SEPTEMBER 2010

Business Jet interiors INTERNATIONAL

THE INTERNATIONAL REVIEW OF BUSINESS JET INTERIOR DESIGN AND COMPLETION



The new compact solution for waste on board



Iacobucci HF Electronics is proud to introduce its new revolutionary WastePak trash compactor specifically developed to resolve the problem of waste on board during the long business flight. Built in small dimensions and combining two tons of compacting force with low-level power consumption, this innovative product can be installed in most long-range aircraft's galleys. Made of high-resistant aluminium and using specific water-proof carton boxes, the unit enables to compact in a convenient and hygienic way paper, plastic dishes, cutlery, aluminium cans, glass and even champagne bottles in one single box with a 3:1 ratio. Equipped with a new backlight control panel, which can be customized to fit galley décor, the WastePak can easily be operated in complete darkness.





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sleeptalk

Sleep is a wonderful thing – I say that as the proud but somewhat exhausted parent of a daughter who has just celebrated her first birthday. The last year has taught me all about the value of a good night's rest – at times I would have paid a small fortune just to spend one night away in the most basic hotel – give me black-out blinds, a reasonably comfortable bed and a 'do not disturb' sign over a swimming pool or fully equipped gym or spa – pure, unadulterated luxury!

International business travel can be equally gruelling – obviously business jets offer more comfort than flying economy on board an airliner, but it's surprising how many still lack seating that converts into a comfortable bed. However, as our feature on page 36 makes abundantly clear, there are a few lucky souls that are able to bed down for the night in king-size berths high above the clouds – never mind splashing out for the latest entertainment systems, I'd rather spend the money (a custom-made crib can cost between US\$100,000 to US\$300,000) on the best possible mattress technology!

Of course beds take up a lot of room – and space is always hard to find on an aircraft – even on BBJs and ACJs. However with a little thought and invention, designers and completion centres are able to craft some interesting solutions – Airbus Corporate Jet Centre (featured on page 50) recently developed and installed an electrically actuated foldable bed on an ACJ, which deploys down from the bulkhead. In effect this provides a 'spare room' – offering the customer the flexibility to switch between a lounge or bedroom.

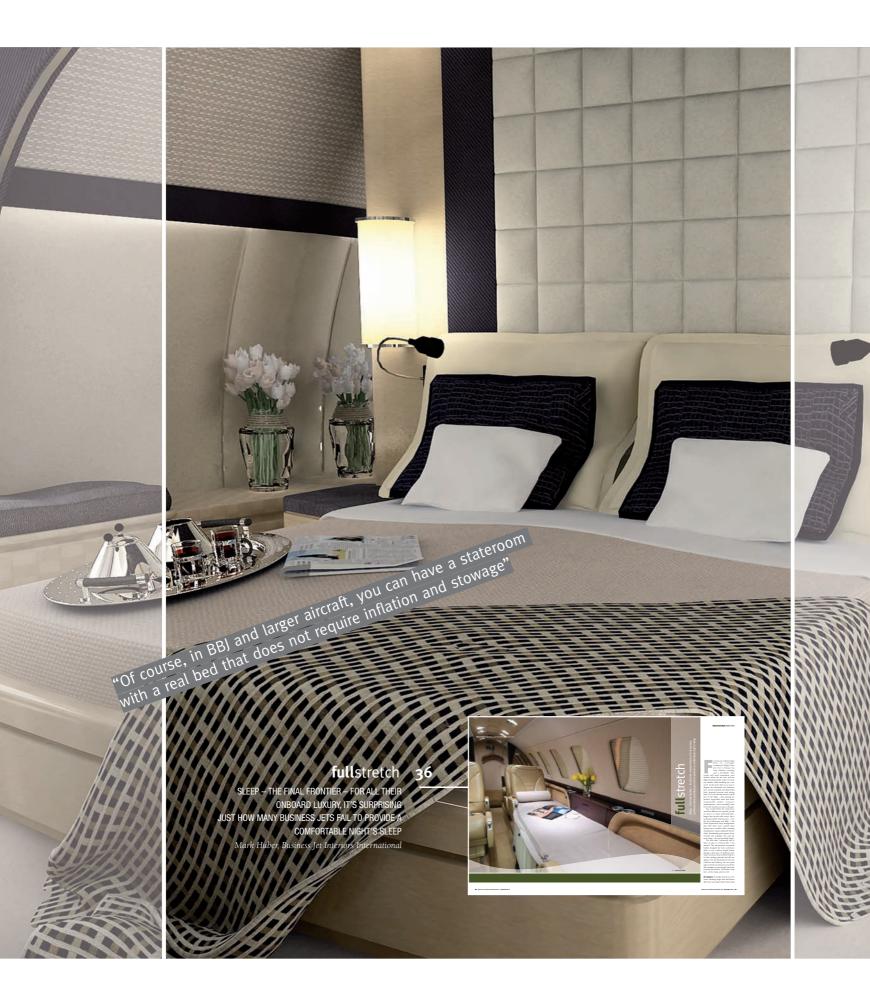
Boeing's new 747-8 and 787 aircraft offer VIP operators plenty of scope for full-size bedrooms, bathrooms and much more besides – Jet Aviation and Peder Eidsgaard of Pegasus Design have developed a VIP 787 scheme featuring a sumptuous split-level cinema, while Edese Doret and Associated Air Center have envisaged a VIP 747-8 complete with a 'grand dining hall'. We include separate features on the challenges and opportunities presented by both wide-bodies in this issue. We also take a look at Bombardier's Global Completions Centre and examine the trend for cabin repair rather than complete refit. Sweet dreams one and all!



Anthony James, editor



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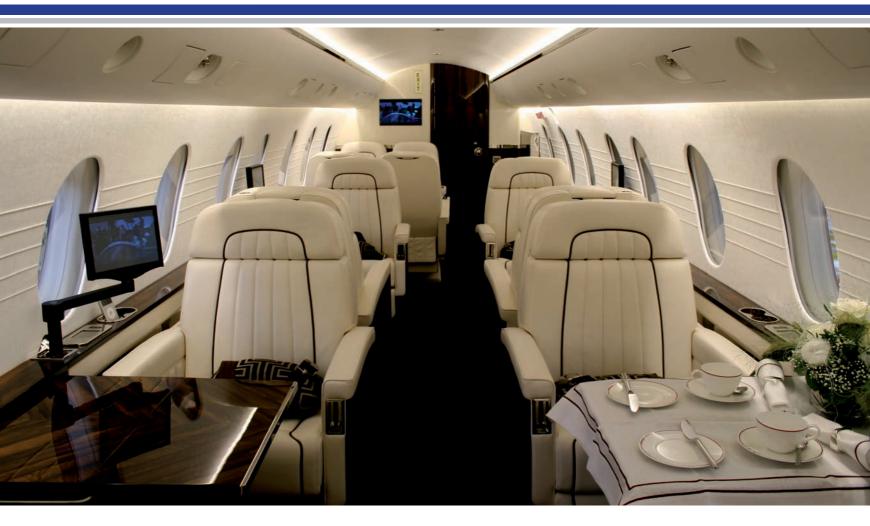
luxury living

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Beyond Dornier

- VIP Galleys (eg Airbus)
- Avionics moisture protection kits (eg Boeing)
- Other full or part VIP conversions

Shops – Interior capabilities

- VIP monuments: galleys, wardrobes, washroom vanities, credenzas, tables, etc
- Wooden and stone veneer
- Upholstery shops seats, curtains, carpets, interior trimming
- Installation and testing of IFE systems
- Avionic wiring loom manufacture
- Manufacture of control cables



Cessna launches special edition Citation Mustang

Cessna has unveiled a new limited edition Citation Mustang. The High Sierra Edition features luxury versions of the three interiors currently offered by the manufacturer, a new paint scheme, a Garmin G1000 system with synthetic vision technology, electronic charts and locking fuel caps, and special support programmes. The three new interiors – Smoky Quartz, Black Pearl, and Silhouette – will only be available on High Sierra Editions. As well as new textures and patterns, the interiors incorporate premium leathers and hand-woven carpets.

New Challenger 605 added to Aviation Concept's fleet

Aviation Concepts (ACI) has added a new Challenger 605 to its charter fleet. The aircraft can accommodate up to 11 passengers, and has a range of 4,045 nautical miles (7,491km). The interior features LEDs, accent lighting, leather armchairs, a four-seat conference area at the rear of the aircraft, and a walk-in baggage compartment that is accessible in flight. The aircraft's IFEC offering includes satellite radio, DIRECTV, high-speed internet connectivity and AVOD. Passengers can access these services through multiple touchscreens and fully integrated control panels.



Goodrich to acquire DeCrane cabin management business

Goodrich Corporation has concluded the purchase of the cabin management assets of DeCrane, a leading provider of seating, furniture, veneers and cabin management systems for the business jet market. The transaction – worth approximately US\$280 million (£182 million) – does not include DeCrane's aircraft completions business.

DeCrane's PATS Aircraft Systems will operate as a standalone business concentrating on business and executive aircraft auxiliary fuel system (AFS) manufacturing and VVIP maintenance, modification and interior completions. PATS will be controlled by Wayzata Investment Partners and led by its existing PATS management team including its CEO, John Martin. DeCrane's current CEO, Roger Wolfe, will become the non-executive chairman of the board of PATS.

DeCrane Cabin Management employs approximately 850 people at six US facilities. Major customers include business jet manufacturers such as Bombardier and Dassault Aviation.

Flying Colours installs stone floor on Global 5000 aircraft

Independently owned completion and modification centre Flying Colours Corp completed the installation of a stone floor on a Bombardier Global 5000 business jet in August 2010.

The new aircraft was flown from the Bombardier Global Completion Center in Montreal, Canada, to Flying Colours in Peterborough, Canada, for the modification, and then on overseas to the end user.

The stone floor, manufactured by List Components & Furniture was installed in the entry/galley area, forward lavatory, and aft lavatory area of the business jet. The process involves cutting the granite into 2.5mm slices which are then attached to a lightweight backplate, designed to give it high elasticity without losing the necessary floor-loading requirements. The floor is custom engineered to fit a specific area and sealed to prevent liquids from penetrating the stone.

Flying Colours says it has seen an escalation in the demand for its refurbishment services among Global Express owners and sees this market as having major growth potential.





New appointment set to expand Ocean Sky's aircraft interiors business

Ocean Sky has appointed a new general manager for its aircraft interiors business. Lenny Gray will oversee the launch of an Ocean Sky interiors operation at London Luton Airport in the UK, as well as ensuring the expansion of the existing interiors operation at the company's Manchester Jet Centre, UK. His role will cover all aspects of the business from quotations and sales through to managing the supply chain and service delivery.

Ocean Sky Aircraft Interiors offers bespoke design and fabrication services for both private jets and helicopters. "Our interiors business is already strong and now I want us to be the market leader," says Gray. "We certainly won't be short of work. We'll be able to support third-party aircraft, of course, but given Ocean Sky's exciting expansion plans, we'll be kept very busy supporting our own aircraft. We're looking to work on business jets from the Cessna Citations through to the complete Bombardier range of business aircraft."

Gray has 25 years experience in aircraft interiors, working with VIP and corporate jet interiors for the past 15 years. Ocean Sky expanded into full aircraft service in 2005. As well as FBOs and offices in the UK, the group has offices in Germany, Italy, Spain, Switzerland and Russia.



Middle East charter company takes delivery of first A318 Elite

Al Jaber Aviation (AJA), based in the Middle East, has received its first A318 Elite, which will be used for VVIP charter flights. The aircraft features an office that converts to a bedroom, large bathrooms, and space for luggage. The interior was completed by BizJet International, Lufthansa Technik's subsidiary in Tulsa, Oklahoma, USA. "The privacy, prestige and productivity of corporate jets is well understood in the Middle East, where there is a strong and growing demand for VVIP charter flights," said John Leahy, chief operating officer, customers, at Airbus.

PCI and Propel Designs team for PiperJet

Piper Aircraft is partnering with interior specialists PCI Composites (formerly known as DeCrane Aerospace) and Propel Designs for the PiperJet, the company's single-engine entry to the VLJ market. PCI Composites will provide engineering, as well as interior soft goods, including carpeting, headliners and interior panels. David Shumate of Propel Designs is providing the overall design and styling philosophy behind the flight deck and advancements to the passenger cabin. Previously with BMW Group's DesignworksUSA, Shumate has created design concepts for a number of turboprops, business jets, high-end automobiles and boats.

Meanwhile Millennium Concepts Inc has signed a contract to provide passenger and crew seats for the PiperJet. The seating system has been "shown to withstand loads of up to 30 times the force of gravity, while maintaining compliance with the FAA's standards," according to Kevin Reifschneider, Millennium's president and managing director.

Aircell rebrands highspeed internet Gogo Biz

Aircell's air-to-ground high-speed internet service for the business aviation market – formerly known as Aircell High Speed Internet – has been rebranded as Gogo Biz Inflight Internet. Gogo Biz can be fitted on virtually any business aircraft. Unlimited and usage-based service plans are available with monthly costs starting at US\$395 (£257).

Aircell is also launching three new programmes aimed at companies that use commercial airlines along with business aviation. With the corporate discount programme, a company that operates a business aircraft with Aircell connectivity is eligible for company-wide discounts on Gogo Inflight Internet on commercial airline aircraft. Meanwhile, companies that equip with Gogo Biz between now and 31 December 2010, will receive three Aircell Black Cards, each of which gives one user unlimited complimentary Gogo service on commercial aircraft. Companies that operate business aircraft are also eligible to try Gogo service on any Gogo-equipped commercial airline aircraft, free of charge.

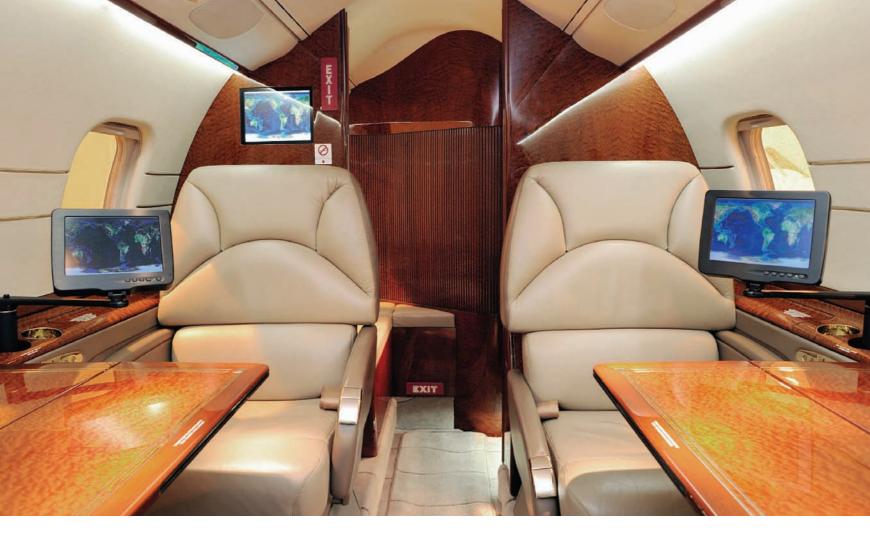
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ACJC delivers VIP conversion kit for multimission A320

Airbus Corporate Jet Centre (ACJC) has installed a VIP conversion kit in under eight hours on an A320 for an undisclosed customer. The kit enables the A320's forward passenger area to be converted into a spacious VIP section, for a dual-role aircraft. The kit includes two double VIP seats and two club-four VIP seats, with Hi-Lo tables. The forward area also features partitions, leather upholstery, woollen carpets and curtains. The configuration can be done by any EASA Part 145 organisation or AMO certificated by its local authority.

Certification for Dassault's Falcon 900LX

Dassault Falcon has received certification from both EASA and the FAA for the newest member of the Falcon family of business jets, the large-cabin Falcon 900LX. The Falcon 900LX is based on the Falcon 900EX, and is designed to offer enhanced performance and economy.

The 900LX offers the same interior as the 900EX but with an expanded list of city pairs. For example, the 900LX can fly from New York to Moscow, Paris to Beijing, and Mumbai to London. The aircraft comes with the EASy flight deck as standard, designed to reduce pilot workload and improve pilot interaction through elevated situational awareness in the cockpit.



Midcoast to consolidate US completions in St Louis

Midcoast Aviation will consolidate its USbased completions and heavy maintenance businesses in St Louis, Missouri, and will close its Savannah, Georgia, operation by the end of the year.

The Savannah operation, comprising 175,000ft² (16,258m²) of hangar and production space, will finish its current completions work before closing. General Dynamics Aerospace Group is currently evaluating possible uses for the facilities, but no final decisions have been made yet.

"By focusing on continuous improvement in our Midcoast operations, we have achieved significant gains in cycle time and quality," said Donald Petersen, president of Midcoast Aviation. "This enabled a consolidation of our talents into a single centre of excellence based in St Louis, while actually increasing our overall throughput capacity. Our St Louis site, comprising of 655,379ft² (60,758m²) of hangar and production space, including two narrow-body completion hangars we constructed in 2008, is sufficient to serve our current needs."

Jet Aviation Basel signs three narrow-body completions

Jet Aviation Basel has signed agreements with undisclosed clients for the completions of two A319 CJs and a BBJ3. Completion work on the cabin interiors is scheduled to commence within the next couple of months. The interiors of two of the three aircraft will be designed by the company's in-house interior design studio. Layouts for all three aircraft include living and dining areas and private bedrooms with en-suite bathrooms.

"We look forward to working on these custom-designed narrow-body completions projects, which will enable us to utilise the best of our cabin interior design expertise," said Charles Celli, general manager and senior vice president of completions at Jet Aviation Basel.

The company also recently delivered two newly completed A319 CJs to Monaco-based Boutsen Aviation, as well as a B737-800 to an undisclosed customer. All three aircraft were designed by the company's in-house interior design studio.

"The sheer variety of design styles in those recently delivered and recently signed aircraft shows how well Jet Aviation can tailor solutions to meet our customers' needs," said Elisabeth Harvey, interior design manager at Jet Aviation Basel.





Royal Jet fleet bolstered by refurbished BBJ

A refurbished BBJ has returned to charter operator Royal Jet after a multimillion dollar refit. The aircraft has three distinct areas a mailis style VIP meeting lounge, a more formal meeting and dining area, and a rest and relaxation zone. Fitted out in Italian leather and high-gloss walnut wood veneer, the aircraft has 14 VIP seats that can convert to fully flat beds - two in the VIP lounge, four in the formal meeting room area and another eight in the sleeping cabin. There are also two divans that can accommodate six passengers and in the meeting room (or formal dining area) there are another eight seats. There are also 12 seats in the rear of the aircraft for entourage passengers.

The aircraft's communications system incorporates broadband WiFi and GSM mobile connectivity, as well as satellite telephone and fax machines. Passengers can access live multichannel TV through a 42in flatscreen monitor, while other entertainment options can be viewed on 28in screens positioned within the rear of the VIP cabin. All VIP seats also have a personal 10.4in screen in the armrest.

