MARCH 2010

BusinessJet interiors INTERNATIONAL

THE INTERNATIONAL REVIEW OF BUSINESS JET INTERIOR DESIGN AND COMPLETION

realitycheck

How upfront design, engineering and certification work ensures VIP projects stay on time and within budget

quickchange

The BBJ-C's rapid conversion from passenger to cargo offers operators the ultimate in cabin flexibility

makingwaves

WHAT CAN THE WORLDS OF YACHT AND BUSINESS JET INTERIOR DESIGN LEARN FROM EACH OTHER?

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lacobucci HF Electronics is proud to introduce its first revolutionary WastePak trash compactor developed specifically to resolve the problem of desposing an extra waste on board during the long business flight.

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Perfect solution that makes the difference on board.



shipshape

Welcome aboard the March issue, which takes a look at the common ground shared by yachts and aircraft interiors on page 24. "Large custom yachts are purchased by the same social and economic class of client as aircraft," notes Rick Roseman, president of RWR Designs, which works across both sectors. A strong focus on safety, comfort and maximising space are obviously essential in both worlds, but there are also some key differences, with yachts ranked above aircraft in a "hierachy of luxury" based on their potential for leisure use, personal privacy and freedom to move around.

Both forms of transport offer designers near limitless possibilities – however Roseman warns of the dangers facing yacht designers working on their first aircraft project: "The biggest pitfall facing a young designer who has accepted an aviation project, is proposing his/her concepts to the client – and then having to back-pedal because it simply isn't deliverable as presented," he says. "Knowing the ground rules is the best advice to adopt for any young designer."

This issue is tackled in our second feature, which emphasises the need for designers and project teams to carry out essential engineering and certification work long before any green aircraft arrives at a completion centre for outfitting. Ensuring the feasibility of a design so early in the process does a great deal more than spare the blushes of the creative responsible – it can also save literally thousands, if not millions, of pounds for the owner. "Over the years, facilities have enjoyed the freedom of a nearly blank cheque scenario," says Herbert Artinger on page 39. "The possibilities are unlimited, I don't dispute that. I think it's great, but it has to be feasible."

Working with an experienced completion centre is obviously critical – although the 'experience' ultimately rests with the staff, so this should not rule out a 'new' facility per se – as our feature on AMAC Aerospace's first VVIP A320 completion on page 42 makes abundantly clear. "The key thing in outfitting is to have people who know the business," says Airbus's David Velupillai. For those lacking experience but keen to learn the basics, I can heartily recommend a new book, an *Introduction to Aircraft Interiors* by Bill Spicer, available via Amazon.com. Happy reading.



Anthony James, editor



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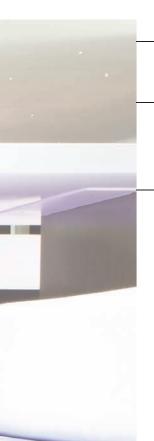
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makingwaves 24

THE WORLDS OF YACHT AND BUSINESS JET INTERIOR DESIGN HAVE MANY SIMILARITIES AND ENJOY AN OVERLAPPING CUSTOMER BASE – BUT WHERE DO THOSE SIMILARITIES END AND WHAT CAN EACH DISCIPLINE LEARN FROM THE OTHER? Guy Bird, Business Jet Interiors International





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Mark Huber, Business Jet Interiors International



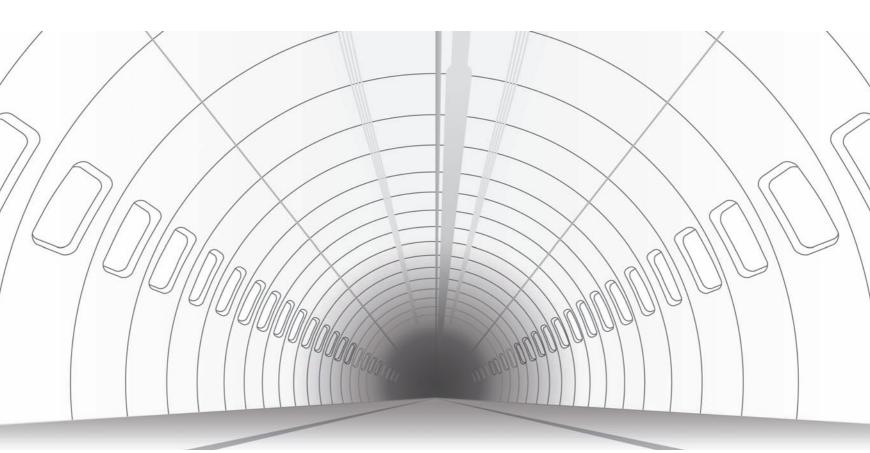
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lightjetreport

THREE NEW TWINJETS ARE REACHING THE MARKET AS QUESTIONS CONTINUE ABOUT THE PROGRESS OF AN EQUAL NUMBER OF SINGLE-ENGINE PROGRAMMES

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The current retail price for a typically equipped Citation CJ4 is US\$9 million

CJ4 gains FAA type certification

Cessna's Citation CJ4, the largest member of its CJ family of business jets, has gained FAA type certification. The CJ4's cabin can be configured for up to eight passengers with a standard, belted aft lavatory. It also features Rockwell Collins' Venue cabin management system, which includes BluRay DVD with HD monitors and XM radio. Deliveries of the aircraft are due to begin later this year.



Aircell's ATG 5000 highspeed internet system debuts on Gulfstream 200

Aircell's ATG 5000 high-speed internet unit has been installed for the first time, on a California-based Gulfstream G200 operated by FlightWorks. The ATG 5000 began shipping in December 2009. The first installation was done by Gulfstream Aerospace's Dallas Service Center.

The ATG 5000 provides standalone Aircell high-speed internet capabilities for customers that don't require the integrated voice and narrow-band data features of Aircell Axxess, and can be installed on virtually any type of business aircraft, including light jets and turboprops.

The ATG 5000-based high-speed internet package includes an ATG 5000 high-speed internet LRU (11 lb), two bellymounted blade antennas (1.25 lb each) and an optional cabin telecommunications router (4 lb). Wired or WiFi in-cabin connection options are available. As well as the high-speed internet system for continental USA, Aircell offers a satellitebased SwiftBroadband solution for global service, powered by Thrane & Thrane.

Aircell has also announced that as of December 2009, all Aircell ATG 4000 and ATG 5000 high-speed internet systems include a built-in feature that automatically manages multiple onboard data networks.



Altitude off the mark with BBJ completion contract

Altitude Aerospace Interiors has signed its first contract to fully fit-out a Boeing Business Jet (BBJ) VIP aircraft interior. Altitude's general manager Michael Pervan says that after completing many BBJ interior refurbishments, the contract is a significant achievement for the company.

