of natural tones

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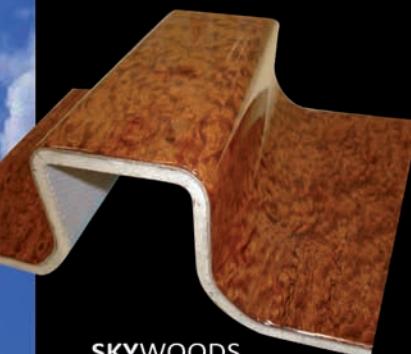


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goodwood

Skywoods has developed a new cabinetry veneer technology that combines the aesthetic quality of wood with the fire-retardancy of aluminium



1



2

Skywoods manufactures veneers for luxury VIP aircraft. Always on the lookout for beautiful and efficient products, it has invented a new high-tech process to create veneer that meets the stringent weight regulations, material flexibility and fire-retardant requirements of today's VIP aircraft completions.

The company came up with a process to replace the centre layer of crossed-veneer with a thin aluminium sheet, sandwiched between the face veneer and the backing veneer. The aim of this is to reduce weight, increase flexibility, and eliminate the need for fire-retardant salts. This process was developed exclusively for aircraft cabin completions and holds an international patent. "Timing was excellent as completion centres are looking for a salt-free, fire-retardant wood cabinetry solution," says François Morin, vice president of Skywoods.

Product testing Skywoods performed a variety of tests on the product, including an advanced accelerated ageing test on the material bonding. Extreme temperatures (-40°C to +80°C) were applied alternately every two weeks. Special low temperature tests (-60°C) were also conducted for the Russian market. Combined with the polyurethane finishing process, the aluminium sheet helped the veneer to pass the flammability test, as it dissipates the heat and creates a

natural retardant during the 60-second vertical test. Skywoods says the aluminium also vastly reduces shrinkage in the varnish process, resulting in a longer aesthetic life for the veneer. As the aluminium sheet has no grain direction, a very tight radii can be formed in certain species of wood, meaning that no form moulds are required to bend the veneer for cabinetry radii. The thickness of the product is about 1.2 mm (0.048 in).

For added flexibility, Skywoods has created Leatherwood. This laminate is created using microcracking technology to soften the material. Leatherwood can be bent to radii as tight as 10mm without breaking. Skywoods says that Leatherwood is comparable to paper-core flexible veneers on the market, but unlike them, it complies with 60-second vertical burn tests, because of its embedded aluminium sheet.

Skywoods laminates have been installed on many aircraft (including several single-aisle Airbus aircraft and Russian Tupolevs), and are gaining even greater appreciation among head-of-state project managers. Skywoods also provides marquetry with high-precision patterns.

"Skywoods is constantly coming up with new and unique high-end laminates," says Morin. "Innovation truly is the key to success."

Skywoods

Reader Enquiry No. 514



3

1. A table finished with Skywood's Bubinga veneer
2. Macassar Ebony installed on a side ledge
3. Multiple veneers can be combined for custom designs



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The SACS Aerospace Group specialises in the manufacture and development of fastening and connecting technologies. Its product range includes standard parts, latches, struts, tie-rods, special mechanisms, business jet hardware and equipment such as partition door and table mechanisms, cup holders, armrests, electronic flight book holders and so on.

The SACS Aerospace Group was formed in 2002 when SACS GmbH and Boysen GmbH & Co KG merged. Boysen, based in Munich, Germany, distributes metric and

unified fasteners for the aerospace industry. Boysen holds over 12,000 different parts in stock, and also offers an aircraft on ground (AOG) service. Its main products are standard hardware including DIN, LN, TAN, PAN, CAN, SON, DOLN, MBBN, NSA, ABS, ASNA, ASNE, DAN, NAS, MS, AN and HST.

The group holds certifications including DIN EN 9100, OASIS, QSF-C, EASA-21G, and EASA-145.