"In addition to the return of this aircraft. we have also just added a sixth BBJ to our fleet, while an Embraer Lineage 1000 will arrive later in the year," said Shane O'Hare, CEO and president of Royal Jet.



Spectrum Aeromed pre-fits Mustang 510 for medical use

Spectrum Aeromed and Cessna have teamed up to pre-fit Cessna's Citation Mustang 510 with a medical interior. Operators will be able to purchase an aircraft that is already multimission-capable without waiting for wiring modifications or STC acquisition. Caribbean charter company Jet Budget will receive the first aircraft, complete with an advanced life support system, stretcher, IV pole, manual loading system and seat rail adaptor.

LBAS installs Lufthansa Technik moving map on Leariet 60XR

Lufthansa Bombardier Aviation Services (LBAS) has installed and certified Lufthansa Technik's niceview moving map system on a Learjet 60XR for Panaviatic, a charter operator based in Tallinn, Estonia. The niceview system provides worldwide. high-resolution 3D maps and virtual flights.

The work took two days to complete. "LBAS provided all the engineering work required to complete the installation, as well as the integration management and the certification of the system," said Andreas Kaden, managing director at LBAS. "This is further proof that LBAS" engineers are able to perform almost any aircraft modification."

Integrating flight simulation technology and authentic satellite maps, niceview offers photorealistic 2D and 3D views for various infotainment features with resolutions down to one metre per pixel. The system is available for retrofit on any Learjet 60XR aircraft currently equipped with a moving map. LBAS says retrofit options for other Bombardier models will be available soon.

Donaldson to supply cabin air filters for new Legacy jets

Embraer has chosen Donaldson Aerospace and Defense to supply cabin air filters for the new mid-light Legacy 450 and mid-size Legacy 500 executive jets. Shipments are expected to begin in 2012.

Donaldson's High Efficiency Particulate Air (HEPA) filtration system is designed to trap dust, lint, pollen, smoke, bacteria, viruses, spores and other contaminants, resulting in a clean and comfortable environment for the crew, passengers, equipment and other critical systems.

"The use of HEPA filtration on board executive aircraft is a growing trend," said Sheila Peyraud, general manager of Donaldson Aerospace and Defense.

Based on concepts presented in 2007 and formally launched in 2008, highlights of the Legacy 450 and Legacy 500 jets include a flat-floor 6ft-high cabin and vacuum lavatories. The Legacy 450 is designed to carry up to nine passengers, while the Legacy 500 will carry up to 12. Embraer says the first flight is on schedule to occur in the second half of 2011.

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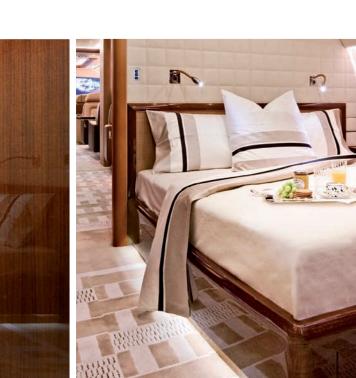


Airbus Corporate Jet Centre (ACJC), the Toulouse-based specialist in ACJ cabin outfitting and associated services, delivered its fifth VVIP ACJ completion to Farnborough-based VVIP charter firm Acropolis Aviation earlier this year in March. The interior was designed by Yves Pickardt of Paris-based Alberto Pinto Interior Design. The aircraft was the star of the static display at this year's EBACE show in Geneva.

Description:

The A319CJ's generous cabin features two luxurious lounges with seating for 19 passengers, as well as an exclusive bedroom and bathroom with a full-height, stand-up shower. The aircraft, designated G-NOAH, is available to charter for US\$15,000 to \$18,000 per hour, depending on the length of the journey. Curvaceous monuments and generous stowage throughout further enhance onboard comfort. A special U-shaped galley offers a spacious and dedicated area for food preparation. The galley is finished in the same luxurious materials as the rest of the interior to ensure a consistent style. The aim was to deliver a galley more in keeping with domestic kitchen design, suitable for both 'live' cooking and the reheating of meals. Mood lighting and a cabin management system featuring touchscreen technology are also included. A wide array of advanced entertainment and communications equipment combines a passenger flight information system (Airshow 4200), internet and an AVOD IFE system. Unique touches include leather sidewall and ceiling finishes and a high level of flexibility - a club-four seating area can be reconfigured to house an eight-person dining table. There's also a large square-shaped shower in the bathroom. Soundproofing in the sidewalls has reduced cabin noise in the bedroom to below 50dB. G-NOAH is certified for both public transport and private flight.





Verdict:

"Airbus Corporate Jet Centre's design team showed great attention to detail, and also used its extensive experience to guide Acropolis throughout the process," says David Crawshaw from Acropolis Aviation's Flight Support Centre. Yves Pickardt, who designed the cabin at Alberto Pinto International Interior Design, confirms: "The team's welcoming approach, expertise and closeness made this partnership a real pleasure."







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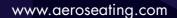
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Electric dreams

new Zero Gravity concept seat will be displayed on B/E Aerospace's booth. The seat places the passenger in a zero-gravity position where the kneeline is elevated above the heart, a position designed to relieve back and bottom stress during long flights. An added benefit of this position is that it eliminates forward slipping that can be found in traditional seats when placed in a lounge position. "With this groundbreaking technology, our customers can truly customise their product offering to suit the diverse needs of their end users," says Chuck Barresi, vice president/general manager at B/E Aerospace's Business Jet Group.

B/E will also feature its Ultimate Comfort Technology (UCT) Electric Divan. Features include a new low-back design for unobstructed views and natural light from cabin windows; electric actuation that moves the divan from an upright three-place seating surface to a fully retracted twin bed; and under-seat storage. Integrated airbags are under development. No harness towers or raising backrests are required for take-off and landing.

As its name suggests, B/E's new Midsize seat is designed specifically for mid-size aircraft. A 'lift and shift' action enhances comfort by synchronising seatpan articulation with backrest recline, ensuring ease of use, relaxed lounging, and backrest auto-return from the fully berthed position. These zero-gap berthing seats provide a continuously flat cushion Isurface. The Midsize seat's lift-up seatpan eases access to cables, and quick-change fittings ensure ease of installation. The seat also incorporates improved track and swivel mechanisms for smooth transition to and from any position.



This year's NBAA Annual Meeting & Convention will be held at the Georgia World Congress Center in Atlanta, Georgia, USA, on 19-21 October. As well as an exhibition, educational sessions and special events, there will be a static display of aircraft at nearby DeKalb Peachtree Airport. Nearly 25,000 attendees and 1,000 exhibitors are expected to attend.



Crystal clear

Flight Display Systems will present a new Blu-ray and DVD player featuring full 1080p HD video, as well as an iPod docking station and iPad cable adapter, which enables passengers to share

movies and music in the cabin. The company will also introduce new components for its Select CMS cabin management system (pictured). Select CMS features OLED buttons and touchscreen monitors, and is designed specifically for retrofit. Flight Display Systems' booth will also include a new IFE solution for very light jets such as the Cessna Citation Mustang and the Embraer Phenom. The new VLJ IFE retrofit offers moving map, DVD player, iPod and iPad support, and many audio channels.



Keep in touch

VT Miltope will show a new addition to its family of network products - an IEEE 802.11n

multifunction access point, called 'nMAP', incorporating the latest access point technology and designed to enhance security. Dual radios provide simultaneous 802.11a/b/g and 802.11n operation, and up to 64 VLANs (IEEE 802.1q) are available to support separate user networks. As an access point, clients connect to aircraft LAN via intelligent bridging that restricts client traffic to only flow to and from the access controller. In the absence of a router, nMAP may also be configured as an access controller to provide router functionality with a firewall.





Power play

Astronics will show the latest of its EmPower in-seat power supply systems. Since 1996, EmPower has been installed on over 4,000 aircraft, with its outlets providing power to over 500,000 seats. The company offers passenger power solutions in 115V AC and 28V DC

configurations. The latest generation EmPower systems weigh as little as 2 lb, supporting up to three outlets. No power is delivered to the outlet until an appropriate device is plugged in, and ground fault interrupt is built into the inverter.

Recline and shine

Zenda Leather and McNeilly's Furniture have joined forces to produce something special and symbolic for this year's NBAA/CAN Charity Event. Jack McNeilly, owner and president of McNeilly's Furniture, has agreed to manufacture its best-selling recliner using Zenda's Pink Ribbon leather. The leather upholstered chair will be donated to the charity event.

Glisten up

Townsend Leather will display its new Wet leather. The leather has a natural grain texture and is designed to glisten. The leather is offered on whole cowhides in several colours and textures. The company will also be featuring other new products at this year's show, including a quickship Classic programme, a soft Antique Glazed cowhide, and a Vintage collection in both cowhide and calfskin, designed to capture the character of hand-antiqued European leathers.

Emergency service

Astronics DME will exhibit its Air Lite LED aviation flashlights, first aid kits and CRS-2000 PlaneSeat. The Air Lite LED flashlight range includes Air Lite 1E for emergency use, and Air Lite 2R, a rechargeable flashlight intended for



repeated utility use. The Air Lite flashlights are 8in in length and weigh 0.5-0.6 lbs. Astronics DME will also show its new line of industryapproved soft container first aid kits. The first aid kit collection includes options to comply with a variety of aviation authorities, including FAR, JAR-OPS and CFR. All kits weigh less than 2.5 lb and are designed to fit into small, compact aircraft spaces. The company has over 30 years of experience manufacturing aviation lighting, safety and survival products.



I'll drink to that

IWG's flight-certified potable water treatment units and potable water systems are designed to provide continuous onboard water disinfection throughout the entire aircraft, killing bacteria, viruses

and other microorganisms. As well as being freeze-proof, the systems are designed to meet the most stringent aviation requirements. The IWG In-Flight Drain System also lets operators purge the aircraft's water upon descent. IWG says the system can prevent costly damage to onboard components and dramatically reduce ground maintenance service time.





Make an impact

Flying Colours Corp will highlight Impact - its lean manufacturing programme that it has implemented over the past year. The company says the programme has borne immediate successful results, through the adoption of lean manufacturing concepts and efficiency improvement techniques. The initiative was carried out by all managers and employees to help

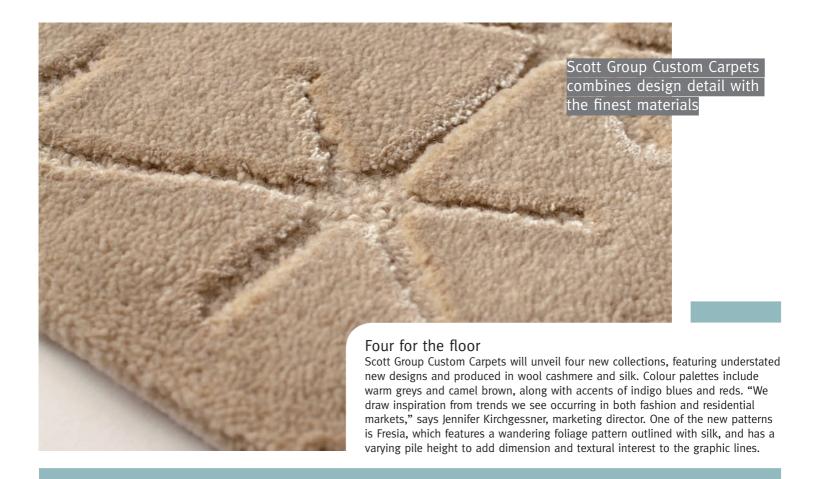
them to maintain their schedules and improve quality and performance. Essentially, the programme has standardised processes and allowed employees to review their own work to eliminate non-valued added processes and time. Flying Colours says this has enabled employees to work more effectively while still maintaining their creative roots. It has also permitted Flying Colours to retain its flexible approach to customer requests. The company recently completed its first green Challenger 850 at its completion facility in St Louis, Missouri, JetCorp Technical Services. The aircraft's interior was completed entirely in St Louis and was recently repositioned to Flying Colours' head office in Canada for customer acceptance and final certification. The aircraft is the first of three Challenger 850 completions under going completion with Flying Colours that will be based in China. Flying Colours also recently installed a stone floor (pictured) on a Bombardier Global 5000. The floor, manufactured by List Components & Furniture, was installed in the entry/galley area, forward lavatory and aft lavatory area of the jet.

Going up...

reliable uploading of Airshow Network programming.

Greenpoint Technologies will present Aerolift, its patent-pending concept for a ground-to-main deck lift (elevator) for the B747-8 VIP aircraft. The lift will transport passengers from the ground to the main deck, providing an elegant and secure method to board the aircraft. Greenpoint also provides the B747-8 Aeroloft, which may be installed simultaneously with the Aerolift, prior to aircraft input to the completion centre. Aeroloft consists of sleeping berth and lounge modules located above the main deck in the aft section of the aircraft between doors four and five. Aeroloft includes custom-designed interior furnishings with a staircase. "This programme has turned out to be a very popular option amongst the B747-8 VIP customers," says Sloan Benson, executive vice president at Greenpoint. A cut-away 1/40th scale B747-8 model with a working Aerolift and outfitted Aeroloft will be on display.







Olympian effort

Moore & Giles will introduce a new range of colours in its Olympia leather collection. The company says that to create Olympia, skilled tanners treat European bull hides in various processing phases with EC-compliant products to achieve a leather with substantial body, yet soft texture. Olympia hides are pre-trimmed at the tannery to increase overall usage, with an average thickness of 1.0-1.2mm. All Moore & Giles aviation leathers are treated to meet aviation

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

Master class in seating

Aero Seating Technologies' (AST) Master Class VIP seat 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's 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. AST will also show its new 16g divan, which comes in a single or twoplace module that can be combined for three-place or L-shaped configurations. The divan features a built-in recline angle, bind-free full or partial berthing, and an auto-levelling seatpan for seamless transition into rest mode.



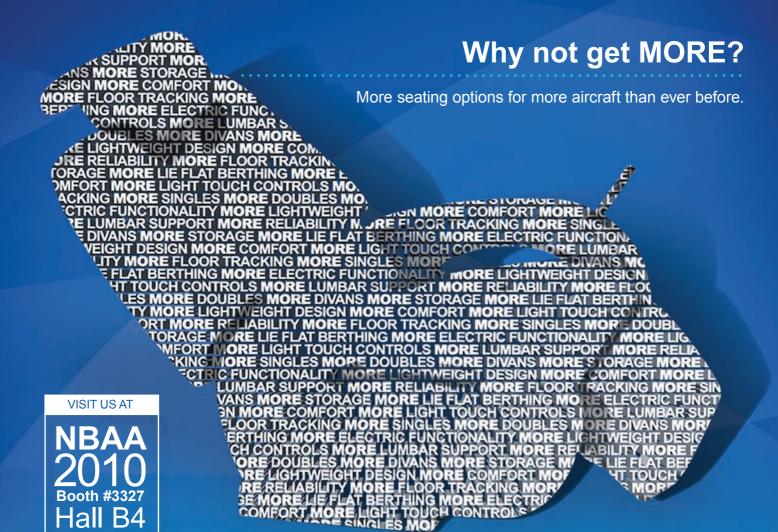
Friendly pressure

Lufthansa Technik will show its latest cabin and IFE inventions, created by the Lufthansa Technik Innovation Center. One example is 'nicemate', a new remote

maintenance unit positioned on board the customer's aircraft. The unit offers secure broadband data transfer on the ground for fleet tracking and cabin diagnostics. It can also be installed without Lufthansa Technik's 'nice' IFE and cabin management system. Other highlights at the show will include the latest version of nice with AVOD, and new iPhone applications that also run on the iPad. The company will also present its completion and fully customised maintenance management services. Via its global network, Lufthansa Technik offers capacity for the completion, conversion and technical support of a broad variety of private jets. The portfolio includes smaller business jets, narrow-bodies such as BBJs or ACJs, as well as wide-bodies including the A330 and B747. LHT says it is also well prepared to work on the A380, A350, B747-8 and B787 in the future.

Leading light

Besides its seating expertise, B/E Aerospace will demonstrate its latest lighting, oxygen and vacuum waste systems, and galley inserts. Visitors will no doubt be dazzled by its custom-designed Interactive Lighting Display, which emulates a cabin interior and includes up- and downwash lighting; cabin dome and reading lights; accent kick lighting; architectural lighting such as sconces and speciality lighting fixtures; and electroluminescent (EL) ceiling panels; and variable white lights.









Whether you're buying new or upgrading what you have, it's never been easier to get more from your aircraft interior with B/E Aerospace. B/E's latest executive passenger seating options include more comfort, more electrical features, and more seats that lie fully flat – all with updated styling and the highest reliability available.

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onah is waiting for the whale. It's called the 747-8. Boeing's latest iteration of its iconic quad-engine jumbo jet is more efficient, quieter, longer, faster, and flies farther than its progenitors. In VIP configuration it can carry 100 passengers 9,260 nautical miles nonstop in a spacious 4,786ft2 cabin at a cruising speed of Mach 0.86 - with a dash speed of Mach 0.92 or 614mph. All these superlatives have a price tag to match: nearly US\$300 million for one of the green Goliaths when deliveries ramp up next year. Add a state-of-the-art, head-of-state interior with opulent finishes, secure communications, and anti-missile countermeasures and the price easily creeps towards half a billion dollars.

The first 747 flew in 1969 and cost US\$24 million per aircraft. Since then more than 1,400 have been delivered, with the aircraft being used for everything from hauling passengers to giving transcontinental piggy back rides to the Space Shuttle. Lately, the US Air Force has been testing one equipped with a high-powered laser designed to vaporize incoming warheads - and possibly even hostile satellites. A fleet dubbed 'Dreamlifters' has been specially modified to carry the fuselage barrels and wings of the all-composite 787. Even a megalomaniacal Texas minister got his hands on an older 747, painted a dove

on the tail and used the aircraft to interject himself into various global crises until he ran out of money to feed the beast. Then he tried to 'hide' the aircraft from creditors.

The 747-8 is currently undergoing airborne testing after making its first flight on 8 February of this year. By June, three test aircraft had accumulated 600 of the estimated 1,600 flight test hours required for certification and a fourth test aircraft was added to the fleet in July; however, a few programme glitches have appeared. During a second-quarter conference call with analysts, Boeing CEO James McNerney cited unspecified design and workmanship issues that could slow certification. At least one of these was a minor problem relating to landing gear doors but Boeing claims that none of them are outside the bounds of the normal trials and tribulations of bringing a new aircraft to market. The VIPs awaiting the aircraft appeared unfazed.