"The Asian-based customer will deliver the new BBJ to Altitude's Christchurch completion facility where, in conjunction with support from Air New Zealand Technical Operations, the aircraft will be installed with its customised interior. The scope of work to complete the fit-out will cover entire electrical, entertainment and mechanical system installation within the empty aircraft shell," said Pervan.

Formerly known as ANZES Design Engineering, operating as part of Air New Zealand, Altitude is now a subsidiary of the airline. With offices based in Auckland and Christchurch, New Zealand, Altitude offers interior engineering design, manufacturing and maintenance in conjunction with Air New Zealand Technical Operations, on both VIP and commercial aircraft.

BizJet International delivers its first A318 Elite

BizJet International, Lufthansa Technik's US subsidiary in Tulsa, Oklahoma, has delivered its first A318 Elite, following the completion of the aircraft on schedule at the end of 2009. The A318 Elite, which is provided with FAA and EASA STCs, has been equipped with a VIP cabin interior during its seven-month completion.

Work has now started on the second of eight A318 Elites that BizJet has contracted. The aircraft is scheduled for handover in mid-2010. Six other A318 Elites are due to be delivered to Airbus by the end of 2013.

Lufthansa Technik has outfitted nine A318 Elites at its site in Hamburg, Germany. Work on its tenth (and final) is due for completion in mid-2010, after which further completions of this aircraft type will be carried out at BizJet. Lufthansa Technik says it will focus on outfitting 'highly individual' narrow- and widebody VIP corporate jets.

BizJet has invested about US\$3 million in expanding its infrastructure for the A318 programme – extending shops, acquiring new machines, and training employees. The Chicago Athenaeum praised the Falcon 7X BMW interior's temperature monitoring, thermal controls and custom-crafted interior furnishings

Simphone OpenCabin chosen for Falcon EASy

TrueNorth's Simphone OpenCabin airborne telecommunications system has been selected for retrofit on its first Falcon 900EASy executive aircraft. The corporate operator sent the newly delivered aircraft to the Dassault Service Center in Wilmington, Delaware, USA, for the telecom upgrade.

The Simphone (pronounced 'symphony') OpenCabin system uses a suite of enterprise-level software applications ('apps') to deliver voice and data-management capabilities. TrueNorth says its software-centric solution interfaces with virtually any corporate aircraft, turning it into an extension of the company's IT and communications networks. A wide variety of custom functions can be added simply by uploading software.

The company also announced that it is experiencing a run of orders and installations for Simphone OpenCabin – including a series of initial installations at new completion centres – since securing its STC for the Bombardier Global Express. Customers range from a multinational financial services conglomerate, to an industrial construction firm, and include Bombardier itself for its corporate flagship aircraft. New installers include Midcoast Aviation in Illinois, USA, Innotech Aviation and SkyService Aviation in Montreal, Canada, and Bombardier Aerospace in Tucson, Arizona, USA.





Award for Falcon 7X BMW interior

C

Dassault Falcon and BMW Group DesignworksUSA have been awarded the 2009 good design award by The Chicago Athenaeum and The European Centre for Architecture Art Design, for their collaboration on the new Falcon 7X interior option, which will be available for deliveries from the third quarter of 2011. The 7X cabin features windows that are 10% larger than previous Falcons, as well as a system that maintains the temperature to within one degree throughout the cabin.

GDC completes its first green A340-500, for African head-of-state

Gore Design Completions (GDC) has finished work on its first green A340-500 completion. The head-of-state aircraft was delivered to an African customer at the end of November 2009.

GDC designers and engineers created an interior complete with VIP stateroom, lavatory, and office suite, as well as a conference room, lounge and high-density seating areas. All engineering and design was completed at GDC.

The aircraft is the largest job GDC has completed to date, although it is not the first A340 on which it has worked. Earlier in 2009, GDC delivered a partial refurbishment of an A340-300, and currently has another A340 in its hangar, with two more on the way in 2010 and 2011.

An approved completion and maintenance facility for single-aisle and wide-body aircraft, the company, based in San Antonio, Texas, USA, provides interior design, engineering, avionics and project management services for customers around the world.

List provides furnishings for Pilatus PC-12 NG turboprop

List components & furniture has delivered the first interior furnishings for the PC-12 NG, a single-engine turboprop multipurpose aircraft produced by Pilatus. The Austrian company was awarded the tier-one supplier (direct supplier) contract to develop and manufacture exclusive cabin components for the aircraft in November 2009. The PC-12 NG has a range of more than 3,500km, with capacity for up to nine passengers.

List supplies all cabin components with wood surfaces, such as partitions, armrests, folding tables and storage compartments, as well as wet areas.





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NetJets Europe's new catering box takes up about half the space of the previous one

NetJets catering goes eco

NetJets Europe has rolled-out a new eco-friendly catering package and recycling initiative. The catering box is fashioned from sustainably sourced bamboo and features wooden cutlery and porcelain inserts – all of which are recyclable. Even the lids are biodegradable, and the porcelain inserts will be re-used. The package will be adapted to suit the storage requirements of the small and mid-sized jets in NetJets Europe's fleet.



Flying Colours Corp delivers first green Challenger 850

Flying Colours Corp's first green Challenger 850 has been delivered to Moscow, Russia, where it will be operated and managed by Chartright Air Group.

The executive interior was manufactured and installed at Flying Colours Corp's facility in Peterborough, Ontario, Canada. The company was assisted on the project from an engineering standpoint by Montreal-based Berletex Aero Design.

Flying Colours Corp currently has three more green Challenger 850 completions in progress, plus two further aircraft scheduled for arrival in 2010. The completions are taking place at both the main facility in Peterborough and at the company's US-based operation, JetCorp Technical Services.

"We are thrilled to have our first green 850 completion in operation, and are looking forward to developing our green completion capabilities on a number of different platforms in the future," said John Gillespie, president of Flying Colours Corp.

Airbus predicts success in Middle East for large corporate jets

Airbus forecasts a market for five to 10 large corporate jets per year in the Middle East – the majority of them in Saudi Arabia – to replace existing aircraft and provide for growth. It believes it is well placed to win at least half of this market.

Airbus says the Middle East is the world's largest market for large corporate jets – aircraft with seating for 15 or more passengers – with private customers and governments currently operating around 200 of them.

Airbus's corporate jet family comprises the A318 Elite, ACJ and A320 Prestige, plus the widebody A330, A340, A350 and A380 Prestige.



Eurocopter enhances cabin comfort

Eurocopter's R&D teams are working on several programmes to enhance cabin comfort, including an advanced antivibration system with torsion spring, also known as the Grand-Comfort Pylon Isolator. The goal was to develop a new suspension system offering better performance levels at lower costs for Eurocopter's light helicopters.

The system filters the loads transmitted by the struts connecting the main gearbox (MGB) to the airframe, thus reducing helicopter vibration levels. It is comprised of a membrane that links the MGB to the transmission deck and four nearly identical units with flapping masses mounted on the attachment fittings of the MGB struts. Each unit includes an arm supporting the flapping mass and a torsion spring.