SACS Aerospace Group

Reader Enquiry No. 515

builttoorder

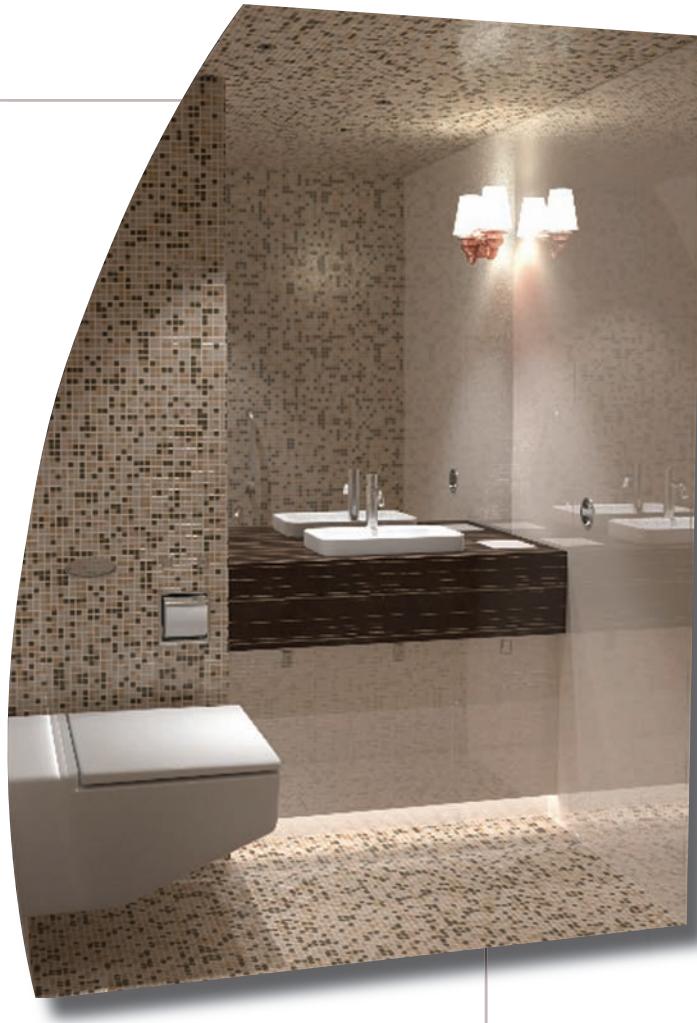
New York-based Air Cabin Trading Company works with designers and their clients to bring custom items to fruition.

One of the company's specialities is interior wall panels that reflect light and colour, while offering durability. These panels include the Jet Mirror and Jet Tile products, which are designed to enhance the look of galleys, lavatories and entryways. Hand manufactured to match any colour, the Jet Tile can be finished to resemble any mosaic or tile pattern, according to customers' wishes. Air Cabin Trading Company says its polycarbonate panels meet and surpass industry standards, and can be recycled.

As well as wall panels, the company also creates bespoke pieces such as washbasins, vases, and lighting. "We meet the demands of innovative design ideas, reinventing interior lighting, vanities and metal extrusions," says Angielina Reyes, president of the company. "Air Cabin Trading Company is tireless in its never-ending quest for the new use of lightweight materials."

Air Cabin Trading Company

Reader Enquiry No. 516



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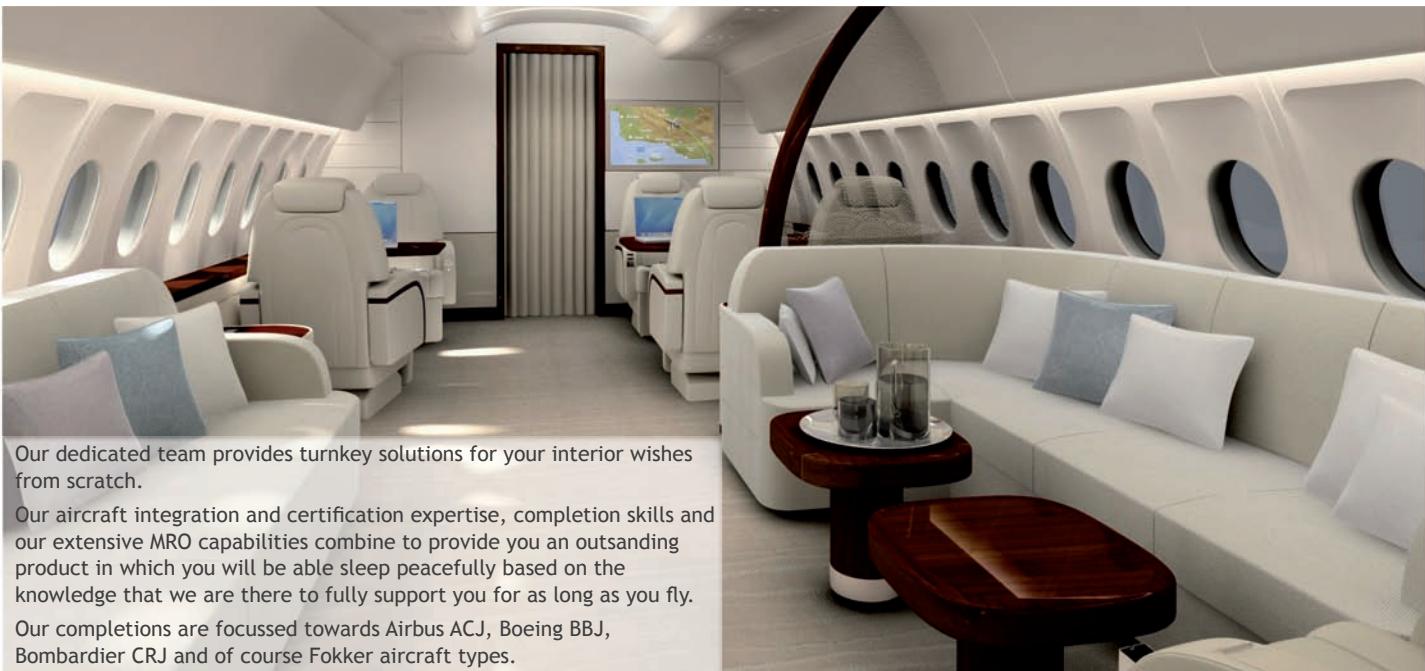
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As an Airbus Approved and Boeing recommended outfitting company, Fokker Aircraft Services has, in addition to many Fokker aircraft, completed A318, A319 and A320 aircraft, along with the first CRJ 700 VIP conversion.