Completion partners Through July, Boeing had bagged seven orders for the leviathan in VIP configuration and identified seven authorised completion centres to work on it: AMAC; BaySys; Greenpoint; Gore; L3; Lufthansa Technik; and Jet Aviation. Associated Air Center is also chasing this elite market with designer Edese Doret. The first 747-8 is scheduled to go into production in late 2011. The potential market for VIP 747-8s could approach



50 orders. That includes not only Middle Eastern clients looking to trade up from their 'small' Airbus A340s and Boeing 767s, but at least two 747-8s as possible replacements for the pair of 25-year-old 747-200s that serve the US President as Air Force One, as well as the estimated two-dozen-odd other 747 variants currently performing some sort of VIP duty. The numbers suggest that the 747-8 will be the penultimate widebody of choice for rarefied rulers and wealthy recluses, with only the Airbus A380 offering more space. However, to date, only one A380 VIP has been sold and most wide-body completion centres have no plans to build hangars large enough to accommodate it.

However, several of them already have hangars sufficient to house the 747-8. The value of Boeing's orderbook for wide-body VIP aircraft is approaching US\$6 billion - eclipsing that of single-aisle, 737-based BBJs by almost three to one. The bigger completion centres are taking notice of the numbers. While Gore Design Completions has not signed a 747-8, yet, company executive vice president Rob Tomenendal notes that it can fit two in the hangars and calls the aircraft "an interesting programme for us".

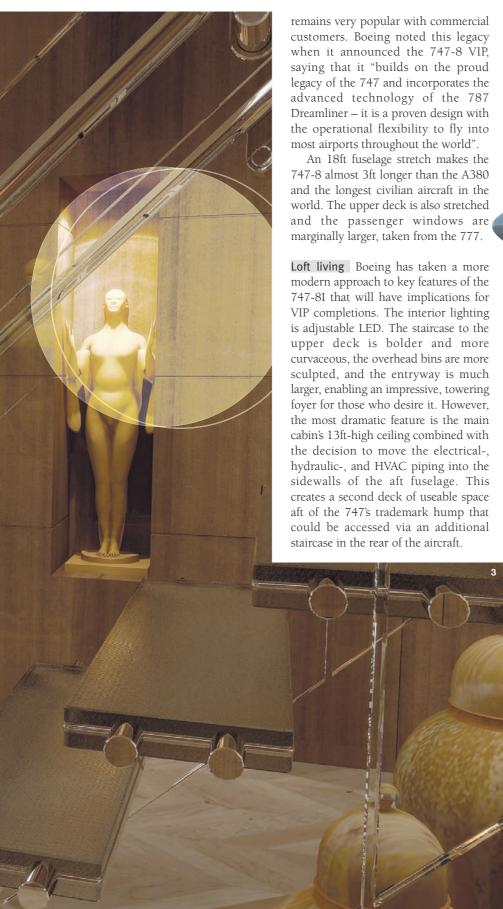
Two years ago Jet Aviation Basel built a mammoth new 377,000ft² hangar that can accommodate an A380 and a 747-8 simultaneously.

Meanwhile BaySys Technologies announced plans in June to establish a joint venture VIP completion centre in Casablanca to service European-, Gulf-, and Middle Eastern-based customers, including prospective 747-8 buyers.

Proven performer For VIP customers, as well as passenger and freight airlines, the case for the 747-8 is compelling. It's 16% more fuel efficient than the 747-400, yielding 13% lower seat-mile costs, and has 26% more cargo capacity. Boeing already has orders for more than 100 aircraft, the majority of them freighters (designation 747-8F). This remains the aircraft's core constituency as the A380 racks up more passenger airline orders. In fact more than half of the world's international air freight moves on 747s. Aware of this, Boeing designed the 467-seat 747-8I passenger variant to be more easily reconfigured to a freight hauler. In airline configuration, range drops to 8,000 nautical miles, while the freighter can fly 5,000 nautical miles with 296,000 lbs (134,000kg) of payload.

In the wake of the A380 challenge, Boeing grappled with its response for nearly a decade before announcing the 747-8 in 2005. With the 787 already under way, Boeing could ill afford another 'clean sheet of paper' widebody programme and, although the 747 is entering its fifth decade, it





- Upper deck bedroom
- Staircase to upper deck
- 747-8 exterior
- Greenpoint's Aeroloft is reached via a staircase on the main deck





Greenpoint goes all out

Greenpoint Technologies has developed two new products specifically with the Boeing 747-8 VIP aircraft in mind: the 'Aerolift' – a ground-to-main deck lift (elevator); and the 'Aeroloft' – consisting of berth and lounge modules for installing above the main deck between doors 3 and 5. "Tackling the complex task of modifications to the aircraft's primary structure, the Aerolift is a complete installation," explains Mike Weisner, chief customer engineer. It consists of an automatic door on the fuselage, a power unit and lift structure from the keel up through the main deck, a lift carriage with internal doors and a cabin enclosure. "The carriage was specifically sized to permit the transport of a wheelchair and attendant, creating a dignified, secure boarding experience.'

Formerly known as the 747-8 Overhead Space Utilization (OSU), Greenpoint's 'Aeroloft' is available as a turnkey modification. Greenpoint says clients have so far selected to install it between doors 4 and 5, leaving the main deck ceiling open at door 3. Each Aeroloft includes a custom, in-house-designed interior with a finished staircase. Clients have also opted for additional modifications to close out and finish the main deck ceiling underneath. "The Aeroloft is installed post-delivery from Boeing but before it goes to a completion centre," explains Sloan Benson, executive vice president. "This programme has turned out to be a very popular option amongst 747-8 VIP customers."



YOU CAN



Initially, Boeing proposed turning this space into added-revenue sleeping compartments and passenger suites for its airline customers, but the numbers did not shake out, with airlines eventually preferring to use the area as a galley annex.

However, on VIP aircraft, this additional 881ft² of floor space creates a wealth of possibilities including private lounges and dining rooms, offices, enclosed sleeping berths, crew rest areas, or secure communications suites. Greenpoint Technologies has designed modular SkyLofts (see sidebar on previous page) with this in mind for VIP completions. While the area will not be certified for occupancy during take-off and landing and does not have windows, it does boost the 747-8's useable floor space to within 700ft² of the completely twin-deck A380. The high ceiling also gives designers the flexibility to fashion dramatic open lofts, as well as vaulted and trayed ceilings.

- Upper deck hedroom
- 747-8 interior in airline mode

"We took advantage of the fact that you can go much higher in terms of ceiling height in the mid-portion of the aircraft," says designer Edese Doret, who used the extra space to fashion a grand dining hall. "You couldn't do that before on the 747," he continues.

The extra real estate also gave Doret room to design a two-level guest bedroom, reached via a spiral staircase and a cat walk, as well as creating a 'Moroccan-style' Keno lounge in the cargo hold area aft of the wing box; while the stretched upper deck, aft of the cockpit, made possible the creation of a penthouse apartment for the aircraft owner complete with private office, bathroom, bedroom, and galley.

Big real-estate also means other luxuries, says Doret, including the installation of more functional and comfortable furniture, such as a classic Eames chair with ottoman in the master bedroom and a tulip chair in the master bathroom vanity. While not certified for take-off and landing, these items are securely bolted to the floor.

Going up Typically, boarding and deplaning wide-body aircraft requires the use of ground-based stairs due to the heights involved and the lack of a built-in airstair. However, custom elevators will not only ease the movement of passengers between

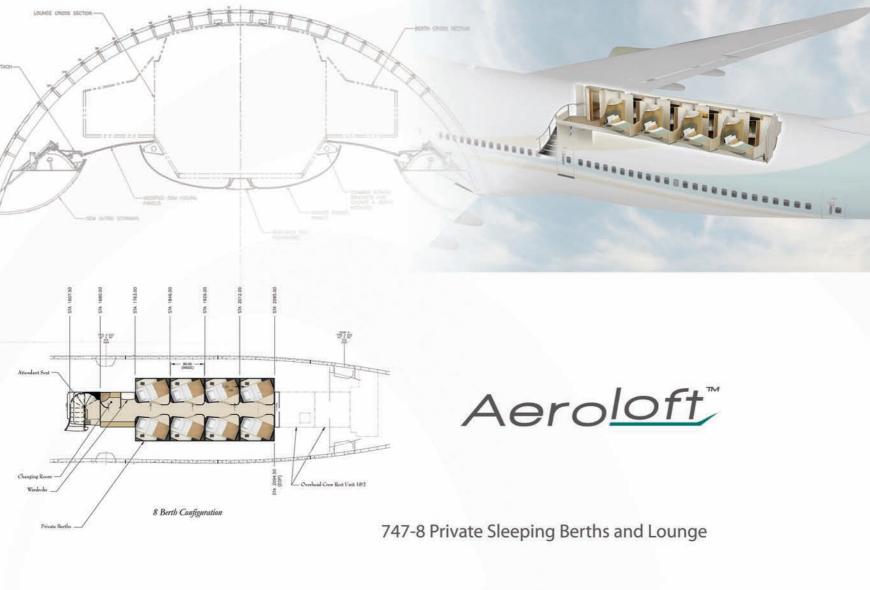
decks, they will also lift heavy items or infirm principals from the ground to the main deck on the 747-8.

L-3 is developing an elevator that can be used in flight or while the aircraft is on the ground. Slated for initial installation via STC, the circular shaft deploys down to the ground through a custom-designed belly hatch that is electronically enabled by the pilot once the aircraft has come to a complete stop. The elevator can run between decks while the aircraft is in flight. A typical elevator cab floor is 18ft², large enough for a motorised wheelchair.

Elevators in VIP aircraft are not an entirely new concept - during the Second World War, US President Franklin Roosevelt, afflicted by polio and often confined to a wheelchair, had one installed on his 'Sacred Cow' C-54 Skymaster.

Besides aiding the less mobile, egressing via the aircraft's belly also promotes better security and less opportunity for those pesky snipers. In fact head-of-state 747-8s are likely to offer a wide variety of aftermarket security measures including anti-missile systems, electronic hardening, alarm, detection, and camera gear. END

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Matt Conder Business Jet Interiors International

bizjet owners and operators to repair interiors rather than rip them out and start again he economic downturn and growing queues at completion centres are encouraging makedoandmend

while keeping the cost in mind.

faced by firms specialising in cabin interior repair include worn carpets, worn/torn leather upholstery, scratches on surfaces or doors, headlining damage, and moisture from spilt beverages that can damage the metallic composite parts of monuments, causing corrosion. Other components particularly those that are in the galley such as microwaves and coffee makers - can break down or become damaged through overuse. Onboard entertainment technology can also suffer irreversible damage.

Choose carefully It's easy for buyers to splash out on luxurious materials from glossy brochures without thinking about the overall value for money and ultimately the lifespan of interior materials. However, a good interior should be able to endure heavy use, hide imperfections and shouldn't need

he average business jet is going to take a few knocks, bumps and suffer the occasional coffee spill from time to time. Normally such issues can be sorted out with a quick repaint or touch-up here and there. However, when it's more than just general wear and tear - such as replacing whole panels or large sections of interior trim – it's up to the experts to try and solve the problem -Some of the most common issues

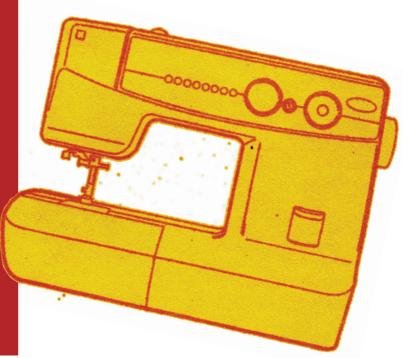




Mobile repairs

An increasing number of specialist firms offer a mobile interior repair service. One such company is New Yorkbased Plane Leather Repair. Its FAA-approved mobile interior station is housed in a specially adapted trailer attached to a pickup truck. The trailer is fully self sufficient with climate control and its own power generator. On board is a vast array of specialist equipment, including a carpet serging machine, air compressor, an assortment of leather materials and its very own sewing machine. It also carries foam and serging yarn for small, unforeseen repairs.

"Since inception, our business model has been to minimise the downtime for the owners," says Brian Guldy, co-owner of the company. "This was the reason for the mobile shop. The owner can either do their own maintenance or have it outsourced to their normal vendor [if they have no interior shop], and still have their interior concerns addressed. We have always felt strongly about repairing where possible, versus replacement. We have perfected many tricks over the years. For example, we can address stains or pen marks on leather sidewalls, by mixing a perfect dye match and colour blending it into the damaged area. This is a substantial saving to the owner."



AN INTERIOR WHERE WHITE IS DOMINANT CAN BE REALLY

BUT IT EASILY BECOMES DIRTY



repairing every five minutes. It may look nice, but you need to ask yourself two questions: Will it last? And do I really need it?

Jean Sémiramoth, chief operating officer of Cyprus-based Altaïr Aero Projects urges caution when choosing an interior. Aside from providing an array of aviation services to banks and commercial airlines, Altaïr Aero Projects manages the acquisition and outfitting of private bizliners for many prestigious customers including heads of state and members of Royal families.

Sémiramoth says he completely understands that customers want to apply their personal touch to the aircraft interior, however, he cautions that even VIP owners need to be realistic: "Technological innovations have dramatically broadened the horizon of choices in interior equipment and this has stimulated imaginative interior decor, architecture and configurations," he says. "Nonetheless it comes at a price. Mood lighting and star lights are certainly

Plane Leather Repair's mobile interior station is housed in a trailer that attaches to a pickup truck!

nice features to have, but also very expensive – often costing up to several hundred thousand dollars. A tailormade galley to accommodate a state-ofthe-art oven or espresso maker costs roughly the same."

He also warns against the use of light colours: "An interior where white is dominant will look luminous and can be really striking. However, once the aircraft is operational, it easily becomes dirty despite thorough cleaning, and what was initially crisp and gleaming can very quickly look shabby. And who has not heard of a stunning interior that unfortunately had to be almost completely removed to find a leak due to the lack of suitable



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Toby Leigh



UNDERSTANDING THE CUSTOMER AND LEARNING HOW THE AIRCRAFT WILL BE USED ARE THE FIRST STEPS TO KEEPING AN INTERIOR LOOKING NFW



maintenance access panels, resulting in the aircraft being grounded for weeks. So pragmatism, realism and practicality should always prevail at the design stage and it goes without saying designers need to be sensitive, flexible and have a great capacity to listen."

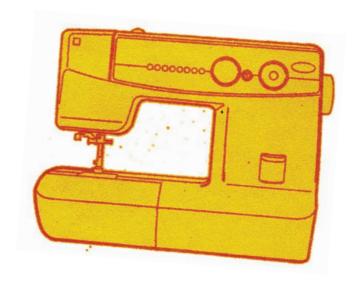
Business case Away from the rarefied world of the VIP owner, corporate customers are equally demanding, as shareholders continue to scrutinise the value of key assets such as business aircraft. Bombardier says that due to the current economic climate, some owners are opting for a refurbishment instead of buying a new aircraft or postponing refurbishment all together.

The trick is to bridge the gap between a luxurious interior and one that is easy to maintain: "Understanding the customer and learning how the aircraft will be used are the first steps to keeping an interior looking new," says Clint Bloom, a senior designer at Bombardier Aircraft Services, Tucson. "Will the aircraft be used sparingly, who will travel in the jet, how many passengers will typically be on board, and will it be used for corporate travel or by the owner and his or her wife or husband? Once this is determined, the designer can then make a judgement on what materials would be most appropriate for the interior."

Bloom says that silk carpet might be suitable for a husband and wife but not for a corporate shuttle. Ultraleather on the window panels can provide easy maintenance but might not offer the warmth of a silk fabric. A satin finish on veneer can look beautiful at first, but can begin to take on a glossy finish if rubbed a little too firmly during routine cleaning. "So it is important for a designer to be able to convey to the customer the advantages and unique characteristics of materials and how or where they are to be used."

Life expectancy How long an interior lasts ultimately depends on the owner and how much the aircraft is used. Bloom says he has seen Challengers over 20 years of age with the original interior come through and still look extremely good. Conversely he has also seen two-year-old aircraft that show signs of extensive use.

Life expectancy can vary from component to component: "Ovens, coffee makers, espresso machines, etc, are extremely reliable and rarely break down," says Bloom. "Toilets do need regular maintenance and can malfunction from time to time but can generally be repaired relatively easily with a minimum of downtime. Seats, tables and other cabin components do require maintenance. Recline functions



Bombardier's **Tucson Completion** Centre also offers running repairs



Galley systems are the most used and therefore the most likely to need repair: "Coffee makers suffer from blockages, leaks and poor performance due to calcification and limescale build up from 'hard' water," explains Neil Watkins, managing director of Reheat International, which describes itself as a 'one-stopshop' aftermarket service provider for aircraft galley equipment and aircraft operations. "Microwaves and warming ovens are often used repeatedly to prepare multiple meals in short time scales and wear and tear obviously increases with higher usage." Watkins says the standard of galleys and galley equipment in business and VIP aircraft is becoming increasingly more akin to that which is currently found in commercial airliners: "As cabins get bigger and inflight catering becomes more important, the importance of high-quality, reliable galley equipment also increases, so the equipment specified by interior manufacturers gets more complex.'



and track-and-swivel mechanisms also need adjustments. But overall these components are very durable and are rarely replaced. With leather or fabric on seating surfaces this again depends heavily on how often the aircraft is used and the individuals using the aircraft."

Overall, Bloom says a typical life span for an interior would be in the six to nine-year range: "Normally, the customer will get tired of the interior or sell the aircraft before it wears out," he says.

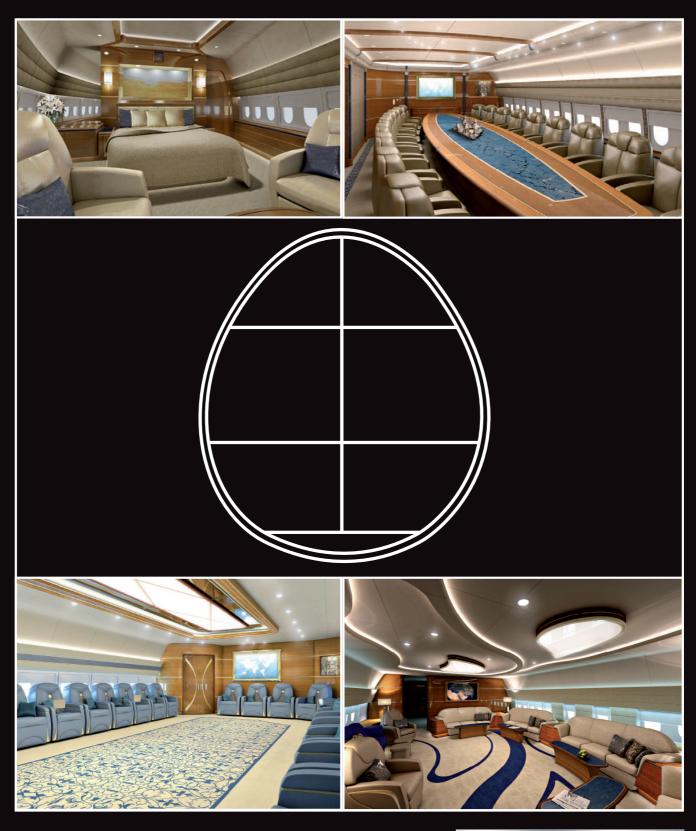
Tips and tricks So what tips and tricks do designers and engineers have up their sleeves to extend the life of a cabin interior? One of Bombardiers 'tricks' is to order a spare carpet: "Carpets can be swapped out relatively easily especially on smaller jets," says Bloom. "This way one carpet can always be clean and ready to re-install." Vacuuming new carpet often and with a good upright vacuum with a beater brush and proper care will extend the life of the carpet dramatically. Vinyl flooring in entry/ galley areas is becoming more and more popular – a wide range of finishes is available and the material is extremely durable and easy to clean.