Eurocopter says the new system cuts vibration levels on the aircraft in half, and also offers reduced weight, greater reliability and less maintenance work.

Eurocopter is also developing an enhanced air-conditioning system based on what is generally standard in the automobile industry, for example featuring automatic temperature regulation, multizone air flow, user-friendly interfaces, rapid demisting and air filtering. The company has defined a standardised range of air conditioning equipment by adopting a modular approach to the system.

The company's environmental test chamber can simulate climatic conditions with temperatures ranging from -40° to +70°C and humidity levels of up to 95%, to test heating and air-conditioning systems. It can also evaluate comfort levels at given temperatures, as well as the effectiveness of demisting systems. The G250 features 19 panoramic windows, a vacuum toilet system and inflight access to 120ft³ of usable baggage space

Marine IFE specialist delivers live football coverage on A320

With just four days notice, marine specialist Advanced New Technologies (ANT) was tasked with providing live coverage of a Premier League football match on an A320 flying across Europe.

The company began by gathering essential data about the match times and which satellite TV stations would be broadcasting the game, as well as sourcing the IT system drawings for the equipment already on the aircraft, and ordering all the equipment and services required. ANT tracked down a subscription to the necessary conditional access module – the PC card that would slot into the satellite receiver and decode the signal.

An engineer was dispatched to collect all the hardware and software, and transport it to a European airport for test. Without access to the client's A320, ANT used a B747 as the test platform. ANT's engineers completed a complete system installation, programming and documentation, followed by a three-hour test flight. The system was then decommissioned, with detailed instructions and user guides, and the whole package (hardware and software) was dispatched with a specialist engineer for installation on the client's A320.

On the day of the big match, the A320 took off and transited to European airspace, where ANT technical support was relayed to the airborne engineer and a test TV programme was shown to prove the system was operating correctly. On landing to refuel, the new channel was activated, and within 20 minutes the client settled down to watch Manchester City vs Hull City – which was a 1-1 draw.

G250 makes first flight

Gulfstream's large-cabin, mid-range G250 has completed its first flight. Designed and built in collaboration with Israel Aerospace Industries in Tel Aviv, Israel, the G250 will be completed at the Gulfstream Center for Mid-Cabin Excellence in Dallas, Texas, USA, and remains on schedule for type certification by 2011, followed by entry into service the same year. Gulfstream says the aircraft features the largest cabin in its class, providing room for a larger lavatory, an improved galley and increased storage.

Associated Air Center gains ODA

Associated Air Center (AAC), a key business unit of StandardAero, has successfully transitioned its Designated Alteration Station (DAS) to Organization Designation Authorization (ODA) at its facility in Dallas, Texas, USA.

"This new type of FAA designation provides increased FAA delegation to our Dallas facility that will result in greater support efficiencies for AAC projects; a major milestone for the company and an important step towards achieving AAC's future goals," said Jack Lawless, chief operating officer of StandardAero and president of Associated Air Center.

Associated Air Center provides design and certification services leading to the issuance of STCs for alterations and modifications on a broad range of transport-category VIP aircraft. Modifications to these aircraft can include the completion of VVIP interiors, and cabin entertainment systems on green aircraft.

Embraer delivers first Phenom 300

Embraer delivered its first Phenom 300 executive jet on 29 December 2009 – to Executive Flight Services, an aircraft management subsidiary of fractional aircraft ownership company Executive AirShare, which received the aircraft on behalf of an undisclosed customer.

The Phenom 300 light jet accommodates up to 10 occupants in an interior designed in partnership with BMW Group DesignworksUSA.

Executive AirShare offers both the Phenom 100 and Phenom 300. It also offers aircraft management and charter services through Executive Flight Services.



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Brief:

Rainsford Mann Design (RMD) has developed a VVIP BBJ2 interior that reflects the owner's love of his ocean-side home. RMD, working in collaboration with Aerospace Interiors and Altitude Interiors, devised a modern 'beach house' style using bleached teak as the main finish, with teak wood flooring effects and a palette of naturally textured finishes. The aircraft is to be used predominately for family-orientated trips, but will also double-up for corporate use and potential charter.

Description:

The galley is placed forward by the crew area and adjacent to the dining zone to ensure the best possible service delivery. A cantilevered bar provides a defined space to gather for predinner drinks, as well as an alternative seating arrangement. The dining zone is opened up to the lounge area with a flexible seating plan that can offer formal or informal configurations, with one end of the sofa forming a day bed for relaxation, and the other end providing three take-off seats certified at 16g. A long and low bleached teak credenza unit with leather inlay panels and nickel trim drops down from the bar to form the unit for the pop-up TV. An electrically automated glass screen can separateoff the office from the lounge area, acoustically and visually. Meanwhile, a woven leather finish with nickel trim provides cladding to the columns that support the nickel frame details to the ceiling. The office divan can convert into a bunk bed arrangement, allowing this area to double as a dedicated cabin for the kids or guests. Bleached teak veneer against woven cream leather with nickel-trimmed panels gives the master bedroom an open, airy feel. Wood flooring is fabricated using a digital veneer film and punctuated with inset silk and wool mix rugs. The bedroom can be closed-off or opened-up to the office, providing one large suite that integrates the office, master bedroom and en suite (which features two carrera marble finished basins and a centrally positioned wet-room shower).



Verdict:

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RMD and Aerospace Interiors should be congratulated for developing a raft of new material applications – particularly the digital wood veneer flooring, which is an essential part of the overall beach house style and flows through from one space to another, blurring the transition between the different areas, and giving a real feeling of spaciousness. Overall, the interior is open, light, airy, and extremely flexible: the cabin can be segregated into different zones, switching quickly between leisure and business configurations.

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Brief:

UK-based design consultancy Design Q set about transforming VIP motor travel in the Middle East by designing the Q-VR – a stretched Range Rover boasting all the luxury embellishments associated with private jets. "The idea is that VIPs will step from a luxurious, climate-controlled building or jet, straight into the back of this equally well-appointed, four-wheel drive limousine," says Gary Doy, director of Design Q.

Description:

The Q-VR has a raised roof for increased cabin space, and the rear passenger door opens in two sections - the upper door opening up by way of a double hinge mechanism, and the lower door folding down into a set of steps, similar to a small jet. VIPs in the back can recline their seats to almost horizontal, and have a large HDTV screen with Blu-ray games and entertainment console, satellite telephone, internet access, a mini-spa centre, a drinks chiller, a humidor for cigars, and refreshing, warm towels all within easy reach. "You have everything that the cabin crew would bring you in a business jet, all within easy reach," says Doy. "One of my favourite features is the panoramic roof, which can be made transparent or opaque at the flick of a switch. This means that you can turn off the cabin lights, recline your seat and watch the stars as you travel through the desert at night. There is even the option of a real-time display that identifies the stars you are looking at. The Range Rover is the ideal vehicle because of its luxury marque, a design that lends itself to modifications of this type, and its off-road capabilities, which are vital to VIP customers in Dubai and the Middle East."