The company has a dedicated team to support the customer throughout the lifecycle of the aircraft, and MRO facilities that support customers in all aspects of aircraft design,

installation and in-service support. It also provides OEM-like support manuals with each aircraft, so that its customers' technicians can quickly identify issues and resolve them.

"All in all, Fokker Aircraft Services is a total solution provider with a unique heritage of over 90 years in aviation, with a growing reputation in a prestigious market for exceptional customers who themselves contribute to drive today's global economies," says Stephen Hands, vice president of marketing and sales at Fokker Aircraft Services.

Fokker Aircraft Services

Reader Enquiry No. 517

spring forward

Responding to customer requests, Saint Louis Designs Inc is developing concealed hinges with an internal spring force to add to its cabin hardware line.

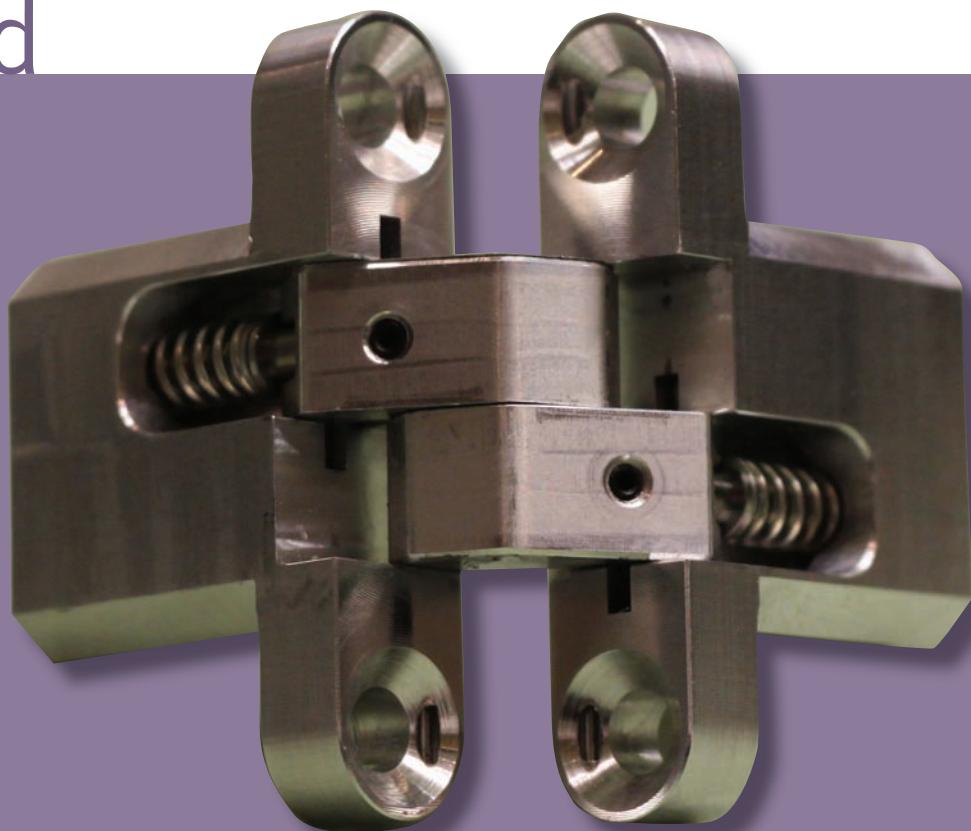
Designed to reduce potential damage to side ledge lid veneers, the SH105-A-Open spring-hinge holds the lid open. Using a hex wrench, this hinge can be adjusted down to a desired opening from a maximum opening of 105°. Meanwhile the SH90-A-Close hinge opens to 105° and will self-close, a function ideal for doors located in an egress path. These hinges use a torsion spring and will only activate very lightweight panels. They are also gapped for use with a touch latch.