"Also leather on seats can be touched up or re-dyed and will offer some extra life at a fraction of the cost and time of stripping and recovering," notes Bloom.

So when purchasing a business jet the main factors to consider - no matter how many millions you are spending - are the quality and durability of the products you intend to install. As the world continues to sail through stormy economic waters, rather than ditch your interior for something new, perhaps it might be best to just make do and mend. END

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Bill Hubbard VP Sales

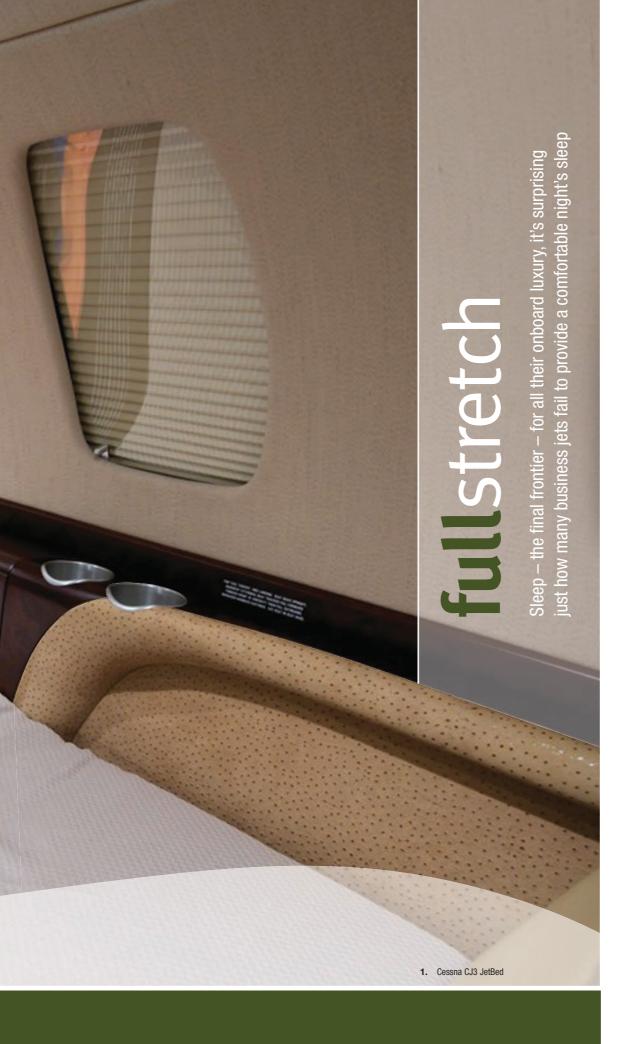
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or years my airborne sleep plan on overnight commercial flights from the USA to Europe has been Ambien, earplugs and a blindfold. This works well until somewhere over Ireland, when the sun rises and the flight attendant gently wakes me from my slumber while handling me a hot towel. At this point there is no way to disguise the aftermath: my unshaven face, overall wrinkled and dishevelled look, hunched posture and aching back. Yes I was unconscious for a good part of the flight - thus sparing me another forgettable meal and other unspeakable public transport unpleasantries - but I can hardly claim to be well rested as we taxi to the gate.

You would think the experience would be different on a private jet and on some it is: those wide-body überbarges that exceed with excess. But a stunning number of private jets – even the big Gulfstreams and BBJs - still utilise improvised sleep arrangements that offer little more comfort than laying atop a wooden table, ensuring chiropractors remain employed forever, while disembarking passengers arrive irritable and unhappy. Oh, and one more thing - they are probably illegal.

The first time I witnessed one of these set-ups, in a Falcon 900, I was amazed. The international investment banker dropped the hi-lo conference table to seat cushion height before placing a thin piece of hardware-store variety memory foam (which looked a lot like packing material and did not appear to be fire-blocked) over the seat cushions and tabletop. He was quite taken with the inventiveness of it all but did complain, at some length, about the ensuing discomfort. Procrustes slept here, on the cheap, and not well.

Air support In smaller aircraft, it's even worse. Berthing single seats and divans offer more snoozing comfort than trying



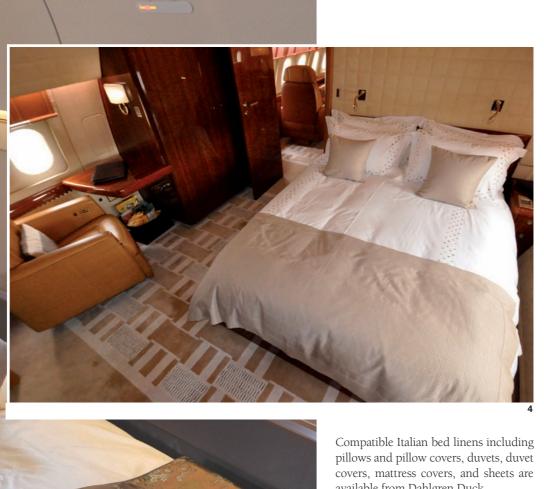
Frustration with this situation led real estate developer and Cessna Citation CJ3 owner and pilot Gary Bosstick to develop the JetBed: "I wanted my wife and kids to be able to lay down in the back and take a nap," he says. "In little jets there is no way, no how, to get your back straight, never mind trying to lay down and sleep. There is just no way to get your back straight on a four- or fivehour trip."

Bosstick fermented the idea of a precisely fit and comfortable inflatable bed designed specifically for his aircraft for "four or five years" before finally broaching his idea with a manufacturer of specialised hospital beds for burn victims. "They thought I was crazy," he says.

Nevertheless, Bosstick and the firm came to terms, scribbling them down on a cocktail napkin in a small airport café. To date, Bosstick has sold most of his US\$5-6,000 inflatable JetBeds via word of mouth and modest advertising. "I don't have to sell these things. If models for Embraer, Pilatus, and singleaisle VVIP aircraft from Airbus and Boeing. Bosstick says some of the product's biggest fans are executives from these OEMs who routinely take their aircraft on long sales trips.

JetBeds weigh less than 20 lb and deploy from an integral carry bag. Place the bag on the floor between two facing single seats, unzip it, fold the cover toward the aircraft sidewall, unfold the head and foot planks over the seat cushions, and inflate the mattress with the portable rechargeable battery pump that is included. The entire process takes about a minute and mattress pressure can be changed after inflation by adjusting a valve. It deflates equally fast by inserting the pump filler nozzle into the valve, folding the planks over it, and rezipping the bag. The entire assembly can be further reduced in volume by placing it in a commercial vacuum bag akin to the type used to compress blankets and large items of clothing.







- BAA Jet Management A318 Elite includes an office with a sofa that converts into a hed
- 787 master bedroom concept from Greenpoint Technologies
- Acropolis AC.1 master bedroom

available from Dahlgren Duck.

Bosstick says the fabric is a highquality "ballistic nylon" that does not stretch and is mated with "a precisely applied special formula urethane." It meets FAR 25-853(a) flammability standards. Electronic welding is used to manufacture the units and tolerances are very precise. "A variation of as little as three thousandth of an inch in the tooling can lead to a defective product. There are very few manufacturers who could build this - this is not like an air mattress you buy at Walmart," he says. He claims that other aircraft seat-top air mattresses are "really like laying a blanket on rocks at the beach".

"You still feel all the contours of the seat and you don't have real support," he continues. "You have to lay there on your back and hope for the best because your spine is still going to gradually assume the contours of the underlying seat," he points out. "There is no sensation of differential pressure anywhere on a JetBed. When you lay on it, it is like laying on your bed at the Four Seasons hotel or your bed at home - maybe even better than your bed at home."

Precise measurement is key: "We get the seat dimensions from the OEMs but that is not sufficient," says Bosstick, comparing the process to custom tailoring. "You can give a tailor some basic dimensions and get a suit based on that, but it is not like going to Saville Row and having the tailor actually measure you and then lay the fabric on your body." For that reason, JetBed personnel go aboard each aircraft and take precise measurements of not just the seats, but also the adjacent structures. Jetbeds "have to fit all sorts of little things that escape people's attention," notes Bosstick.

Built to order Of course, in BBJ and larger aircraft, you can have a stateroom with a real bed that does not require inflation and stowage. In this category of rarified sleep there are several choices of manufacturer or completely customised solutions available directly from completion centres. There's also a quantum price jump to US\$100,000 or even more per finished bed.

DeCrane offers traditional welded tube technology mated to the latest and highly customised features, according to sales manager Mike Stevens. This includes electric actuators that can bring the pitch of the bed in synch with the

STEVENS SAYS A BASIC BED FRAME US\$15,000





aircraft's angle of attack during climb and descent and mimic the positions of an adjustable hospital bed. Options including drawer storage and shrouds are also available. Stevens says a basic bed frame starts at US\$15,000. Besides options, the method of attachment can drive up the price. "If the customer wants a bed frame that picks up exactly on Boeing seat track, that makes it more expensive." He adds that beds for VIP aircraft are generally highly customized affairs: "You show the customer stock designs but generally they always want something a little different."

Light touch Weight continues to be an ongoing knock on aircraft beds, but another manufacturer, LifePort, has been able to reduce their weight significantly by using machined, lightweight aircraft aluminum parts for the bed frame

5. 787 stateroom concept from Andrew Winch

Comlux ACJ bedroom

instead of metal tubing, sometimes saving up to 60 lb per frame with this construction. The weight savings are needed because of the increasing list of features VVIP customers are demanding on their beds.

Recently LifePort designed a VVIP bed for a head-of-state completion on an Airbus A340-500. The king-size bed has a top and bottom frame; the top is used for pitch levelling in flight while the bottom contains the adjustment actuators. The bed is also equipped with twin variable speed massaging mattresses; independent touchscreen controls for each side of the bed to adjust pitch, mattresses, headrests, and footrests; and independent actuator controls for position adjustment on each side of the bed. The frame also includes 3° levelling that automatically adjusts to provide flat sleeping surfaces in flight.

However all the completion centres agree that waterbeds are unsuitable for aircraft - the threat of corrosion or an electrical fault resulting from any potential leaks rules them out on safety grounds: "The risk is too high - water drainage could drip into one of the electronic lower lobe compartments," points out Ralf Walter, team leader and project specification manager interior design, Lufthansa Technik.

Flexible thinking Of course there are happy mediums between inflatable mattresses and beds fit for a potentate, including berthing divans and bunkbed divans - a perennial favourite for crew rest areas. Airbus Corporate Jet Centre has designed and installed an electrically actuated, foldable bed that deploys from the bulkhead, enabling any meeting or baggage room aboard the aircraft to quickly convert into a sleeping compartment. Twin beds are also increasingly popular, particularly for VIP charter and the Middle Eastern markets, where they offer a more flexible solution for business or family groups.

More of these innovative designs are no doubt in the pipeline, helping ensure no matter the price point or size of the aircraft, a comfortable sleeping solution should be available. **END**

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Never mind Boeing's own delays – can the completion centres handle the challenges presented by the 787's composite fuselage?

here are only four ways to make an aircraft more efficient: power it with more economical engines; craft a more aerodynamic shape; cut weight; or just park it out in the desert somewhere and walk away.

Boeing is trying the first three options with the new twin-aisle 787 twinjet, which will be powered by new-generation Rolls-Royce or GE engines, and is also lighter and more aerodynamic than its predecessors as a result of its composite fuselage and wings. However, things rarely go smoothly when a metal aircraft company converts to all-composite assembly. Aviation is inherently biased towards incrementalism. Quantum technology changes tend to vex manufacturing engineers and certification authorities alike and turn even the most diligent project management into bad fiction.

While the 787 test programme appears to be doing better these days, the aircraft is years behind schedule, mainly because of design and supplier glitches. Boeing already has announced that the first deliveries off the line will be overweight, raising concerns about range and efficiency guarantees. More than 12 VIP 787s are on order and certainly more will follow. The first will arrive at a completion centre sometime in 2012, and the 787's tortured gestation and new technology is making completion centres looking to work on the aircraft a little nervous.



History lessons The Boeing Business Jets unit is working hard to assuage these concerns through close consultations with completion centres; and the development of technical data packets for various aspects of 787 VIP interiors well before the first production aircraft rolls off the line. However, trepidation remains among many centres and their suppliers who worked on early 737-based BBJs in the 1990s. Several of them still recount "trial and error" horror stories plagued by huge delays and cost overruns, and the frustration from that experience, while somewhat faded, still lingers to a degree in the industry's institutional memory. BBJ president Steve Taylor remembers it well, "We've seen that movie," and vows that things will be different on the 787.

2-4. Lufthansa Technik and Andrew Winch released these 787 interior concept renderings at the 2006 NBAA show





BY MID-2010 FIVE **TEST AIRCRAFT HAD** ACCUMULATED OVER 1,000 FLIGHT HOURS, HOWEVER CERTIFICATION COULD BE DELAYED INTO 2011





The 787's teething problems are not unlike Beechcraft's river of red ink that floated, and then sank, the all-composite Starship turboprop. Thirty years ago that aircraft was designed to fend off a market attack from the Cessna Citation turbofan. By the late 1960s, composites had begun to find their way into aviation, initially in sailplanes. Beech's own research showed that carbon fibre was at least three times stronger than aircraft aluminium. Beech's parent company (then Raytheon) would spend a million man-hours and US\$350 million (early 1980s dollars) bringing the aircraft to market and hundreds of millions more marketing and supporting it. Some estimate that Raytheon plowed as much as US\$1 billion into the programme, but in the end only produced 53 of the US\$5 million aircraft

that turned out to be thirsty, overweight and shy of a few passenger seats. It looked futuristic and cool, but by any financial yardstick, the Starship was a disaster. (Hawker Beechcraft has done better with two subsequent jet designs that use all-composite fuselages mated to metal wings.)

That will not be the 787's fate. Profithungry airlines, enticed by Boeing's claim that the Dreamliner will post double-digit efficiency improvements over comparable metal aircraft, have ordered nearly 900 787s worth more than US\$132 billion, making it the most successful commercial airliner launch of all-time. Certainly composite technology has made great strides since the 1980s and Boeing's engineering resources far outpace those of a corporate aircraft manufacturer. Nevertheless, even with record orders, the 787 has encountered turbulence.

Part of it was driven by Boeing's aggressive push to outsource major subassemblies, including the fuselage barrels, to companies that had never fashioned them before from composites. To hasten component assembly at Boeing, suppliers were also being asked to stuff more guts – wires, connectors, tubes and the like – into the components they made. More complex assemblies mean more paperwork - and more paperwork mistakes. The fuselage subassemblies come from no fewer than six different companies around the world. In a move designed to speed things up, Boeing actually bought a big chunk of one of these suppliers (Vought). When the first 787 rolled out in July 2007, it was held together with temporary fasteners. Subsequent ground testing showed that the wing body joint needed to be redesigned. The first flight slipped repeatedly, from 2007 to 15 December 2009. By mid-2010, five test aircraft had accumulated more than 1,000 flight hours; however, certification could be delayed into 2011.

Designs on the job Although the first US\$153 million (2007 price, green) 787-8 VIP will not be delivered to a completion centre until 2012, as early as 2006 leading designers and centres began fashioning futuristic interior concepts that played on the aircraft's spacious 2,400ft² cabin, larger fuselage windows and open space. Working with designer Andrew Winch, Lufthansa Technik has developed several concepts including a 35passenger layout with all lie-flat seats. BMW Group's DesignworksUSA created a whimsical design for a fictitious Russian billionaire complete with fitness centre, band stand, an

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Design perspective

Peder Eidsgaard of Pegasus Design on the challenges and opportunities presented by the VIP 787:

How much help have you had from Boeing?

Boeing is understandably very strict in releasing data, hence much of the detailed design can only take place once an outfitter has been chosen.

How much of a problem is the 787's composite fuselage?

We are expecting the fuselage thickness to be similar to that of an aluminium aircraft; and that the bulkhead attachment engineering will not intrude significantly into the living areas. On the other hand, we expect the aircraft to be more sensitive to weight and balance, hence the positioning of interior facilities will need to be carefully considered. Overall, a new aircraft built in new materials will mean some new challenges, which of course nobody can predict the extent of at this stage.

What are some of the more unique possibilities?

A very wide fuselage, the possibility of high ceilings, and larger windows all provide greater freedom to replicate an owner's earthly lifestyle in the sky. I cannot comment on our current projects, but I can confirm that the 787 fuselage offers space in which very luxurious facilities can be incorporated! The greater range means longer service periods for the crew, hence facilities for them to relax properly also need to be provided. Waste management is another important factor – longer flights mean more food packaging, cans, bottles, etc.

- 5. Sketch from Peder Eidsgaard showing 787-9 movie theatre
- 6. Library and lounge





enormous media room, open staircase, bar, and glass floor revealing – what else – a BMW automobile stashed in the cargo hold.

Some actual client designs are already in the works. In 2007, Jet Aviation signed a letter of intent with a prospective customer. Working with designer Peder Eidsgaard, the Swiss completion centre has fashioned a prospective 24-seat design that features beds for 10 passengers, a gym with sauna, library and lounge, formal dining room, three guest rooms, a walk-in shower in the master suite, and a two-level movie theatre with a 60in pop-up plasma screen.

BBJ's Taylor says he expected some of the designs to be as radically new as the aircraft itself: "Well-known designers produce challenging designs, but they are workable," he says, noting that there are fewer hiccups with designers who have previous aviation experience. First-time aircraft interior designers, who often have an established relationship with an aircraft buyer because they designed his office, home, or the inside of his yacht, can be another matter. "Those are the ones that drive the completion centres crazy."

Boeing is reaching out to some designers directly with special data packages: "We don't give the designers the same depth (of data) as the completion centres," says Taylor, but they do get an "outfitters data package" that contains "everything a designer needs to do to an interior."

Time to reflect The pressure for designers and wide-body completion centres to "nail it" has never been greater. The 787-8 VIP will be able to remain aloft for nearly 22 hours and fly unrefuelled missions up to 9,590 nautical miles with reserves. A followon 787-9 VIP adds 300ft² of cabin space and 400 more miles of range. If something malfunctions in flight, the unhappy owner is likely to have plenty of time to stew on it before landing. Beyond that, there is the small matter of finance. Typical 787 VIP completion budgets are estimated at US\$40 million to US\$70 million per aircraft, the higher end equivalent to the cost of an entire completed 737 BBJ in the 1990s. The stakes are high for both Boeing and the completion centres - any serious missteps by the latter will make the financial carnage on those early BBJs look like a rounding error.