Verdict:

The Q-VR's sumptuous luxury and proven off-road capabilities should appeal to VIP customers looking to do business in far-flung places. Design Q says it is currently in discussions with a customer over its first order for a fleet of these very special Range Rovers. "The Q-VR is the ultimate in comfort and would be a genuine challenge to Rolls-Royce and Maybach as the luxury car of choice in the Middle East," claims Doy. Design Q is targeting the Q-VR at hotel chains, businesses and other major organisations, as well as individuals who want to travel in the epitome of luxury. "The feedback so far has been extremely positive and we would expect to see the first road car available within 12 to 18 months from completion of contract," concludes Doy.



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Both the Signature Series Red and Black feature soft colour schemes and dark wood veneers

Seeing red

ombardier hopes to include a Learjet 60 XR fitted with the new Signature Series Red interior (pictured) on its static display at this year's EBACE. If this happens it will be the Signature Series' European debut. The Signature Series Red interior option offers seating for six passengers, with a stand-up cabin and new elements such as a larger galley with multiple storage units and an optional built-in espresso machine. The entertainment system features SwiftBroadband, supporting simultaneous WiFi connectivity for laptops and personal electronic devices and satcom cabin phone.

Bombardier will definitely be taking its Learjet 85 mock-up, which has been updated to incorporate the latest round of customer inputs. Since its initial design, changes to the mock-up have included a new colour scheme, revamped flight deck, window shade, and an optional three-place divan replacing an aft double-club seat. All the major components are now set, but the team is working on refinements such as making the divan slightly smaller, and modifying the galley control panel that is incorporated into it, along with other minor changes, from the cockpit to the lavatory. Simon Larfeniere, manager of Learjet product planning, says the company will continuously show mock-up upgrades in order to "validate that we're on the right track" and "refine the design of the aircraft".

Bombardier has tried to make the latest mock-up as close as possible to a production aircraft – including filling the closets with the relevant equipment, so that potential customers can see exactly how much space is left for internal storage.

Bombardier now has over 60 firm orders for the mid-size aircraft, and will give a full programme update at the show.

EBACE 2010

This year's European Business Aviation Convention & Exhibition will be held at Switzerland's Geneva Palexpo from 4-6 May, with a static display at nearby Geneva International Airport expected to incorporate more than 60 aircraft.



Nice work

Lufthansa Technik will show the latest developments in its nice (networked integrated cabin equipment) fully digital

CMS/IFE system. These include a new smartphone integration and system control feature, which allows passengers to control the nice system with their personal smartphones.

Other developments for the nice system include the niceview network or nicestuff widgets, which should be available from later this year. nicestuff will allow customers to choose from a wide variety of internet content, such as weather, stocks, world times, sports, and other news, which will be aggregated and sent to the niceview server via the onboard communications system and displayed in the cabin. Lufthansa Technik's innovation business unit has partnered with SatCom Direct for this service. In addition, a second-generation nice system colour graphical user interface will be introduced later this year for existing nice system customers.



Fast forward

Aircell will feature its global SwiftBroadband solution. In addition to voice service through cabin handsets, the system allows passengers and crews to use their personal

laptops and smartphones to send and receive email, use the internet, access a corporate VPN, and more. Customer can choose wired or wireless (WiFi) connections, and several antenna options are available.

EBACE2010: CELEBRATING THE GLOBAL REACH OF BUSINESS AVIATION

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Double debut

Hawker Beechcraft's King Air 350i and King Air C90GTx will make their EBACE debuts. The King Air 350i turboprop boasts the new Rockwell Collins Venue cabin management system and Beechcraft FlexCabin capability, which enables owners to reconfigure or remove aft club components as needed. The updated interior includes all-new headliner, seat tailoring and tables, electrochromic window darkeners, LED lighting, increased legroom and optional seat warmers.

The King Air 350i turboprop, which recently achieved FAA and EASA type certification

Meanwhile, the King Air C9oGTx seats up to seven passengers (plus pilot) in its squared-oval design. Hawker Beechcraft's booth will also feature an interiors selection centre where people can sample some of the interior materials, and use computer modelling to envisage their aircraft interior.

In the works

Altitude will be showcasing plans for its facilities in Christchurch, New Zealand. Development of a VIP interior mock-up on a B737 fuselage is well underway, and a showroom is also being designed, to enable clients to sample veneers, leathers and interior finishes. Altitude's VIP jet interior services include refurbishments, personalised product design, fully certified green completions, maintenance and repair engineering.

Model example

Comlux will display a 1/20 scale cut-away model of its new VIP A320, which will become its flagship charter aircraft. The aircraft interior was designed last year by Comlux Creatives, and the cabin outfitting is being handled by Comlux America, a completion centre based in Indianapolis, USA. The completed aircraft is due for delivery to Fly Comlux by the end of 2010, and will be available for VIP charter from Bahrain, where Comlux has set up a new company in partnership with MAZ Aviation – Comlux Middle East.



Another dimension

Gulfstream will have the G150, G200, G450 and G550 on static display, as well as 1/10 scale models of its G150, G200, G250, G450, G550 and G650 aircraft.

On call

OnAir will focus on its SwiftBroadband (SBB) based Mobile OnAir service, which enables passengers to use their own mobile phone or smartphone during flights to make and receive phone calls, check voicemail, send and receive SMS and MMS, and exchange emails. The Mobile OnAir solution is available on new production Airbus Corporate Jets (ACJ) and for retrofit via service bulletin on ACJs and BBJs, and for retrofit via STC on other aircraft.

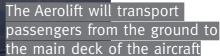


Birds of a feather

Dassault will display a range of Falcons – a 7X, a 2000LX and the new 900LX, which is currently in development. The company will not display its Falcon 7X BMW interior – the aircraft displayed at last year's show has been sold.

The company is also likely to focus on the Honeywell MCS 7120 SwiftBroadband Communications Gateway, a fully integrated wired and wireless cabin communication and high-speed global connectivity system that is available as an option on a range of Falcon types. Dassault will deliver the first Falcon business jet with the system before the show – a 7X for a European customer.

The system provides integrated voice and high-speed data communications (including end-to-end VoIP telephony services) via the Inmarsat I4 satellite network for cabin and cockpit applications. Dassault says the service is capable of providing more than five times the bandwidth than the current service, and will be available on all its current production aircraft as an option.





Greenpoint will display a full-size mock-up of Aerolift, its patent-pending lift for the B747-8 VIP aircraft. The company also provides the B747-8 Aeroloft, which may be installed simultaneously with the Aerolift, prior to aircraft input to the completion centre. The 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. In addition to the Aerolift mockup, a cut-away 1/40 scale B747-8 model featuring the Aerolift and Aeroloft will be on display.