When a stronger force is required, the SH105-EX-A-Open hinge employs the use of two compression springs (4#) designed into the hinge body. The hinge pockets are sealed from the back to prevent potting compound from entering the hinge cavity. This hinge has the same range of adjustment.

The company says future developments will include similar but larger hinges with various opening options. Hinge components are precision-machined 7075-T6511 aluminium with a black anodised finish.

Saint Louis Designs Inc

Reader Enquiry No. 518



World Class Interiors



A large blue and white industrial building with multiple hangar doors open, revealing aircraft interiors. In the foreground, there are several smaller buildings and a paved area. Three inset images show the interior of a private jet cabin with beige leather seats and wooden paneling, a close-up of the cabin interior, and a view of the exterior of the King Aerospace facility.

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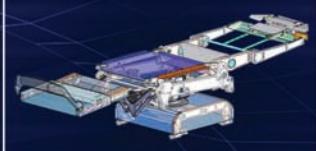
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masterclass

Aero Seating Technologies' 16g VIP aircraft seats have now been delivered to various completion centres across the globe. The company's next-generation 16g Master Class seat is loaded with features designed to ensure maximum comfort in any seating position, including vertical adjustment.

The seats can be used for a wide range of aircraft installations including wide- and narrow-body business jets and VVIP aircraft, and can also be customised to accommodate owner/operator requirements for comfort, style and ergonomics.

"Aero Seating Technologies is focused on providing every customer with the highest level of luxury through the integration of innovative designs, meticulous craftsmanship, comfort and style," says Pete Perera, vice president, business development at the company.

From its operations in Southern California, USA, the company provides VIP seating solutions to a wide range of customers worldwide, and has expertise gained from many years of developing crew and passenger seats.

Aero Seating Technologies

Reader Enquiry No. 519



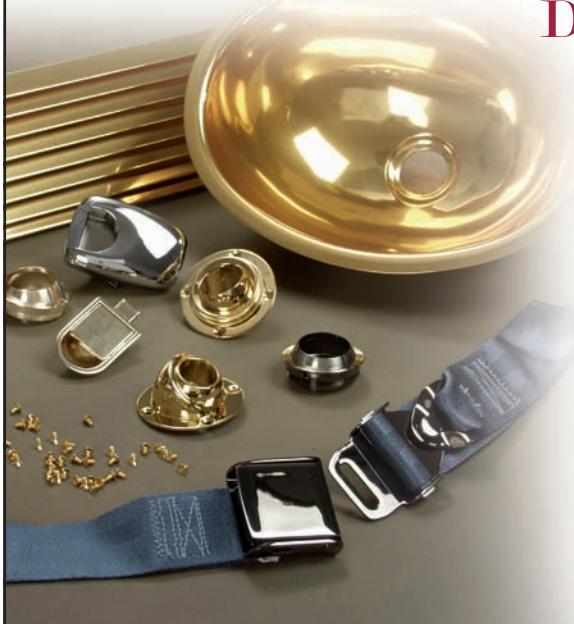
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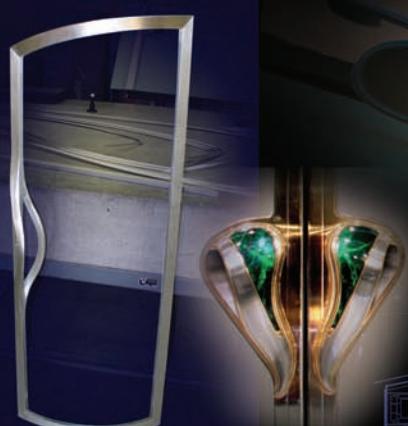
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BE-Technologies Ltd is located in the heart of Dallas, Texas, USA, and has become the source for many modification centres around the world, supplying solutions such as design concept engineering drawings and floorplans for VIP aircraft.

The company's 42,000ft² facility boasts advanced 3D scanning, design and manufacturing equipment – including nine three-axis computer numerical controlled (CNC) machines, two large five-axis machines, and an assortment of Faro equipment such as Faro Arm and 3D laser scanner, laser tracker and LS scanner. As well as having a 10,000ft² composite shop, two artistic designers and six engineers on site, the company maintains strong associations with renowned designers, cabinet shops and engineering firms, and is ISO certified and AS9100 compliant.

"But most of all, there has not been a part we have made that did not satisfy the customer and fit their budget requirements," says Mike Berdan from BE-Technologies Ltd. "Staying in touch with our customers through the most advanced solutions, we can manage the project schedule, project job costing, procurement, net meetings and full or subassemblies."

BE-Technologies Ltd

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4.



1.



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