7-8. Jet Aviation and Pegasus Design (Peder Eidsgaard) released these renderings of a VIP 787-9 concept at the 2006 EBACE

Taylor, a witness to that unpleasantness, first at Boeing and then while working as chief pilot for a 737 BBI owner before returning to the company, understands the challenges ahead, admitting "some (completion) centres are more or less comfortable" with Boeing's data sharing on the aircraft. While most deliveries of green VIP 787s remain years out, some designers already have submitted interior concepts to Boeing for review.

Predrilled frames Boeing is also reaching out to designers and completion centres. In January, Boeing held a week-long symposium on the 787 for all licensed twin-aisle completion centres during which time the company "exposed the enabling architecture in the 787" for VIP completions, says Taylor. "We were able to show that there has been progressive thought" on the 787 that will make VIP completions "in some ways easier than on an aluminium aircraft," he continues. By way of example, he points to predrilled frames and attach points on the 787 "that do not exist on aluminium jets" that will make monument placement easier.

However, not all completion centres are convinced: "You can't do the same things [on a 787] that you can do on an aluminium airplane," says Gore

Design Completions' executive vice president Rob Tomenendal, who warns that, despite Boeing's data packets, VIP 787 completions will "require a lot of R&D". This will include development of design standards that competitors are unlikely to share. "Boeing is going to have to participate in the engineering development," says Tomenendal.

Taylor says Boeing is doing just that with the data packets it is developing and with the available "bucket of engineering hours" included in the price of each 787. Nevertheless, completion concerns, particularly about the 787, were prime topics of conversation at the Boeing Operators Conference in June. Boeing took advantage of the gathering to hold a morning session dedicated to 787 completions. "The completion centres will have to come back to Boeing on certain things and we will help them," acknowledges Taylor, who highlights the development of a more specialised software code as a priority. However, overall he remains confident: "We think we have our data lined up." END

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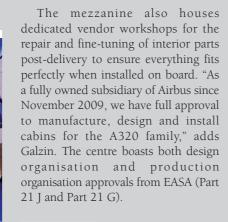
and extend our facility. We have

refurbished offices and workshops, and

adopt this way of working - it required

a lot of investment but it's really

appreciated by customers."



Good pedigree ACJC is in the fortunate position of being able to blend newly modernised facilities with an experienced staff - many of its employees used to work on the same site for EADS Sogerma's cabin outfitting business before Airbus reorganised and

relaunched it as the Airbus Corporate Jet Centre in July 2007. Prior to this date, EADS Sogerma delivered eight ACJ projects for customers including Aero Services Executive, National Air Services (NAS), the Venezuelan government and undisclosed clients in the Middle East. It also just happened to deliver three VIP wide-body projects - two A330s and one A340 - but more on that later.

The centre now boasts some 200 staff, having begun life in 2007 with 117 employees. Its investment in people and facilities has enabled ACJC to deliver five completions in the last three years - with three deliveries in 2009 alone. Its very first delivery was an A320 airliner that was refurbished with a VIP lounge upfront, as well as the latest satellite television and communications

- 1. One of two nose docks that ensure same-level access for ACJC workers when installing cabin equipment
- **2.** ACJC's 6,500m² main hangar can accommodate three ACJs at the same





latter trio was delivered to VIP charter firm, Acropolis Aviation, earlier this year. The aircraft (G-NOAH) features a luxurious cabin seating 19 passengers and a special U-shaped galley to ease food preparation on board for the crew.

"Everything has changed in this company in terms of capability, infrastructure and organisation over the last three years. As such, to deliver five aircraft with customised cabins is a good achievement. Our customers are VIP and VVIP - therefore every interior is different."

Meanwhile ACJC is on schedule to deliver its sixth completion this October. The aircraft in question is an A320 for an undisclosed customer, and features a VIP lounge, bedroom, bathroom with shower, an office and a separate entourage area with airlinestyle seating.

Quality not quantity Going forward, the outlook is relatively simple - at least until 2012. The company began life in 2007 with a five-year plan - to offer the best possible completions to ACJ owners and operators, backed up with full engineering support throughout the life of the aircraft. "We want to be known for the

China

interior designed by Mariat

concept (by Mariat)

3D project seat (by

Main lounge

core business but we are also an approved maintenance organisation

quality and not for the quantity of aircraft we are able to deliver," explains Galzin. "Overall, our strategy is to provide a full range of services – completion plus maintenance engineering, airframe upgrade, full engine support, spares pool access, warranty management, and maintenance checks," he continues. "Cabin completion is effectively our

ACJCINTERVIEW





able to support the Airbus aircraft from nose to tail, including the engines."

Hence since the start of this year, ACJC has begun offering VIP Pass – a customisable package of services, including cabin upgrades and refurbishment, airframe maintenance, cabin and airframe spares, and full engine support. The VIP Pass is available for the ACJ family, A330 and A340 aircraft.

Future growth Next year, Galzin says ACJC will deliver four ACJ completions: "It's not a lot compared to some of our competitors, but we want our customers to feel they are dealing with a humansized organisation," he acknowledges. "We don't want to have lots of aircraft waiting in line in front of the hangar."

However, from mid-2012, there's every reason to believe the completion centre will begin to grow its portfolio - to include wide-body VVIP Airbus completions: "We have







TWO A330S AND ONE A340 HAVE ALREADY BEEN COMPLETED IN OUR HANGARS

chosen to focus on the A320 Family first because it was necessary to validate our new processes, industrial tools and re-organisation. Obviously A330 and A340 cabin completions involve more resources and longer outfitting periods, but we know we may come back to this product in the near future. Two A330s and one A340 have already been completed in our hangars by the previous organisation [EADS Sogerma], so we have the capability to do it. We are already an approved maintenance organisation [Part 145] for both the A330 and A340."

For now though, the focus remains firmly on ACJs: "We are fully booked in 2011 for green aircraft cabin



7. ACJC's VIP conversion kit can be installed on an A320 in just eight hours

completion but there are still opportunities for cabin upgrades and airframe maintenance," says Galzin. "In fact we have more and more requests for cabin upgrades – especially to add or upgrade systems." However, owners seeking a full green VIP completion will have to wait until the second quarter of 2012.

In-house expertise ACJC offers its own in-house designer, Sylvain Mariat, who joined in 2008, having spent the previous four years as a cabin designer at Airbus helping airlines to visualise their cabin schemes. "We have the capability to propose a creative design service to our customers," explains

Galzin. "Some of our customers don't know anything about the aviation world, so they are very appreciative when you are able to offer a full package of services, including those of a creative designer."

They also appreciate the reduced price tag: "I think it's more interesting in terms of cost – it's a little bit less expensive when you think about it," admits Galzin. "When you propose your in-house designer compared to someone from the outside, it doesn't cost as much because you are not paying for the outside designer's brand – his signature design."

However, that's not to say customers are getting any less value: "I have experienced several meetings between our designer and aircraft principals, where, after listening to the customer and discussing their preferences for the overall cabin ambience and materials, the principal is amazed because Sylvain is able to just pick up a pen and make a few sketches. He draws on a piece of paper what the customer would like to have and the customer says, 'Wow, that's exactly what I mean!'"

Mariat himself insists it is this ability to listen that lies at the heart of his work: "I do not develop a preconceived idea," he says. "I am guided by the

Quick change

A highly flexible VIP conversion kit is now available from the Airbus Corporate Jet Centre for airline and government operators of the A320 family aircraft. The kit allows the aircraft to seamlessly switch between commercial transport and VIP operations. Already in service with an undisclosed customer, it requires less than eight hours to install. "The Airbus Corporate Jet Centre is now capitalising on its experience and know-how with this VIP conversion kit solution, which is the quickest to install in the current VIP market," says Bruno Galzin, ACJC's head of sales and marketing.

The kit converts the forward passenger area into a spacious VIP section with two double VIP seats and two club-four seats with hi/lo tables. Partitions, high-quality leather upholstery, wool carpets and elegant curtains for a warmer ambiance and greater privacy are also provided. The conversion can be performed by any EASA Part 145 organisation or Approved Maintenance Organisation (AMO) certified by its local authority. ACJC is now preparing a VIP conversion kit for installation on a second A320 aircraft for the same customer.



desires dictated by my clients, be it in terms of ergonomics or form. I provide the visual solutions based on reality, my perception and my own data and especially by what I detect from the customer. Overall, I think the challenge for the creators of VIP interiors is to inspire our customers while providing optimum functionality."

Technically speaking Beyond this very human skill, the ACJC also offers an impressive array of design and engineering software: "We can go from a simple sketch to a rendering to the real cabin," explains Galzin. CATIA is used to check the impact of interior features on key systems, as well as to review ergonomics and overall feasibility. "We

build the cabin as a 3D digital model and then we confirm all the elements with the customer and the engineers it's a very modern way to work."

The centre also uses AMOS as the maintenance information system for its VIP Pass: "AMOS is a leader in off-theshelf maintenance information systems for the airline industry, but such highend products are not easily accessible to ACJ operators and owners since they require an IT infrastructure and specific operating knowledge," says Fabio Beretta, head of customer support and services, ACJC.

Finally, customers also benefit from strong support throughout the completion process - and beyond. "One customer was a little surprised because

Completion trends

Airbus Corporate Jet Centre reports strong interest from communications systems: "We have installed satellite TV, WiFi, GSM onboard and audio/video on-demand IFE systems; and we were the first completion centre to certify a tail camera for an A319 – the same tail camera fitted to the A380 on the assembly line," says Bruno Galzin, head of sales and marketing. "We also get requests for mood lighting, cabin air humidification systems, water purification systems, and now we are studying 3D television screens." ACJC has developed its

- 9. Acropolis Aviation A319CJ delivered earlier this year, with an interior created by Yves Pickardt of Alberto Pinto Interior Design
- 10. The Acropolis ACJ features a luxurious cabin with seating for 19 passengers

it was the first time he had the same team from the beginning to the end of the project," says Galzin. "We have a single team in front of the customer throughout the whole completion - a programme manager, a technical project manager and an aircraft manager. When we reach the end of the project, we also have a customer support manager who is available after delivery and is the main contact during the life of the aircraft for the operator. He can assist and train the crew and engineers to ensure they are comfortable with the systems and to check everything is fine during the first month of operation." **END**

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t the very top end of the aircraft charter market, the emphasis is firmly on quality rather than quantity. However Abu Dhabi-based Royal Jet, chaired by H.E. Sheikh Hamdan Bin Mubarak Al Nahyan, manages to combine both qualities. As the world's largest single Boeing Business Jet (BBJ) operator, it offers no less than six BBJs, two Gulfstream 300s, a Gulfstream IVSP and a Learjet 60 for exclusive hire to its prestigious client base. There are also plans to add an Embraer Lineage 1000 before the year is out. "Our vision is simple – to provide the finest private jet operation in the world," declares Shane O'Hare, Royal Jet's CEO and president. And he means it.

For proof, look no further than the recent return of a fully refurbished BBJ (registration A6-RJY) after a multimillion dollar refit at Goderich Aircraft Inc, Ontario, Canada. "The interior was originally specified for the presidential flight of Abu Dhabi, which was the original owner of the aircraft," explains O'Hare. "At the time the work was carried out the aircraft was around nine years old and the refurbishment was part of a continual fleet upgrade programme. It's almost a full completion rather than a refurbishment. Everything was changed - from the IFE system all the way through to the lighting, passenger amenities, bathrooms and the seating configuration and layout."

Welcome aboard Split into three cabin zones, RJY includes a majlis-style VIP lounge, a more formal meeting and dining area, and a rest and relaxation zone, making it suitable for a variety of VIP guests. Fitted out in Italian leather and high-gloss walnut veneer, the aircraft can be configured for either 40 or 50 passengers. The latter features 14 VIP seats from B/E Aerospace that convert into fully flat beds. In addition, there are two Lifeport-supplied divans that can accommodate six passengers in the meeting room (or formal dining area). There are also 30 seats in the rear for the use of entourage passengers – an important consideration for operators in the Middle East. The 40-seat option sees 22 VIP seats (with eight to the rear of the meeting room) 12 standard units and two three-place divans.





- A6-RJY includes a majilis-style VIP lounge with programmable mood lighting
- 2. There's also a 42in flat-screen, multichannel live TV system



THE EQUIPMENT AND THE FACILITIES ON BOARD HAVE TO BE COMPLETELY UP TO DATE

Equipment check

- Lufthansa NICE Ethernet-based audio/video on demand (AVOD) system
- Two AVOD servers provide 1 Terabyte of robust flash memory for video and audio IFE media contents, which is equivalent to 450 movies
- 42in widescreen LCD monitor for the VIP lounge
- 23in LCD monitors in VIP sleep zone and rear cabin
- 10.4in LCD touchscreen monitors for each VIP seat
- Apple iPod and iPhone docking stations for each area fully integrated with IFE, providing a more personalised IFE source
- Four dual-drive DVD players
- Rockwell Collins Tailwind 550 airborne live TV system for worldwide coverage
- Collins Airshow 4000 moving map system
- Quad Colour external camera system providing forward, aft, left and right views outside the aircraft during take-off and landing
- Trim panel speaker system delivers surround sound quality
- Noise-cancelling headphones for each seat
- GSM mobile phone connectivity
- WiFi broadband internet access
- Honeywell satcom system with Swift Broadband data connectivity and conventional satellite telephones/ fax machine
- Emteq Quasar full spectrum LED lighting system
- Fully programmable lighting scenarios
- Starlight system for the VIP lounge and mid-cabin area

The plush carpets come from Aircraft Interior Products, with galley and lavatory floor coverings supplied by Lonseal. Cabin trim and finish details include leather from Townsend and veneers from Carl F. Booth (DeCrane Aerospace). The new mood lighting system is from Emteq, while the star-effect ceiling is the work of E.I.S. Electronics GmbH.

The interior is the proud creation of Royal Jet's Nizar Jazzar, vice-president, aircraft engineering project and business development, who also called upon VIP design consultancy RWR Designs, with offices in Dallas and London. "The new cabin colour and material choices were guided by the need for elegance, richness, comfort and simplicity," says Jazzar. "The interior colour reflects the region and the UAE's rich culture, with final selections made by our chairman, HE Sheikh Hamdan Bin Mubarak Al Nayhan."

Keep in touch A new communications system provides onboard WiFi and GSM mobile connectivity, while satellite telephone and fax machines further ensure guests are able to keep in touch with colleagues, family and friends back on the ground. There's also a multichannel live TV system and a 42in flat-screen monitor – one of the largest currently flying. Further entertainment can be viewed on 28in screens positioned within the rear of the cabin, as well as personal, armrest-deployable 10.4in screens in each VIP seat.

"When you have customers that may be paying a million dollars plus for a charter, the equipment and the facilities on board have to be completely up to date," explains O'Hare. "Staying in touch is very important, so as well as GSM availability and onboard satcom and internet, we have a live TV system in addition to a Lufthansa Technik-designed and patented audio/video on demand system, which is custom made for VIP jets. This is the first BBJ installation that Lufthansa Technik has done and I'm pleased to say it's extremely reliable."

A state-of-the-art avionics suite has also been installed, enhancing the operational efficiency of the aircraft. "We committed a significant amount of money and resources to the overhaul of RJY, which now epitomises the very best in cutting-edge technology and luxurious refinement," says O'Hare. "Only when one sees the inside of this aircraft, is it possible to comprehend the sheer luxury of the fittings and thereby one of the many refinements that differentiates our offering from the competition."

World domination In creating a virtually new aircraft, Royal Jet has reaffirmed its claim to operate the most sophisticated and luxurious charter jet fleet – bar none. Despite the difficult economic and market conditions of the last 18 months, O'Hare says the company continues to press on with its

THE AIRCRAFT PROVIDES THE EXPERIENCE OF A PRESIDENTIAL SUITE

commitment to an ambitious and aggressive five-year expansion and service enhancement plan: "Part of our growth strategy is to increase our fleet over the next five years through acquisitions and aircraft management deals," he says. "In addition to the return of RJY, we have also just added a sixth BBJ to our fleet, while an Embraer Lineage 1000 will arrive later in the year. We are steadfast in our determination to enable more guests to enjoy an inflight experience that we believe surpasses by a large margin the offering of any other commercial private jet operator anywhere in the world."

Latest arrival The sixth and latest BBJ (A6-DFR) to join Royal Jet's fleet is configured to accommodate up to 18 passengers. The cabin begins with a majlis-style VIP lounge upfront, followed by a further two lounges, a private office and stateroom, as well as two bathrooms complete with luxurious showers.

"It offers a truly private jet experience and is perfect for a small, intimate group of people, affording

extreme levels of comfort and a great deal of living or working space, all combined with total intimacy and privacy," says O'Hare. "The aircraft provides the experience of a presidential suite in some of the world's most luxurious hotels."

O'Hare says all its interiors have to deliver exceptional quality to meet the needs of clients, many of whom are members of the ruling Middle Eastern dynasties: "What they're looking for is obviously a high level of comfort," he says. "Our customers are born and bred with quality, they understand quality, they know what it looks like, and they know what it feels like. Obviously everything needs to work, it needs to be functional, it needs to be extremely comfortable, and it needs to take into account cultural factors."

Guest service Overall, O'Hare likens Royal Jet's customer service to being similar to an exclusive hotel: "It's like running a six- or seven-star resort," he says. "We see ourselves very much in the hospitality business. There's an extensive consultation process with the client on exactly what their needs are

Mix and match

Royal Jet offers six BBJs in total, with varying interior layouts. A6-DFR has the least seating (22 passengers) on board, while A6-RJY can accommodate up to 50 guests in 14 VIP seats, 30 standard seats and two three-place divans. Three of its BBJs feature separate bedrooms with adjoining bathrooms, while all feature separate cabin zones ideal for principals travelling with entourages. "Often within a customer delegation there are different types of people, from entourage through to advisers, up to the lead customer and their immediate family," explains Shane O'Hare, president and CEO of Royal Jet. "When choosing the type of aircraft, these things are looked at fairly carefully. A dedicated bedroom, shower facilities and baggage space are also extremely important. Finally the range of the aircraft – how far it can take them without a stop – is also considered with these high level delegations."

O'Hare says Royal Jet will continue to add to its fleet and expects "to take another unit in 2012".

> so everything for that particular trip is tailor made - from the menus to the types of wine we serve, down to the magazines, IFE choices and bathroom amenities on board."

> Personalised touches that create a 'home from home' are key: "Some of our clients have their own crockery. cutlery and glassware, which we store and uplift for them on their specific missions," he explains. "Every customer that we fly has a profile that our crew updates according to their observations and specific customer requests. It's very specialised, very bespoke and the training and selection of our crew is built around their ability to provide exceptional service," he continues. "It's the opposite of normal airline operations where 90% of what happens is predictable as far as the service and interaction with customers is concerned. It's almost the complete opposite and the crew are specifically trained in these kind of operations."