Family show

Cessna will be well represented at the static display, with a Citation X, Citation Sovereign, Citation XLS+, Citation CJ3, Citation CJ2+, Citation CJ1+, Citation Mustang, Corvalis TT, and Grand Caravan

already confirmed. The company is also expected to share more news about its newest model, the CJ4, which has now received FAA type certification.

In control

Rockwell Collins will highlight its Venue cabin management system, which features high-definition displays, digital entertainment and cabin management functionality.

In addition, the company will showcase newly released Version 2 updates and enhancements to its Airshow 4000 moving map system. Software updates provide more than 100 new features and enhancements. Rockwell Collins' Tailwind 300 and Tailwind 500 satellite TV systems will also be on site, showing off enhanced regional coverage that now includes both India and Russia. The company will also display broadband connectivity products including SAT-6100 and the eXchange system.

Direct dial

ARINC Direct will present the latest developments in its online flight operations software, as well as onboard communications applications for use via SwiftBroadband, both in the cockpit and in the cabin.

Magic carpet

Tisca Tiara will showcase Waron, an embroidered carpet that can be made to measure and supplied without seams, according to the aircraft's floorplan. It is available in multiple colours, colour mixtures and different shapes.



Net gains

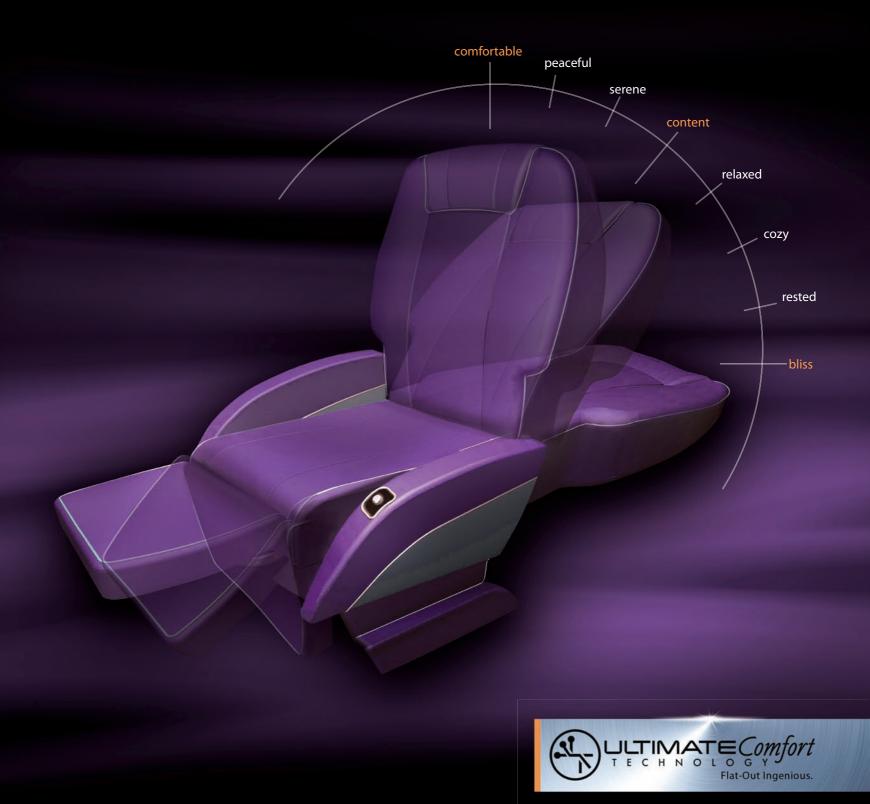
ViaSat will focus on its Yonder satellite mobile broadband service, licensed by the FCC for commercial

service. The service offers passengers access to office-like IP network applications and services, and also delivers entertainment options, including access to the internet, home television services, or media library selections. The VMT-1500 airborne mobile broadband terminal features ViaSat-patented ArcLight technology, enabling the use of 12in antennas. The service offers data download speeds of up to 10Mbps to the aircraft, and up to 512Kbps for uploads. ViaSat says it is building near-global network coverage (pictured), in cooperation with KVH Industries.

Going public

Embraer will have its Phenom 100, Phenom 300, Legacy 600, and Lineage 1000 on static display, and will also feature a mock-up of the Legacy 500. EBACE will be the Phenom 300's first public appearance since receiving FAA and EASA certification.

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The worlds of yacht and business jet interior design have many similarities and enjoy an overlapping customer base – but where do those similarities end and what can each discipline learn from the other?

mmersion in industries other than your own – for however short a time – can often reap benefits in understanding and knowledge that can then be applied back to your chosen or specialism. But in the case of

YACHTDESIGN

field or specialism. But in the case of yacht and business jet interiors, some designers have seen sufficient synergies that they're now making a healthy living majoring in both disciplines.

Shared wealth So what is it that makes them so similar? Of course both are forms of transport design involving moving people from A to B in restricted spaces, but both additionally specialise in moving very wealthy and influential people with exacting standards and expectations about getting from A to B in considerable comfort.

<u>G</u>io

photo:

Given the speeds of such transport, both are also restricted by safety regulations affecting shape and materials. Spiky controls or sharp corners next to non-flame retardant upholstery would be rejected out of hand in either context.

Both usually feature bespoke designs and the owners of business jets often have a yacht too. As Rick Roseman of Texas-based RWR Designs – a significant player in both fields – puts it: "Large



custom yachts are purchased by the same social and economic class of client as aircraft. Therefore a yacht designer will automatically have a grasp of the level of design and fit-out that these customers expect. Knowing and understanding the uniqueness of this particular 'shared' and very high-level market strata is hugely important."

Designers of public transport might not have such an immediate empathy with their customers.

The design software used in both industries is often similar, recognised by engineering and suppliers alike, and includes AutoCAD, Alias Maya and Rhino. Budgets and timescales for these projects can even work out similarly too - although for very differently sized vehicles and different reasons. Roseman says interiors for a Boeing Business Jet or a US\$50-60 million yacht could both come in at approximately US\$18-20 million and take two years to complete. The per-square-foot price of the business jet is much higher due to the greater engineering work and materials needed, but on the other hand the yacht will need more design as they tend to be bigger floor spaces. Both can take the same amount of time due to the extra work needed to pass each industry's relevant regulations.

Rules and regulations Indeed, the aviation industry has some of the most stringent regulations of any, such are the



KNOWING THE GROUND RULES IS THE BEST ADVICE TO ADOPT FOR ANY YOUNG DESIGNER

dangers of a part failing or a certain material catching fire thousands of feet up in the air. So much so that Rupert Mann of London-based Rainsford Mann Design (RMD) – which set up RMD Air specifically to service its growing number of yacht clients who also wanted private aircraft – feels the need to have the support of an STC (Supplemental Type Certificate) design consultant to provide all certified drawings for construction. By contrast, RMD would provide the equivalent full drawing packages for the yacht work it carries out by itself.