> Our guests have come to expect only the very best in terms of luxury, service, confidentiality and security from Royal Jet. The return of RJY to our fleet will ensure that we remain the world leader in providing luxury aviation, setting the standards that other companies can only dream of emulating," concludes O'Hare. END

Web www.royaljetgroup.com







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ombardier's purchase of the Saint-Laurent (Montreal) facilities of ExelTech Aerospace Inc. announced in June, is designed to increase Bombardier's Global Completion Centre (GCC) capabilities for its Global 5000 and Global Express XRS business jets. The GCC originally opened in 1998 with a capacity of 20 aircraft per year. It is a fully integrated completion facility with the capability to define, engineer, fabricate, certify and deliver customised interior installations. The acquisition adds 115,000ft2 (10,684m2) of hangar and workshop space, ensuring Bombardier is able to offer six additional aircraft positions per year. Although Bombardier remains tight-lipped on the exact capacity Stéphane Leblanc, vice president, Global Completion Centre, says the target is "around 40 aircraft in the main facility".

"As we get better and better at doing our own Global completions we will be getting more workshop space and do intend to complete the majority of our aircraft in house," says Leblanc. Presently Bombardier says it completes around two thirds of its aircraft in house. "The aircraft that we complete will strictly be handled at our Montreal facilities," he adds. Currently there are no plans to recruit extra workers as Leblanc says they already have enough staff to cope with the increase in capacity - around 2,000 workers on the completions side. "We think we have enough people to cope with the business growth that we will see in the next two to three years - we have introduced lean manufacturing and we are striving to become more efficient, which should ensure we achieve the necessary throughput."



Up for the challenge

typically darker also some beige and greys. Customers





Design trends The main advantage of handling more completions in house is the ability to ensure complete customer satisfaction: "We can really focus on what the customer wants," says Leblanc. "We follow a lot of trends in keeping up with our designs - right now the focus is on connectivity." Sandra Henry, a designer at the GCC, adds: "We are seeing more linear carpets, metallic and pearlescent finishes on the seats and even animal prints. Overall, it is very much a clean cabin look that is in demand, but with some customers opting for a more classic or more modern slant."

Ultimately Bombardier's large cabin and long-range business jets are designed to provide a home away from home: "Our customers are looking for a seamless transition between home and aircraft," explains Mark Ghaly, product planning, Global. To help them achieve this, the GCC employs 22 designers dedicated to creating cabin schemes that match their owner's aspirations. "We have a good cabin for noise and cabin altitude but we really need to reproduce the same comfort as the owners experience at home," adds Leblanc.

Fortunately there's plenty of room to play with on board - the Global 5000 boasts a cabin volume of 2,022ft3 (57.26m3), while the XRS has an even more impressive 2,140ft³ (60.6m³) of cabin space. Bombardier even offers a full stand-up shower module on the XRS to help revive customers always on







- 1. XRS media suite
- GCC customer showroom
- Modular seating options help speed completion deliveries

the move. The shower can take up to 75% of the 28 gallons of water on board, providing up to 40 minutes of shower time. The shower module costs US\$960,000 to install, including the aircraft modification. "One customer wanted a full gym on board their aircraft," adds Leblanc. "While we try to accommodate all of our customers' wishes, we were only able to add an exercise bike into one cabin. We do get the occasional requests that are just impossible to deliver."

XRS customers looking for the latest in audio-visual stimulation are also offered a mid-cabin media suite featuring a 31.5in flat-screen monitor mounted in a custom entertainment cabinet opposite a side-facing, full-berthing, three-place divan. A surround sound system with both cabinet and monitor-mounted speakers completes the experience.

In theory the cabin is completely customisable, with more than 40,000 different materials and finishes available to choose from in the GCC's showroom. "The real challenge for us is to be able to accept something that we can actually do," cautions Leblanc. "We therefore have a thorough process of assessment to check that customer requests can be achieved, particularly if it is a new request. It is crucial to get

quality. We know that the Global brand is a high-quality brand and that we have to meet the expectations every time we build an aircraft."

Modular package To ensure tighter quality control, Bombardier builds a large amount of predefined modularity into its cabins: "We do try to go into customer meetings with pre-engineered modules. We have done several hundred completions on this aircraft type and have a lot of experience. We know what can and cannot be done," says Leblanc.

The G5000 offers four base interiors that can then be customised: the Manor with 15 seats; the Monarch with 11 seats; and the Limited Edition and Ultimate, both of which seat 13 passengers. The XRS has six base interiors: the Estate offering 15 seats; the Suite with 14 seats; the Premium and Pinnacle that both offer 13 seats; and the Limited Edition and Ultimate that cater for 14 passengers.

Once a customer has decided on his interior, the challenge is then to ensure prompt delivery: "We have given ourselves the challenge of being more efficient in a very custom environment," says Leblanc. "We are introducing lean manufacturing techniques to our completions. For example, we build all





XRS cabinets in house in a lean manufacturing line. We have 16 types of cabinets and each has its own mini, moving production line. This is important, as cycle times are a big challenge. Once a customer has made the decision to buy it, they want it now."

Leblanc says about 90% of the XRS cabin is built by Bombardier itself, while for the Global 5000, it is around a 50/50 split of internally sourced parts and external suppliers. "We do however buy the cabinetry for the 5000, from C&D Zodiac."

According to Leblanc, the GCC is also working to improve the efficiency of the aircraft specification process itself: "Customers don't always have a lot of time, so we have to capture their needs, desires and aspirations before turning them into a design as either an extension of their company, themselves or even both," he says. "We are no longer looking to merely satisfy our customers. We want to amaze them. If

we amaze them, they'll come back to us in the future. Often people won't remember what you tell them during the completion process, but it is guaranteed they will remember how they feel. We are very much in the business of answering customers' dreams."

Overall, Leblanc is happy with the feedback he gets from customers: "We have stiff competition in the marketplace and the feedback we're getting is, that in terms of quality, customers are very appreciative of what we are delivering. They're saying we are meeting aspirations and expectations for quality associated with the Global brand. We are getting customer recognition for our customer care throughout the programme and getting a lot of positive feedback. We are also very busy focusing on efficiencies and maximising our throughput."

Part of that optimisation includes some investment in new technology. To help workers, Bombardier has added a



G5000 interior XRS shower module

CNC machine to cut leather in the upholstery shop, a move that Leblanc claims has really helped maximise efficiency. "We have also invested quite a bit in cabinet manufacturing, including investment in our varnishing capacity. We want to do most of it in house because the most visible part of the cabinet to the customer is its varnish finish. We have total control," he says.

The acquisition of ExelTech should only further tighten Bombardier's grip over its most lavish interiors. END

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Flying Colours and AP Completions prepare to deliver the first of three Challenger 850s destined for China

he first of three green Bombardier Challenger 850s being completed by Flying Colours for export to China is nearing delivery. The aircraft will be operated by a private company. The 850 is gaining popularity in Asia as companies opt for big cabin comfort at super-midsize prices. An executiveoutfitted aircraft can seat up to 14 passengers, yet costs about half the price of a comparable Global Express.

The 850's fuselage and engines are based on those from the Bombardier CRJ200 regional jet. Bombardier began to study the 44-50 seat regional jet market in 1987 and launched the programme in 1989. The aircraft made its first flight in 1991 and customer deliveries began the following year. The aircraft utilises the same fuselage crosssection as the Challenger 600 and Global Express series business jets.

The seeds of the current CRI programme were sown in the late 1960s with two US military aircraft programmes, the Air Force's A-10 ground support attack aircraft and the Navy's SA-3 carrier-based antisubmarine and patrol jet. Both aircraft would come to rely on a new, higherbypass turbofan engine, the General Electric TF-34 series. The engine came to the attention of business jet legend Bill Lear, who used it for a proposed

new design business jet in 1971. The Learstar 600 had a wide cabin, efficient and thin laminar-flow wings, and transcontinental range. He briefly tinkered with an offshoot of this design called the 'Learliner'. Canadair bought the design from Lear in 1976 and the 'Challenger 600' made its first flight in 1978. Customer deliveries began in 1980. Bombardier subsequently bought Canadair from the Canadian Government in 1986. More than 700 Challenger 600-605 series aircraft have been delivered to date and Bombardier used it as the basis to launch Canada's most successful civil aircraft programme of all time, the CRJ. More than 1,300 CRJs have been delivered to date.

Second life However, 50-seat regional jets have fallen from fashion in the marketplace of late. Initially, they were a real game-changer for the airlines, allowing them to bypass traditional hubs and provide point-to-point routes to smaller markets, or bring more passengers from outlying airports into their established hubs. But it was hard, if not impossible, to make money with 50-seat jets. As good as they were for building market share, regional jets were conversely awful for the bottom line. Airlines began parking them in prodigious numbers over the last few years as part of their bankruptcies and other financial reorganisation. This in





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turn created a booming market for completion centres poised to convert these dead assets to executive livery, thereby offering customers large cabin comfort at the fraction of the cost of a new aircraft.

Peterborough, Ontario-based Flying Colours was one of the first completion centres to get in the game with its ExecuLiner programme. It later acquired one of its major CRI conversion competitors, St Louis-based JetCorp. Both locations continue to do CRI conversions.

Three basic cabin layouts were offered to customers. Aft of the galley and forward lav there is an executive 'club four' of large single seats, followed by a conference grouping with narrower seats seating four to six passengers, with a hi-lo table, a mid-cabin credenza, and an aft stateroom with privacy pocket doors. The stateroom can be outfitted with either a single, four-place berthing

2. The 850 provides plenty of cabin for its price tag

side-facing divan opposite a 'half-club' or two opposed divans. Aft of the stateroom is the rear bathroom. The lavatory opens to a passageway for inflight access to the baggage compartment. Two 300-gallon auxiliary fuel tanks are located in this area.

However, while these aircraft had 'new' interiors, they were still old aircraft with all the attendant maintenance concerns on the airframe, avionics and engines. A growing market niche developed for customers who wanted a new large-cabin jet with all the amenities of a top-end Global Express, albeit without its range and speed, for the price of a super-midsize or roughly 40% less. Nevertheless, the 850 is a very capable aircraft. It will cruise near 500mph and carry eight passengers and crew 2,811 nautical miles non-stop.

Demand for the Challenger 850 in no way matched lost CRJ orders, but it did keep the production line open.

Since 2007, Bombardier has delivered 51 units - and 61 overall since its introduction in 2005. Some it runs through its own completions shop while others are purchased by customers green and completed by outside centres.

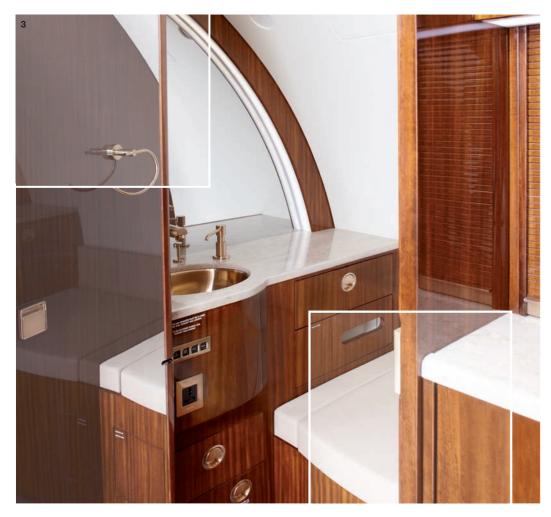
Natural talent Because of its work on CRJ conversions, Flying Colours found itself in a good spot to compete for green 850 work. It has already completed three and currently has another five in process: three destined for China; one for India; and one for Russia. Its first Chinese aircraft is nearing completion in partnership with AP Completions Services, which is acting as project manager on behalf of the client. AP, based in St Laurent, Quebec, has delivered over 20 aircraft in the last three years, but this is its first 850.

Flying Colours' sales and marketing manager Sean Gillespie calls the 850 "a big airplane". The cabin is 48.42ft long, 6.08ft high, and 8.17ft wide at the centerline, yielding 346ft² of floor area and 1,990ft3 of volume excluding the cockpit. This leaves ample space for a large cabin layout. On this particular 850 it includes forward galley, galley annex and lavatory followed by a large club four grouping with a Steecon hi-lo table, then a four-place conference grouping opposite a half-club, and behind that an aft cabin suite complete with berthing three-place divan, halfclub grouping, aft lav and aft wardrobe. Like the CRJ conversions, inflight access to the baggage hold is obtained through the lavatory and a corridor lined with two auxiliary fuel tanks. The galley and the main cabin are separated by a Steecon pocket door, and another Steecon door can be used to close off the aft suite from the main cabin.

"You can put all the state-of-the-art stuff in it that you would find in a Global Express," says Gillespie. "The

CAN PUT ALL THE STATE-OF-





IT'S A LEARNING EXPERIENCE FOR NE BRINGING AN AIRCRAFT

interior is gorgeous," adds AP Completion's co-owner Andrew Broccoli of Flying Colours' first Chinese 850.

The list of interior equipment and vendors confirms these assertions for this classically understated design, configured for 14 passengers in two zones. Unique positioning of fabric inserts on the bulkheads and lower dado panels add contrast. The contrast of the mahogany-stained, dark custom plywood quartered makore veneer with the lighter leather, headliner, sidewall and carpet colours gives the interior an open feeling. Modern Audio International cabin management and Spectra IFE systems with 8.4in monitors give passengers the latest in technology, controlled via 3.5in

Spacious and luxuriously appointed bathroom

touchscreens in the galley and passenger areas. The guts of the system, including dual DVD players and iPod docking station, are housed in the forward cabin closet off the galley.

The galley and galley annex are fitted with Corian Polystone counter tops that resemble granite. Galley equipment includes an Aerolux espresso maker and a TIA Wavejet microwave oven. Enflite convection ovens and refrigerators are available options.

Tapis Porcelain ultraleather is used on the headliner and sidewalls. The lower dado is covered in Townsend Heritage cowhide mink accented in Tapis ultraleather Promessa. Miritech manufactured the custom carpets. The DeCrane seats are covered in Townsend

Sandbar classic cowhide, while the divan is finished in Kravet Harmony Parchment with sumptuous mink pillow accents, also from Kravet. Signature Plating's satin chrome and EMTEQ LED lighting complete the elegant appearance. MTU Polyfab sound insulation keeps the cabin noise level much quieter than on a CRJ.

"This airplane is very quiet," says AP's Broccoli, who credits the material selection in terms of sidewalls, carpets. and the fabrics used on the bulkheads to absorb the sound a little bit more. "You can have a normal conversation. in a normal tone of voice during the flight. That is pretty impressive." Flying Colours' Gillespie adds interior cabin noise has been reduced down to "53 or 54dBA".

Official approval Although the interior has been approved by Transport Canada, it must ultimately be signed off by the Chinese CAAC prior to delivery, and that has presented a learning curve for both Flying Colours and AP Completions. "It's a learning experience for anyone bringing an aircraft into China," says Broccoli.

Gillespie says that there has been lots of customer involvement directly with the CAAC, which has helped to expedite approvals and resolve any issues that arise from language difference nuances.

While CAAC standards largely mirror those in the US and Europe with regard to issues such as 16g seating or flammability standards, there are important differences, notes Broccoli: "Little things you might not think of such as the placards," he cites as an example. "We thought they had to be in Mandarin and English. Turns out they have to be in Mandarin only."

Ultimately, a CAAC representative or designee will need to visit Flying Colours and sign off the aircraft before it can be exported, and both Broccoli and Gillespie expect the process to become smoother as more executive aircraft flow into China. Overall, Broccoli says this is only the beginning of the demand from that market: "It's coming hard and it's coming fast," he states. **END**

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super-midsizereport

From Dassault's popular Falcon 2000 to Gulfstream's new G250, the super-midsize sector offers a rich variety of cabin offerings to customers looking to combine comfort with range

Dassault Falcon 2000

The super-midsize niche emerged during the 1990s with the goal of taking eight passengers and full fuel non-stop 3,000 to 3,500 nautical miles from 5,000ft runways in stand-up, or near stand-up, cabin comfort. In 1989, the stretched narrow-body, mid-size Hawker 1000 was the first attempt to service the market. Then Dassault introduced the wide-cabin Falcon 2000 in 1995.

Dassault's Falcon 2000 was the first true 'super-midsized' twinjet and remains a popular one. For roughly the same fuel burn as a mid-size Hawker 900 you get a cabin only slightly smaller than a large cabin Challenger 605. The latest flavour of the 2000, the LX, was certified last year. It comes with winglets that help extend range to 4,000 nautical miles. Cabin size has always been at the heart of the 2000's enduring popularity.

It is capacious and measures a full 26ft long aft of the flight deck and is 92in wide (75.2in of floor width) and 74in tall. The dimensions yield 1,024ft³, not including 134ft³ of baggage space in the luggage compartment located aft of the lavatory and accessible in flight. The external luggage door is a generous 30.5 x 29.5in and conveniently located at shoulder height.

The cabin entry door is 31.5in wide and 67.7in tall. The entryway can be sealed off with an acoustical curtain in flight. The 36in wide galley/bar is opposite the entry and is equipped with a

high-temperature oven, a sink with hot and cold running water, an automatic coffee maker, two ice chests, two storage drawers, trash container, storage bins, four decanters and glass storage. Left of the galley and entry, two small closets flank the cockpit entry.

The main cabin is typically configured to seat 8 to 10 passengers. In the double-club layout, eight identical 20in wide (seat cushion) slide, swivel and reclining seats are fashioned into two groups of four with each pair of facing seats sharing a single fold-out sidewall table.

Two other layouts of note also feature this forward 'club four'. However, behind it you can select a four-seat conference grouping with two facing pairs of narrower 18in seats bisected by a fold-out, hi-lo table. Across the aisle from this conference grouping there is room for one choice from the four following options: a large credenza; a somewhat smaller credenza and one additional seat (ideal for a flight attendant); two additional facing narrow seats; or a cabinet with a two-place side-facing divan.

Meanwhile, details remain sketchy on the Falcon 5X (formerly known as SMS). The aircraft is expected to be comparable in size with a Challenger 300, and incorporate fly-by-wire controls. Its first flight is not expected until at least 2014.



Cessna Citation X

The Citation X cruises at Mach 0.92 at 49,000ft. More than 300 of the swift US\$21.7 million 'X' have been delivered. At altitude, over-theground speeds of 650mph or better in the X are routine. During flight testing it broke the sound barrier.

A dramatic belly fairing on the X makes it aerodynamically more efficient and holds key control cables, wiring and hydraulics. This frees up more cabin space compared with Cessna's first 'fast' bizjet, the Citation III. The X's seats and floor were also lowered 2in to free up more headroom. The 24ft-long centre aisle is trenched and while standing in it there is 5ft 10in of headroom. But for tall passengers, the 'short' seats place the knees above the waist and some

will find this uncomfortable. The fold-down armrests create a more open appearance, but look like they were stripped from a minivan. Complaints about overall seat comfort prompted Cessna to order a redesign several years ago. The new versions are only marginally more comfortable. The cabin's eight single passenger seats are arranged in two facing club groups and work/meal tables can be deployed from the cabin sidewalls.