RWR's Roseman believes reading up and fully understanding these regulations is the single most important aspect a yacht designer should remember when thinking about pitching for a business jet interior project. As he makes very clear: "The biggest pitfall facing a young designer who has accepted an aviation project, is proposing his/her concepts to the client – and then having to back-pedal because it simply isn't deliverable as presented. This will automatically Patrick Knowlesdesigned yacht, Blind Date
BBJ2 interior by Andrew Winch for Multiflight – the ribbed sidewalls were inspired by yacht design
BBJ lounge detail

from RWR Designs 4. Big City yacht interior by Patrick Knowles

5. Big City bedroom

disappoint the client – not to mention quickly eroding his confidence in the designer. Knowing the ground rules is

the best advice to adopt for any

young designer." Understanding the subtle differences in the use of space in different kinds of transportation is also important. Adriana Monk, founder and design director of amDESIGN and a close design collaborator with high-end and ultra modern yacht brand Wally, explains: "In a car it's about the driver plus maybe a few passengers, all sitting in their designated seats. In business jets you can move around a little more and all guests are treated equally. But it's still a restricted vessel, and you need to consider all the activities that may take place, designing the space accordingly. In yachts you can cater to multiple guests who dispose of even more space and a greater choice of activities and entertainment. It's almost like a hierarchy of luxury."

Aside from greater potential for space and movement in yachts as compared to business jets, the reason for the mode of transport in question itself becomes





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Meet Adriana Monk

Arguably, Adriana Monk helps design the most avant-garde yachts in the world. A former car designer for the likes of Jaguar, Monk was chief designer for the interior of the acclaimed C-XF concept car that spawned the Jaguar XF production car. However, in the past few years she has turned her attention to designing the interiors of luxury yachts. Recent



projects include the interior of the latest Wally lightweight racing yacht and the initial concept exploration for a concept yacht developed in collaboration with fashion brand Hermès, (called the Wally-Hermès Yacht or WHY). With her latest venture, amDESIGN, which has its HQ in Switzerland and a design studio in the Côte d'Azur, France, she is branching out with other clients, potentially ones in the field of aviation too.

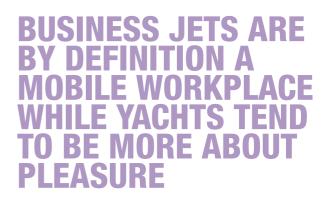
For Monk, "ultimate luxury is free time", and design can help create that, by improving ergonomics and reducing the switch count and functionality in a yacht to reduce the number of crew needed to man it, for example. Otherwise, as she reasons, "you're not alone any more and so you're sharing your private time – it is important to design the owner's living space aboard for privacy, controlling the flow of guests and crew alike." Her design philosophy is unashamedly modern – "my clients don't want gold taps or fluffy cozy, comfy sailing boats".

Such design doesn't come cheap - the funky carbon fibre toilet on some Wally yachts costs a cool €6,600, but it only weighs 7.5kg rather than 26kg so the yacht's performance benefits, and as she concludes: "It's not really about endless budgets. These customers are very clever and have money because they know how to spend it. Even in the interiors, you have to prove why you want to use certain materials."

fundamental. Business jets are by definition mostly about doing business as a mobile workplace, while yachts although great places to impress a client or have a business lunch - tend to be more about pleasure.

A further design consideration follows from this general distinction. Business jet design - especially in the case of head-of-state or VIP aircraft needs to take greater heed of security than yachts, especially in the design process, a factor that as Florida-based Patrick Knowles Designs concedes, makes conducting the design process let alone talking about and publishing pictures of it - very sensitive.

Weight watchers The final major contrast between the two relates to the fundamental difference in approach to transportation. Aviation designers have to consider the weight of parts and materials with much more care because not to do so would affect performance and running costs dramatically.





Master suite for the WallyPower 64 with Hermès accessories Social zone on Blind Date. by Patrick Knowles

As RWR's Roseman points out: "Weight is a huge issue in aircraft each pound affects range and potentially maximum gross take-off weight. This doesn't mean you can't have the same look you might be going for in a yacht - but it definitely means how you get there will be will be different. It will require different materials, more stringent burn requirements and rigorous 16g certification requirements - not to mention considerably more engineering to support it all."

The benefits of understanding such rigorous restrictions and material considerations can be significant when back designing yachts. According to Patrick Knowles, who started out in business jet and VIP aircraft, the positive design influences from aviation to marine are mainly technical. He cites two great examples. The first is a weightsaving design technique that allows yacht interiors to feature normally heavy marble and granite surfaces by water-jet cutting ultra-thin slices of those materials and bonding them to an aluminium substrate rather than using full thickness stone – a process that can reduce weight by up to 75%. Also through business jet work, he discovered a high-density foam with excellent fire



Vertical take-off tender

Andrew Winch Designs, a specialist in yacht design and aviation interiors, has worked with superyacht brand Edmiston and helicopter manufacturer Eurocopter to develop a 'vertical take-off tender' concept especially for yachts. Based on the medium-twin EC155 B1 Dauphin helicopter, the interior features teak flooring, leather wrap-around adjustable seats fitted with carbon fibre back shells, fold-down central armrests, 'floating' LCD screens and headphones. The exterior includes a faux teak finish as a stylistic reference to yacht aesthetics, polished stainless 'raised' trim lines, and window surrounds finished in antharacite. "The vertical take-off tender is an extension of the yacht, inspired by teak decking and stainless steel details, drawing on the simplicity, quality and honesty of materials found in sailing yachts, combined with a unique sense of freedom and the spirit of sailing," says Andrew Winch of Andrew Winch Designs.

resistance called Divinycell that can be formed to house and protect delicate crystal and crockery in yacht cabinet drawers.

In terms of other influences, Knowles says LED lighting and huge plasma TVs got their first application within aircraft and are now filtering across to marine and indeed automotive and domestic interiors.

Aesthetic advantage Regarding influence back the other way, Knowles believes the biggest factor is probably in the area of aesthetics. Rupert Mann of RMD agrees, believing the aviation industry to be a little behind the yacht world: "It's my perception that the level of design for the aviation VIP industry is where the yacht interior industry was eight years ago – in other words the aviation industry is just catching on to Guilty, a yacht featuring interior design from Ivana Porfiri and an exterior from artist Jeff Koons Separate Jourge

Main lounge on

10. Guilty at night

8.





the value of good design and aesthetic. The creative explosion is taking longer in the VIP industry because these assets are business tools first and leisure assets second. In addition, the regulations have been such that material choice has been restrictive. Now though, with the advent of improved technology, designers have more scope with the material finishes and aesthetic – digital veneers being a good example."

Mann also senses that business jet customers' tastes are changing, as he

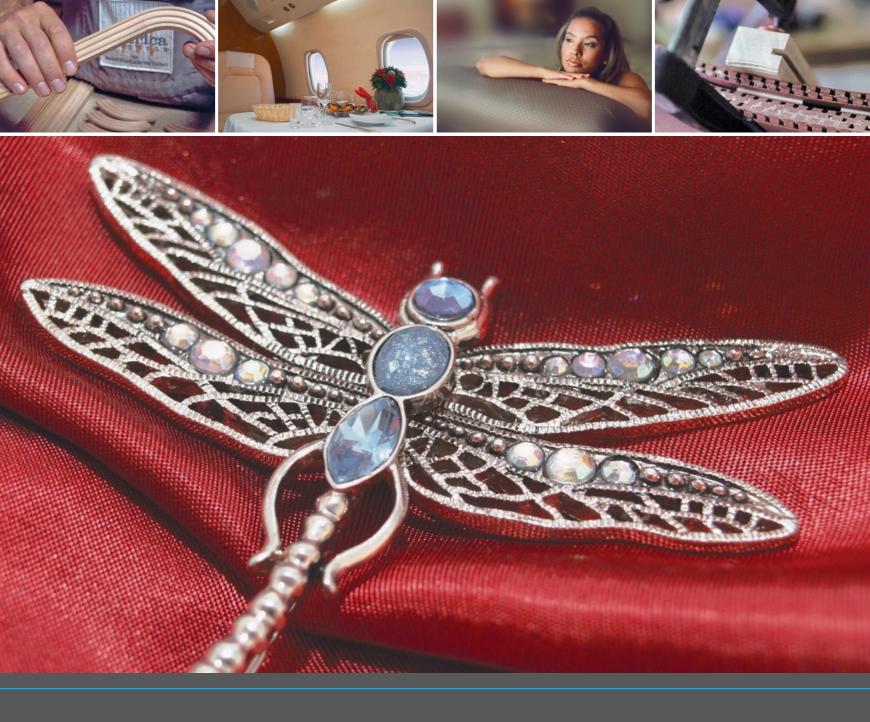


continues: "We must also recognise that owners are getting more ambitious with how they want their aircraft to reflect their lifestyle and are requiring designers to push the boundaries more."

Multiple choice Designers with more diverse backgrounds will certainly help. Ivana Porfiri of Milan-based Porfiri Studio is pushing modern design through influences well beyond aviation, as she concedes: "I am absolutely not a specialist. My experience is in many fields, in yacht design, as well as in product design, in housing and working spaces. I think multi-design experiences are always better as they make for a more rich vocabulary and allow the circulation of ideas and innovation." Her recent yacht project 'Guilty' is a good example of such a challenging approach.

Ultimately, though, design progression and business success in aviation has to come in tandem with pleasing the customer. And as pointed out earlier, given that many yacht and aviation customers are the same people, those that get it right will benefit twice over, as RWR's Roseman concludes: "If you can make him or her ecstatic over the results, which ideally means giving them more than they expected, you *will* be doing more work for them – be it yacht, aircraft or home. This is a 'theorem' that is absolute." **END**

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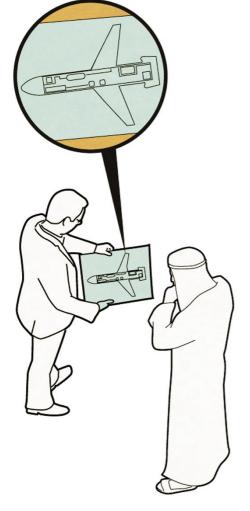


customized solutions

Bernard Fitzsimons Business Jet Interiors International

keepitreal

The secret to avoiding costly overruns and expensive last-minute changes on VIP wide-body completions is to bring design, engineering and certification all together at the front end of each project



hen dreams collide with reality there can be only one winner. And too often in the past, the ultimate dream that is a new

wide-body aircraft interior has been wrecked on the unyielding rocks of engineering feasibility and regulatory requirements.

To avoid that unhappy outcome, Rick Roseman, director and CEO of Plano, Texas-based RWR Designs, developed the 'engineering first' (E-First) methodology, which aims to address engineering and certification concerns from the outset of the project. In New York, Edése Doret Industrial Design has added its own inhouse engineering capability to eliminate the risk of rejected designs and consequently unhappy customers. Meanwhile, Herbert Artinger, president and owner of Hamburg-based Aircraft Conformance Engineering Services (ACES) has spent nearly 15 years overseeing the completion process on behalf of both owners and OEMs at facilities on both sides of the Atlantic. He believes that an ounce of protection is worth a pound of cure: "A properly drafted specification is worth an enormous amount of time and money at the end," he says.

First principles Every design-build endeavour used to go the same way, says RWR's Roseman. First the owner would delay hiring a designer until three or four months before the aircraft was due for delivery. Then, after generating sketches and renderings, and two or three iterations to incorporate the owner's input, the designer would obtain



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Toby Leigh

final approval for the finished design just in time for the delivery of the green airframe.

"So now you have a completely conceptual design generated by a designer, who is almost never an engineer, and the owner has decided that he loves it," Roseman recalls. "Round about the time that you have the aircraft coming to the completion centre is the first time that the engineering group has even had a look at what the designer has done. And invariably in that situation the group says, 'Well, I like the renderings but you can't do this, you can't do this, you can't do this and you can't do this'. Now the owner is upset because he likes what he saw from the designer, he wants it, and there are major engineering or certification problems, or both."

Right from the start The E-First approach aims to avoid that disappointment by formally marrying engineering and certification with the design from the outset of the project. Even in planning the LOPA, he says, "there are many certification issues that if you have a DER [designated engineering representative] take just a cursory look at what you're proposing to your customer, he can tell you if you have problems with stay-out zones or

AS DESIGNERS, WE'RE ALL TRYING TO CUT NEW GROUND AND GIVE THE CUSTOMER SOMETHING HE HASN'T SEEN

other certification issues that are going to cause problems downstream, long before you've ever presented anything to your customer."

The process includes aspects such as cabinet heights, bulkhead positions and aesthetic aspects. "As designers, we're all trying to cut new ground and give the customer something that he hasn't seen before," Roseman continues. "Every time you do that you get into non-recurring engineering, where it's never been done before so it's never been blessed by a DER and the engineering doesn't exist. But you want to know that things like that are plausible and doable from an engineering standpoint, and that certification is at least something that can be achieved. A pre-certification plan gives the FAA or other airworthiness authority the opportunity to examine the proposals, and bless them or tell you if you've got problems, long before they become a real issue and before the customer has seen them."