Overall, the cabin is adequate, but by no means capacious. However, for many passengers the ultimate measure of an aircraft's comfort is still how fast it gets you to your destination – and not many can compete with the X on that score.





Embraer Legacy 650

The Embraer Legacy 650 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 Legacy will haul four passengers and lots of luggage 3,900 nautical miles or 14 passengers 3,500 nautical miles. That's a little more than half the range of the Gulfstream. It is also about 50mph slower.

In recent years Embraer has been marketing it as an alternative to super-midsize jets such as the Gulfstream G200, the Falcon 2000, and the Bombardier Challenger 300 -

aircraft that fall into the mid-to-high US\$20 million price range. Against the super-midsize crowd, the Legacy's cabin is 60% larger, measuring 1,410ft3.

This translates into a spacious cabin environment with seating for up to 14 passengers, although 10 is more reasonable. The typical executive cabin layout features a forward galley and closet; four large executive seats arranged in a facing grouping sharing two fold-out tables; four slightly smaller seats with a conference table and an opposite-facing credenza; and an aft stateroom area with two

more large single seats, a fold-out table, and an opposite-facing divan or couch. The divan is available with a berthing top that slides out to create a comfortable sleeping surface. The six executive seats have 20in-wide seat cushions and 26in-wide backs. They recline to 75°, track forward and aft, and swivel.

The Legacy's baggage compartment is 240ft³ and can hold 1,000lbs. The baggage compartment can be accessed in flight through the capacious 92ft3 lavatory. The lavatory also contains a generous wardrobe closet, ideal for inflight clothes changing.

Bombardier Challenger 300

Announced in 1999 and first delivered in December 2003, the Challenger 300 has a roomy cockpit that is reminiscent of Bombardier's much larger Challenger 605, as is the aircraft's 28ft-long, flat-floor passenger cabin. The seating area is more than 16ft long and the cabin floor is 61in wide. However, the cabin beam is 86in wide, yielding ample shoulder room. At 73in tall, the 300 has a genuine stand-up cabin.

On the Challenger 300, typical executive cabins are fitted with either eight individual

track-and-swivel reclining seats in a doubleclub configuration or six individual seats and a three-place side-facing divan. Between seats, work tables deploy from the side ledges. Optional legrests are available on the seats. The 106ft³ baggage compartment is accessible in flight through the rear lavatory – a clever arrangement that allows passengers to change clothes in privacy. A belted lavatory certified for take-off and landing is an available option. Starting with Serial Number 149, Bombardier turned to a new seat provider (Ipeco) for the 300. The new seats include full swivel and recline, as well as an optional jump seat that can be installed near the pilot door. The seat mechanisms have also been improved, with smoother and more reliable functionality. Bombardier has made other changes to the 300 over the years that include a new lightweight (200lbs) cabin sound insulation system, which helps cut cabin noise down to a perceived speech interference level of 56.5dB, and a reengineered and quieter main cabin door.







Gulfstream G250

The G250 is Gulfstream's successor to the super-midsize G200. The US\$24 million (2008 price) G250 was unveiled in October 2008. The aircraft is currently undergoing flight testing with certification expected next year. The G250 retains the G200's positives and discards the rest. As expected, the engines, wings and avionics are all new and are predicted to enhance aircraft performance.

The fuselage is unchanged from the G200, but optimising it and moving all the fuel into the wings created more usable cabin space as well as inflight access to the 120ft3 baggage compartment. The lavatory on the G250 will be a full 48in wide compared with

26in on the G200. The G250 lavatory will also have a wardrobe closet, two large cabin windows, a sink with raised ledge and a vacuum toilet system - a unique feature in a super-midsize jet.

Three basic cabin layouts are available in 8-, 9-, or 10-passenger configurations, including double-club and club with half-club opposite a three-place, side-facing aft divan. The redesigned galley, while the same size as on the G200, will have increased stowage space, a gasper-cooled ice drawer, and sink with slide-out work surfaces. It will also have a modular design, allowing customers to specify differing locations for the positioning

of things like coffee makers, ice drawers, glassware and liquor. Another clever but important innovation are drawers that can accommodate all sizes of catering travs. Options will include espresso makers, choice of microwave or convection oven, and stemware storage. The G250 cabin also has a forward closet. Cabin altitude at FL450 is a comfortable 7,000ft and the G250 will have Gulfstream's '100% fresh air system'. The electrical system also promises to be more robust on the G250, incorporating large aircraft features that include independent generators on each engine and a quieter auxiliary power unit.

Hawker 4000

The 4000 was certified in 2006 and is the largest Hawker ever built, with a stand-up cabin and a third more cabin space than a Hawker 900XP, the latest incarnation of a 40-year-old design. The 4000 typically seats two pilots and eight to nine passengers, and can fly more than 3,300 nautical miles at 495mph (four passengers) or about 3,040 nautical miles at 541mph (six passengers). It features a wound-carbon-fibre fuselage mated to aluminum wings. Fuji Heavy Industries, a partner in the venture, fabricates the wings in Japan. The composite fuselage is made in Wichita. It saves weight as well as fabrication, assembly and labour time; is five times stronger than aluminium; won't corrode; and yields more cabin space.

While the composite fuselage has many advantages, its rigidity can increase vibration-induced cabin noise. Relying on sound suppression insulation alone would simply add weight to the aircraft. So Hawker Beechcraft also uses special isolators to mitigate noise and dampen vibration. Cabin sidewalls, headliners and furniture are mounted on these devices, which absorb fuselage vibrations before they can be transmitted to the cabin and passengers. Specially designed acoustic cabin panels also suppress noise. The results have been impressive. Cabin noise, as measured in decibels

(lower numbers are quieter) is in the low 70s and the 'speech interference value' – a measure of how well speech can be heard – is in the low 60s. By comparison, interior noise in a new Lexus is 63dB at 70mph.

The flat-floor cabin is generously proportioned and comfortable. Passenger seats are available with full recline, manually adjustable lumbar support and optional legrests. A typical cabin is configured in either a double 'club four' layout with eight individual executive seats or with six individual seats and a three-place couch or divan. Each pair of single seats share a stowable 24in sidewall table. In-flight entertainment and lighting controls are sidewall-mounted at each passenger position, and master controls for the entire cabin are at the CEO passenger position and on a cabin touchscreen.

A forward cabin galley, two forward closets and rear cabin lavatory and walk-in baggage compartment with external access complete the layout. Both the lavatory and baggage compartment are generous for an aircraft in this category. You can actually stand up and move around in the bathroom, which features a potable water system, gravity-fed flushing toilet with external servicing and a wash basin. A belted lavatory seat is available as an option.





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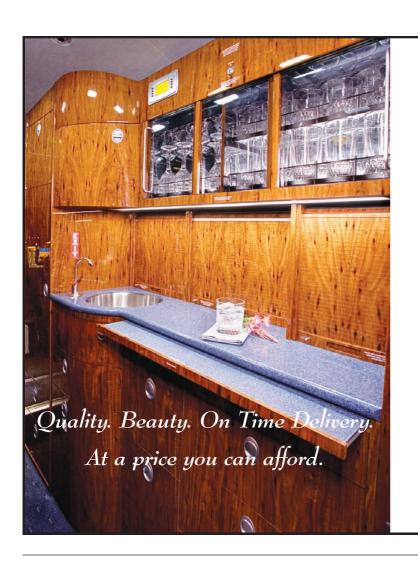
> Bernhard Strunk, Managing Director **RECARO GmbH & Co. KG**

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builttoorder

Besides numerous ways to control seating comfort, AST offers customers multiple ways to customise the seat before it is even installed

Aircraft seat manufacturer Aero Seating Technologies (AST) offers a range of seats small narrow-body business jets to whereby it adapts existing seat designs with minor modifications to satisfy specific customer requirements for comfort, style and ergonomics. The company says this results in shorter customisation and certification lead times.

AST's products include the nextgeneration 16*g*-certified Master Class seat, which is loaded with features designed to ensure ultimate seating comfort, including adjustment for 3in of vertical travel. Fore, aft and lateral translation - including 360° swivel and full-flat berthing with drop down armrests – are standard on all AST's 9g and 16g Master Class VIP seats. In addition, the integrated seatpan lifter and articulating seat bottom enable the seat to move from the fully upright position to lie-flat sleep systems and legrests are also available.

Single and double 16g Master Class seats were recently installed on green Global 5000 and XRS aircraft by a major

VIP seat for light jets, which when upholstered weighs less than 44kg (93 lbs). As with the Master Class seat, standard features include fore, aft and lateral translation, 360° swivel and full-flat berthing. Additional features include electric lumbar support and legrest, while optional power-assist mechanical controls are augmented by a 28V DC solenoid motor.

Meanwhile, AST's 16g divan design

offers a wide range of features, and is available in single- and two-place modular designs, enabling three-place and multipleplace seating arrangements as required. The divans have a low back design, so as stowage drawer and doors, fold-down arms and the ability to customise cushions for

through the integration of innovative



designs, meticulous craftsmanship, comfort and style," says Pete Perera, vice president of business development at the company. "From its operations in southern California, USA, the company provides VIP seating solutions for a wide range of

Aero Seating Technologies Reader Enquiry No. 501





- 1. The 16g certified Master Class seat
- 2. Rendering of AST seats installed on a G5000 aircraft
- 3. AST's 16q singleplace divan structure

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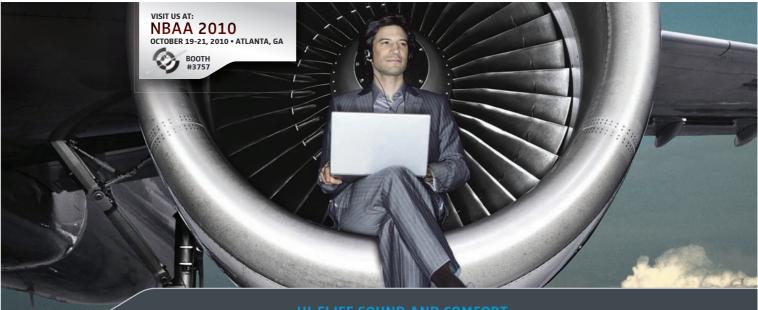
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dreammachine

Gore Design Completions has upgraded its cabinet shop with a new CNC machine

With six wide- and narrow-body completions currently underway at its facility in San Antonio, Texas, USA, Gore Design Completions (GDC) has made a recent update to its cabinet shop with the addition of a computer numeric control (CNC) router. This machine enables the shop to cut the Nomex and aluminium honeycomb panels used to build cabinetry installed in all aircraft interiors built at GDC. In the past the company's cabinet shop had cut these panels using table, circular and band saws. Now 90% of these panels can be cut on the new machine under the supervision of a CNC programmer.

The cabinet building process begins with GDC's team of engineers, which uses SolidWorks 3D modelling software to build the specifications of each piece of cabinetry. These designs are then sent to the CNC programmers who transfer the data to the CNC machine.

Quality and yield Because of the intricacy and high level of detail included in many of GDC's designs it was important for the company to find a machine that could produce the high quality work that its customers expect. GDC says the machine's ability to separate the drawings into individual parts preserves the accuracy of the SolidWorks model and thus the overall quality of the end product. The company also wanted a machine that increases the yield of raw materials. The CNC nesting software organises multiple parts onto a

single sheet for cutting, thus decreasing the amount of wasted material.

Ralph Wetzel and Jessie Swinson, CNC programmers at GDC, say that the machine has made the production of parts much more efficient, saving a considerable amount of time. In the past, craftsmen had to lay out each pattern by hand and cut it with a table or band saw. Now they are able to let the machine do all of the work.

Another key factor in using such a machine is its ability to reduce the risk of injury that can be associated with cutting panels with table, circular and band saws. Despite having no major accidents in the past, GDC felt the benefits of moving to a CNC machine would significantly lower any risks its employees might face in the future.

The first aircraft to benefit from this new process is a green B767-300ER. Following closely will be three A340 projects, a B777-200LR and a BBJ 3. All six projects will have some if not all of their cabinetry work run through the CNC machine as part of the fabrication process.

"The benefits of the CNC machine have impacted quality, material utilisation, production and safety," says Terry Bethell, senior manager of manufacturing for GDC. With such a broad scope of impact, Bethell admits that the machine has far exceeded expectations, and for a company with a backlog of work going into 2012, exceeding expectations is key to its success.

Gore Design Completions Reader Enquiry No. 502





- A GDC craftsman measuring a cahinet
- 2-3. The CNC router



<u>powertothepeople</u>

Passengers are demanding connectivity for work and play, but need power available to make the most of it

Furthermore, 50% of all passengers have WiFienabled devices with them.

Whether for entertainment, to pass the time, or to be productive for business purposes, passengers want to use their devices while flying. In fact, Kellsey Justus, vice president, airborne power and control, at Astronics AES, business inflicted in the process has become a believes inflight WiFi access has become a major selling point. "An increasing number of business aircraft are being outfitted to deliver this option for the purpose of attracting buyers and remaining competitive," he says

A 2009 online survey by American Airlines

WiFi availability, however, is only half of it. "Although many aircraft receive upgrades which include the ability to offer WiFi, few are equipped with enough power to allow each passenger to plug in their device," says Justus. "Many passengers are faced with the hard reality that duration of the flight. Even owners of aircraft equipped with power systems are now realising that one or two outlets per aircraft is not enough to keep all their executive passengers productive while in flight."

Following extensive research and tests with company says the average battery life of a WiFi-enabled device drops 33%, lasting an average of

Dissatisfied customers "By overlooking the fact that passengers are restricted by the battery life of their devices, inflight WiFi access may not be as useful, or enticing, as it sounds. It is an attractive feature that is becoming increasingly important to fliers, but without adequate power provided alongside, fliers are becoming disgruntled," says Justus.

In the American Airlines survey in May 2009, dead laptop batteries topped frequent flyers' complaints. A combined 67.7% of respondents in (26.3%) were their largest complaints.

players and portable DVD players are also

day-to-day basis, and Justus says that practical means of recharging these is also needed.

Justus says the simple solution is to provide personal outlets to passengers, and supply them with the power they need to use their laptop, mobile phone, or other PED.

The EmPower in-seat power supply system,

outputs per unit, and is available in 115V AC and 28V DC configurations. "EmPower systems meet or exceed FAA requirements, are TSO certified, and fully comply with the 2005 policy statement for certification of power supply at over 500,000 seats on over 4,000 aircraft for over 140 airlines and OEMs, the EmPower system is an innovative solution to passenger demand for an on-aircraft power supply.

units can be mounted either in-seat or through-









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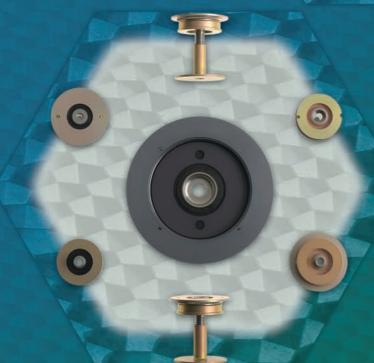
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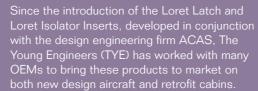


Loret Latches™

latchingon

TYE gives an update on its Loret Latch

and Loret Isolator Insert programmes



Young Engineers (TYE) has worked with many OEMs to bring these products to market on both new design aircraft and retrofit cabins.

These two product families define what TYE likes to call its 'open source approach' to design, where customer input helps drive the design and development process. Not only is user input sought from an engineering and functional standards to the design and standards. functional standpoint, but also as it relates to aesthetics. TYE believes that such an approach allows designers to offer customers something unique, providing flexibility in design, along with fresh and exciting design elements.

The Loret Latches are a family of latches that can be customised with the customer's aesthetic requirements in mind. The mechanism assembly can be teamed with a wide selection of actuation devices, including non-linear sizes and include an integrated backplate. While standard styles are available, TYE continues to work with designers to develop signature latches designed for specific aircraft programmes or types, some including corporate or private logos, customised finishes, specialised actuation devices, and so on

Meanwhile Loret Isolator Inserts incorporate an elastomeric isolation device into a panel fastener. Designed for sound and/or motion dampening, these isolator inserts are installed in a similar fashion to standard fixed inserts. The devices can be incorporated into panels or

components (such as cabinets, galleys, or bracket via a wide variety of internally or externally threaded or clearance hole attachments. Certain styles even have the capability to attach to seat tracks or are adjustable eccentrically and/or linearly.

Strength and lightness As designers and engineers search for ways to lighten aircraft interior structures, TYE is continuing to design and develop other fastening products made from high-strength composites. For example, the company recently developed a metal/composite self-locking threaded fastener. This variant is designed to give the security and stability of a metal, self-locking thread, with a non-corrosive, environmentally sensitive composite shell. TYE says the resulting insert saves weight and also Composite fastener variants are currently being are being used or evaluated for TYE in a variety of interior structures, including lavatories, galleys, floor structures and stowage bins.

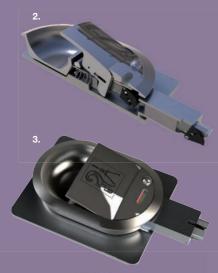
TYE, based in Southern California USA.

boasts nearly 200 years of combined management experience in the aerospace fastening arena. The company boasts ISO9001:2000, EN/ JISQ/AS9100:2004 and Nadcap certifications Defense Logistics Agency QSLM approval

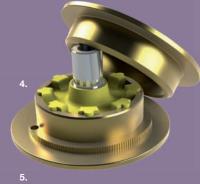
ACAS, with whom TYE partnered for Loret Latches and Loret Isolator Inserts, is a product development firm with many years experience in the design, engineering, and certification of commercial, corporate and VIP aircraft. ACAS provides CNC machining and sheet metal parts

The Young Engineers

Reader Enquiry No. 504



1-5. TYE offers a huge variety of latches







fullflow

Boeing specialist Greenpoint has lots of exciting projects on the go

With a wide variety and quantity of projects on the go - including B747-8 products, multiple BBJ completions and designs for BBJ3 and B747-8 VIP interiors - business is certainly not slow at Greenpoint.

"The flexibility to execute complex projects and adapt to new technologies enables Greenpoint to serve its client's best interests - time and money," says Sloan Benson, executive vice president at the company.

Greenpoint's experience and expertise is focused solely on Boeing aircraft. The company completed a Boeing Design Delegation Level 5 audit (highest level) in May 2010, with a site assessment that focused on engineering and information technology systems. The company met all the criteria imposed by Boeing to perform turnkey programmes on their behalf.

"Being a Boeing-only completion centre is a key advantage to our customers. They know we have the technical experience to deliver on our promise," says Bret Neely, vice president of sales for Greenpoint.

B747-8 products One of Greenpoint's products for the B747-8 is the Aeroloft, for which the company has multiple contracts in place. The Aeroloft provides private sleeping berths above the main deck in the aft section of the new B747-8, and is installed with custom-designed interior furnishings and a forward-entry staircase. Greenpoint is currently wrapping up the engineering phase of the programme, and

production is scheduled to start in a few months to support installations in late 2011.

"In addition to the Aeroloft, the new Aerolift programme has turned out to be another popular product option among B747-8 VIP customers," says Benson.

Greenpoint's B747-8 Aerolift, a groundto-main deck lift/elevator, is currently in the engineering development stage. The lift consists of an automatic door on the fuselage, a lift carriage with internal doors, and a cabin enclosure.

Greenpoint's solution offers a secure, self-contained means to transport individuals (up to four passengers or a wheelchair and attendant) from the ground to the main deck. From a security standpoint, the enclosed carriage descends directly to the tarmac, aiming to reduce the occupant's exposure to the public and permitting close-quarter boarding to and from ground transportation.

With the B747-8 VIP products Aeroloft and Aerolift, multiple BBJs in work and the potential wide-body BBJs ahead, Greenpoint is fully geared up and excited about the future. Doubling its office space a few years ago provided the square footage and robust infrastructure necessary for growth in engineering, certification and programme management. Greenpoint is also aligning the critical resources for success by establishing its own engineering test lab, cabinetry facility and manufacturing capability.

Greenpoint

Reader Enquiry No. 505









- An Aeroloft berth
- The Aeroloft installation includes a staircase



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Other collections such as Striations, Calypso and Contrail also feature the company's signature 'abrash' effect, and dense wool pile. For Striations, a special dye striations for an antique textural appeal. All designs are available in several colour

The Airstream and Runway collections boast

Star, Tiger, Striations and Calypso collections have over 70oz per square yard.

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- 1. An aircraft fitted with a carpet from the Tiger range, in beige
- 2. The Diamonds range. in cocoa
- 3. Tiger, in midnight
- 4. Celestial Star, in chestnut
- 5. Runways, in surf
- 6. Striations, in steel



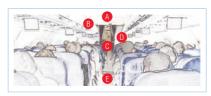
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smartstart

TrueNorth, creator of the Simphone OpenCabin system, gives its tips for setting up smartphone connectivity on a business jet

operating system



Since the introduction of the smartphone, the possibilities, this boom, and the huge choice of handsets and manufacturers that have become available, has also led to some confusion for

passengers.
As a leader in airborne smartphone communications, TrueNorth is a good resource for information about the benefits of smartphone connectivity. Its Simphone OpenCabin smartphone and network, and was chosen by the leading smartphone manufacturer for its own corporate fleet.

Being able to use a smartphone in the air enables flyers to stay in touch via voice, email, texting and internet data. This form of connectivity requires three elements – a WiFicapable smartphone; an off-aircraft network to send and receive signals; and an onboard WiFismartphone and to route data between the

TrueNorth advises determining exactly how it will be used. Some airborne business travellers simply want to send and receive emails. Some expect to be able to walk on their aircraft and use their smartphones in exactly the same way they do on the ground, handling voice calls, emails and short messages (SMS or IM). Some want to browse the internet while running one (or more) functional apps. Some want to use such bandwidth-intensive applications as YouTube or iTunes. There are airborne solutions for each of those scenarios; however, they're not all the same.

For example, for users who only want to communicate with voice and email, TrueNorth recommends its Smarter app, included with enables passengers to send and receive email

Simphone Chorus system, which features a built-in data router to manage heavy traffic. Similarly, aircraft mission and range play a role in equipment selection. TrueNorth says that if an aircraft flies only over the USA, a limited ground-based network may be all that is needed. But for those who operate a long range corporate jet, TrueNorth recommends a worldwide Satcom network.

Surprisingly, the company says the age-old problem of rapid technological change is no longer a barrier to adding airborne smartphone system that TrueNorth created for Simphone can be upgraded and expanded indefinitely, enabling customers to add new features and

that enable passengers to use smartphones on easy as possible for its customers.

TrueNorth Avionics

Reader Enquiry No. 507







lookbeforeyouleap

Digital tools can make it quicker and easier to decide on aircraft interior customisation

When it comes to sitting down with a client to customise the interior of an aircraft, it is the designer's job to walk him or her through the whole process. "This can be daunting for both the client and the designer," says J. P. Magnano, president of 3D Visualization Service (3D Viz). "From the customer's point of view, there seem to be almost infinite options. And from the point of view of the designer, an undecided client can prove difficult when finalising the design.

Besides material swatches and colour boards, there are other tools designed to make this process easier, such as computer renderings. 3D Viz says that one such program, a colour configurator, is particularly helpful when working with semi-custom interiors. The program shows the user the interior of the cabin in a photo-like, highdefinition representation. The designer and client can sit together and start changing the materials of the seats, sidewalls and so on. with the result in front of them and in real time. Several variations can be saved and recalled for comparison.

"The use of this program cuts down the time it takes to finalise interior colour and material selections by a factor of 10," says Magnano. "The secret lies in that the client is looking at the end result all the time, and any changes or tweaks can be applied at the touch of a button."

3D Viz offers this system to help streamline the design process, free up resources

and be more efficient with the client's time. Several manufacturers have already implemented the system. Pilatus Aircraft is using the third version of the program for its PC12 NG with VIP interior. In this case. the customer can choose from the preestablished designs or mix and match using the pool of materials made available from the factory.

Another company that is using the fourth version of the program is Piaggio Aero for the Avanti P180 II cabin. In this case, the program is quite comprehensive - the user can not only select from a very large pool of materials to customise every aspect of the cabin, but can also select from three VIP layouts (and one shuttle), four seat styles, additional cabinets, lavatory options and even cabin entertainment. "The number of combinations possible is mind boggling, but the program handles it with ease and in real time," says Magnano.

Piaggio Aero can use the tool for all its clients, including VIP cabins, shuttle versions and even air ambulance variants. It works by selecting the area to be configured (seat, sidewall, floor, etc) and clicking on a colour or material from the list of options. The display immediately changes to reflect the modification. The program can also save and recall an unlimited number of variations, as well as make prints in high quality, save a list of





material names (including part numbers and provider) and generate a colour board. An additional feature is that the program can be uploaded to a private or public area of a website, where a customer can log in and configure the interior without having to fly out to the completion centre.

"The implementation of the colour configurator is in line with completion centre's and OEM's philosophy to deliver nothing but the best. Both parties benefit greatly in terms of quality, time and end result," concludes Magnano.

Reader Enquiry No. 508



- 1. The Pilatus PC12 NG configurator
- 2. An unconfigured PC12 NG cabin
- 3.. A VIP cabin rendering for the P180 II





quickwitted

Quick-change interiors are growing in popularity, so Field Aviation is responding with the expertise to cater for the demand

Field Aviation specialises in tailoring interior VIP cabin or transporting patients from remote areas with medevac equipment. The company says that in recent years it has seen an increasing number of requests for quick-change interiors as aircraft owners are looking for ways to get the most out of their assets.

"A multipurpose aircraft is a cost-effective way to cater to different market segments,"

says Carrie Servos, sales director at Field Aviation. "It provides the flexibility to offer a specialised service when it is needed,

without having to dedicate an aircraft to that

configurations will usually drive the design. Field Aviation works with customers to determine the best configuration to meet their operational requirements and convertibility needs – whether the interior conversion is required within a few hours or a few days.

We have customers who convert their DHC-8 aircraft from all economy class to mixed VIP/economy class overnight, using our VIP club seating kit," says Servos. "We can also install provisions into multiple aircraft to give them the flexibility to install the kit in any of

As well as breathing new life into used aircraft, the company customises new aircraft, which might not be available from the OEM in the configuration needed by the client. In these that are outside of the OEM's standard' production offering.

"It's a win-win solution – helping the OEM sell an aircraft they may not normally sell, and helping a customer get the aircraft they need in the configuration they want," says Servos. "Keeping the main interior shell of a commercial aircraft and installing new VIP or business seating in all or part of the passenger cabin can also make acquiring a corporate shuttle aircraft more affordable than one with a complete VIP interior.

1. A quick-change VIP seating suite installed on a DHC-8





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movingup

New purpose-built premises will mean more space for F.H. Lambert's metal plating business to expand





1963, making jewellery in his bedroom. More than 45 years later, F.H. Lambert is a respected leader in specialist decorative metal plating, its work being featured on some of the aviation industry's finest interiors – on aircraft ranging in size from the Hawker 125 to the A380.

Specialising in many variations of gold, silver, rhodium, chrome, nickel and copper plating for aircraft décor, clients include Jet Aviation, B/E to name but a few.

Now F.H. Lambert is undertaking an investment in business expansion that will see it moving all of its operations to a new purpose built facility during the first quarter of 2011. "We believe we have the largest precious metal plating tanks in Europe, but we will be able to accommodate even larger metal plating processes, in excess of 8ft long tanks. The expansion gives us capacity to accommodate

"The move offers an opportunity to streamline our practices and procedures, which will introduce new efficiencies in water and electricity consumption, minimising our carbon footprint," says co-director Daniel Lambert.

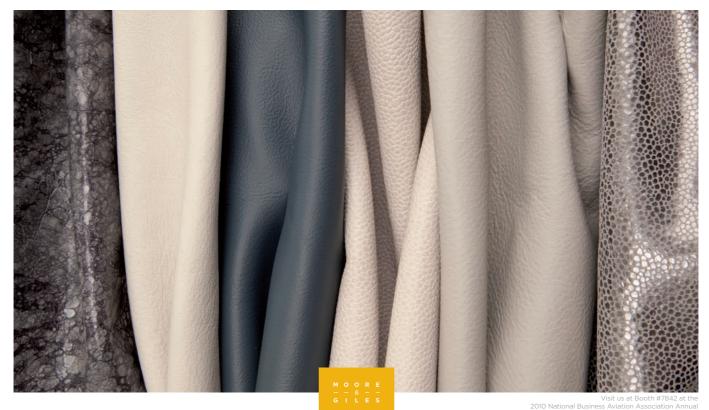
While the prospect of installing large and high-tech apparatus such as F.H. Lambert's

dustproof spray booth oven and numerous tanks into the premises represents a challenge, Jamie is looking forward to completing the move: "There will be a seamless transition to the new more, we are moving less than a quarter of a will have no trouble finding us.

F.H. Lambert

Reader Enquiry No. 510

- 1. AmSafe seatbelt buckle tops, used as colour samples by FH Lambert
- 2. Coasters finished in various metals



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Business Aircraft Completion Management

Whether your new business jet is the realization of your life-long dream or a new addition to your corporate fleet, you'll want to protect your investment by a team of professionals.

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For years, business aircraft clients have relied on consultants to oversee the completion of their new corporate aircraft. In this role, the consultant's responsibilities may have been limited to tracking the work being carried out on the aircraft, inspecting

ensuring the aircraft build meets the engineering and customer requirements. In other words, the consultant has acted as an aircraft inspector/project manager.

In the last few years, JEM Aviation says it has seen clients develop strong, trusting relationships with their consultants and rely on them for more than just aircraft

'Consultants are now often involved from the start of the aircraft purchase process, counselling their clients on the aircraft type that best meets with mission profile, the types of equipment, avionics components and other cabin amenities that are must-haves or nice-to-haves," says Richard Plourde, president of JEM Aviation. Clients may also rely on their pre-owned aircraft or find a suitable buyer

tax incentive programmes and pre-owned market status," says Plourde. "Clients are no longer alone to face OEMs, completion centres or aircraft sales brokers."

JEM Aviation says clients can and should rely on their consultant. "Acting on one hand as an inspector, and on the

other, as an invaluable advisor, the consultant has taken on a new role as the 'go-to' person for the business-aircraft

must-haveaccessory

Beginning in October 2010, Moore & Giles is planning to expand its aviation industry offerings to include handcrafted leather amenities. The new collection will consist of leather service and accessory items such as placemats, side ledge mats, conference table mats, fruit boxes, magazine trays, divan arm trays, leather inserts for cup holders, and lavatory towel and passenger amenity chests. Initial colour offerings will include burgundy, black, beige and navy blue leathers.

A 77-year-old Virginia-based leather design and development company, Moore & Giles offers an extensive portfolio of aviation-specific leathers. Also, many of the company's more fashion-forward leathers can be treated to meet aviation standards.

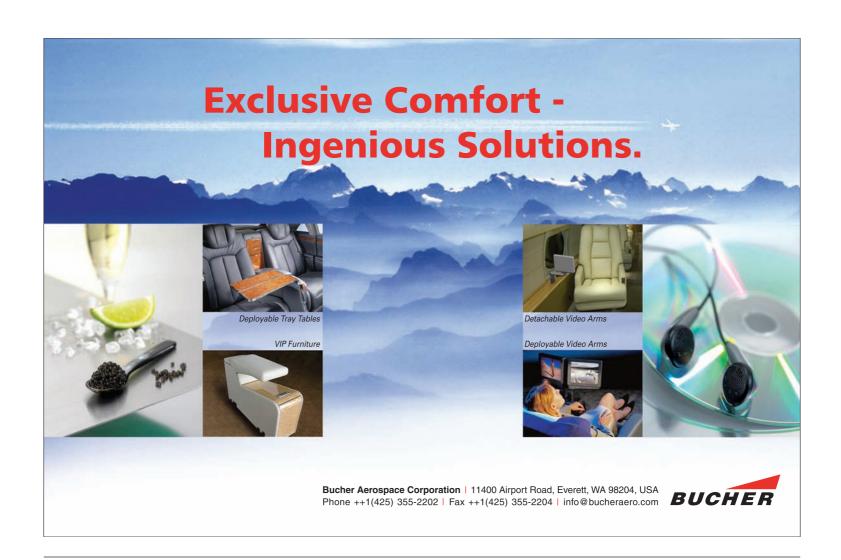
Four years ago, Moore & Giles also launched a highend leather travel bag and accessory line crafted from some of the finest natural leathers in the industry. All 'of-the-moment' yet designed to last forever, these bags and accessories were designed as ideal travel companions for business jet travellers, both now, and for many seasons to come.

The new leather amenity collection is an additional avenue for Moore & Giles in its quest to meet the needs of key players in the aviation industry, and help pave the way for more specialised and unique aircraft interiors around the world.

Moore & Giles

Reader Enquiry No. 512





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yourtableis ready

Six years ago, Bucher Aerospace Corporation began expanding its business from IFE deployment systems to first- and business-class tray tables. With a wide array of modular, scalable food tray table solutions now available, Bucher has developed partnerships with many aircraft seat manufacturers, helping to adapt their products to meet the requirements of a highly demanding market.

Today, tables built and designed by Bucher fly in numerous luxury classes for commercial airlines around the world. The company is now bringing its solutions to the business jet market.

Bucher believes partnership is the key to a successful luxury-class product line, making it central to its business strategies and day-to-day operations. Whether it is with the seat manufacturer, the airline customer, the industrial design consultant or the aircraft manufacturer, the company handles each programme with a team mentality. It understands the importance of integration and collaboration throughout the entire development process. It knows

that industrial design consultants have a vision for the overall product, and understands that this vision encompasses not just the aesthetics but also the touchpoints and quality of operation.

Bucher says that historically, the sequential, disjointed nature of some programmes has diminished the lines of communication between industrial designers and those implementing their vision. The company is committed to finding and fostering creative ways to partner with the industrial design community earlier and integrate them into the overall conception and planning processes. It believes this is the key to creating a final product that matches the original vision.

With its existing modular product line, new and upcoming product innovations, a dynamic marketplace, and a clear understanding of and passion for success and integrity, the company is excited about the future.

Bucher Aerospace Corporation Reader Enquiry No. 513



asktheexperts

and programme management. In owners and operators of narrow- and wide-body Boeing and Airbus airframes going through or scheduled for VIP interior installations and modifications. Over the past three years, DRB and Talco team members have been involved with seven BBJs, two A319s, and five Embraer

"The strategic partnership established between Talco and DRB will provide our every engineering, certification, and completion and wide-body completions," said Tom
Langeland, president of Talco Aviation.
"This is a departure from the more typical standalone individual representatives normally seen in our industry."

DRB was recently awarded a major interior modification STC for an international luvum flight continuous provides.

international luxury flight service provider.

The modification of the BBJ included

completion management, and vendor management," said Don Bell, president of DRB. "The work scope of this refurbishment was of a level equal to our green BBJ efforts.

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partandparcel

Aeropair is a Part 21G and Part 145 organisation specialising in the manufacture and repair of aircraft interior products. Its range of services is extensive, including the modification and upgrade of economy-, business- and first-class seats. With extensive capabilities for the refurbishment of sidewall panels, using a wide variety of materials, the company has completed over 50 interior sets for the B737, B757, B767, A320, A319, BA ERJ, Saab, Jetstream and many smaller jets, for a wide variety of customers such as British Airways, Jet2, Icelandair, Silverjet and Monarch. Aeropair prides itself on maintaining the highest standard of quality, while adhering to the schedule.

Aeropair prides itself on maintaining the highest standard of quality, while adhering to the schedule.

The company is now embarking on new galley and lavatory refurbishment projects that have been designed for an enhanced appearance, with soft lighting and laminate materials.

The company also manufactures, designs and integrates a new active-air filtration system, AirManager, designed to enhance air quality in aircraft. It can easily be configured to integrate within the existing environmental control system, and is already installed on various aircraft types.

installed on various aircraft types.

There is also a new range of 100% plant-based cleaning products, for use inside and outside the aircraft. These products have been tested extensively and offer a solution for every cleaning application – from carpets, leather and soft furnishings to full aircraft maintenance cleaning and airport terminal cleaning, as recently used at Gatwick Airport.

Aeropair Ltd

Reader Enquiry No. 51



bigonjapan

Scott Group Custom Carpets has developed a new collection of carpets – the Kibori Collection. Kibori was inspired by the distinctive style and subject matter of Japanese woodblock prints.

"We were struck by the way simple shapes from nature were depicted in graphic modern ways," says Jennifer Kirchgessner, director of marketing at the company.

Kibori means woodcarving in Japanese. Thatched and sinuous lines printed over blocks of colour render the texture of wood grain, branches, bark, trees, and grass. Those elements formed the basis for the patterns of this collection, interpreted in natural hues such as pebble, amber, and bamboo to create a quietly elegant statement.

Scott Group Custom Carpets

Reader Enquiry No. 516



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lastexit

Madelec Aero is a French aviation products manufacturer based near Paris that supplies a complete range of emergency lighting systems, ice detection systems, various cockpit and cabin lights, illuminated signs and human machine interface (HMI) products. Its products can be found on commercial aircraft manufactured by Airbus, Boeing, Bombardier and ATR, on business and general aviation aircraft and helicopters.

In addition to offering a standard line of stock items, Madelec Aero specialises in the development of customised applications. The company says it welcomes requests for creating new designs and modification of existing equipment.

Madelec Aero operates an efficient and modern engineering, production and test facility boasting 800m² of workshop and office space, just 45 minutes away from both Paris-Orly and Paris-Charles de Gaulle airports. Full product support, including technical documentation and emergency service is offered.

Madelec Aero is also an approved JAR/ FAR 145 repair station and authorised spares distributor.

Madelec Aero

Reader Enquiry No. 517



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