Doing the engineering last instead of first not only risks compromising the design, Roseman says, it also invites delay: "Often you'll have this US\$100 million asset out on the tarmac with nothing being done by the completion group because they don't know what to do yet." By addressing engineering and certification from the outset, the E-First approach avoids that unhappy situation, developing a full, pre-engineered specification that has been approved by the customer before the aircraft arrives. so that work can begin immediately, or even in advance: "The completion centre can start forming up major monuments, building bulkheads, fabricating overhead panels and so on."

Such a coordinated approach is particularly crucial when it comes to a Boeing 747-8, which has attracted seven VIP orders so far. "The problem is just exponential when you get into an aircraft that size," Roseman comments. "Even though it's a huge aircraft, you



IN TERMIS OF COST AND SCHEDULING IT MAKES THINGS A LOT EASIER



can't afford to spend three years on a completion like that – you have to squeeze it into a year and a half. But the amount of detail and overall square footage is just a whole lot more, so it becomes a lot more critical with an aircraft like that and you need to start a lot further out."

The ideal time to start, he considers, is when the order is placed. "The delivery time for a 747-8, for example, is a lot longer than for a BBJ. So theoretically, and this is just a rule of thumb, if the owner will hire his designer at or about the time that hes ordered the aircraft, sent his initial deposit and actually got the aircraft underway, then you're OK."

The outcome of the E-First methodology, Roseman sums up, is "an owner, a designer, a completion centre and an engineering group that are all confident that the design that's been put in front of the customer will in fact work." Probably the biggest resulting benefit is "you don't have an owner who is upset because the designer has brought him things that can't happen. The completion centre is happy because they've known all along what's going on – the engineering group is on the same page with the designer." That does not mean an end to all difficulties, he adds: "There are always problems you have to deal with even in the best of worlds, but this simple methodology really does render enormous benefits and efficiencies in the whole process."

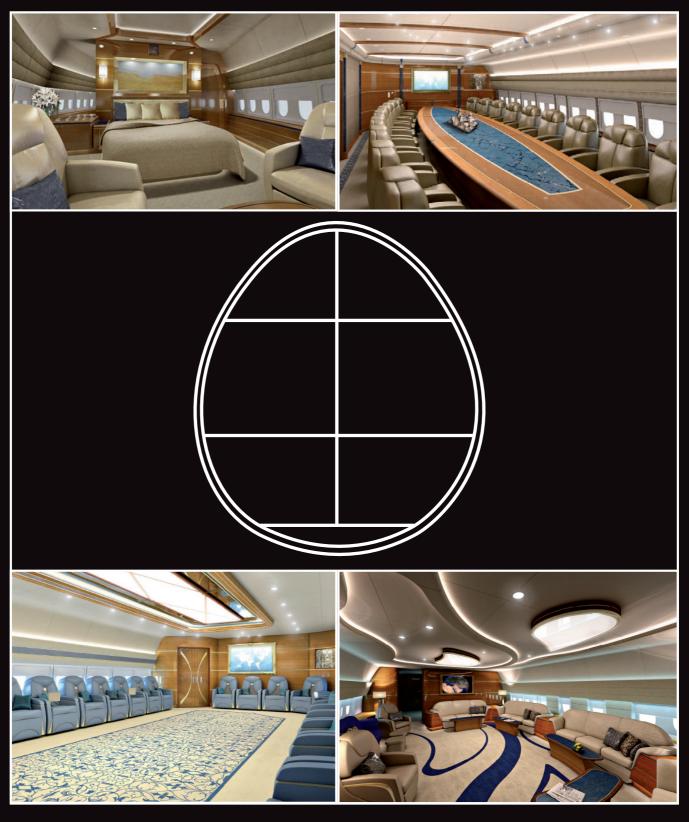
Turnkey capability "We do our own engineering," says Edése Doret, principal at Edése Doret Industrial Design. In fact, his company's current workload includes pure engineering and certification work involving wide-body aircraft on behalf of two airlines, along with a new VIP programme where it is providing turnkey service.

"We're doing all the engineering and certification, as well as managing the actual completion itself at the facility," he says of the latter. "It's actually our responsibility to deliver the aircraft back to the owner with the new interior, rather than the facility's."

So far the company has employed two engineers, one handling certification while the other deals with mechanical and structural engineering, and expects to double that number by the summer. "It's controlled costs," says Doret. "In terms of cost, in terms of scheduling, it makes things a lot easier. Also our clients have been happy because we don't have to wait for an engineering firm to free-up space for us in order to support our project."

The in-house capability helps with the development of new systems such as lighting and innovative window shades. "We use the engineering to validate the design, rather than waiting to try to introduce it to the facility and hope their engineers will accept it. Typically they won't, so if we do it in-house, we don't have to worry about those problems, essentially."

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11

TYPICALLY WE'LL TRY TO PUSH THE ENVELOPE WHEREAS A FACILITY'S

Cabinet reshuffle

So what are some of the challenges presented by custom VIP interiors? RWR Design's Rick Roseman quotes the example of a recent client request for a 'free-standing' cabinet in the centre of a widebody aircraft. Resembling a very thick bulkhead separating two lounges, this was to be a major monument that would house entertainment consoles, storage, a wardrobe closet and other items.

"We sketched up the concept from a variety of different angles to study the aesthetic and then drew it in CAD to prove its spatial aspect and volume requirements. But this was done ahead of showing the customer. Instead, we first ran our preliminary design proposals by our local DERs and the retained engineering group. As it turned out, it was a feasible design and we were even able to rest on some partial 'recurring engineering' that had been done for a smaller but similar application several years back – data generated and owned by the engineering group."

However, the certification aspects were a quite different matter, as the size and weight of the finished unit were significantly larger: "There were some head strike issues with two chairs and a stay-out zone that posed a problem and we were told that the entire unit would definately have to undergo a 'pull test'," says Roseman. "This meant the monument would have to be designed fully, engineered fully and completely constructed to final build specs – all so it could be dropped from a special apparatus designed to simulate a 16g forward crash – and replicating the precise attach points that would ultimately secure the monument in the aircraft. If it failed the test [meaning if it broke apart or otherwise was structurally compromised] it would never be approved or allowed in the aircraft. Obviously this type of enterprise is tricky to say the least, and potentially devastating to your project – at least, without proper planning and realistic projected assessments. In the end, the FAA was convinced that with proper engineering and weight distribution loads, our unit had an 80 to 90% chance of passing the pull test and therefore being allowed."

At this point, Roseman still needed to solve some floorplan issues and reposition some seats to avoid head strike issues, but these were much easier challenges to overcome: "Ultimately, we were confident enough based on our preliminary collaborations with the DERs and engineering group that we formalised our concepts in the renderings and presented them to the customer. This kind of confidence – shared by all parties – is what keeps projects on track, on budget and on schedule."

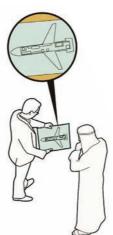
The new capability has been "a huge help", he says, and not just in practical terms: "It's actually made us more creative, I think. Typically we'll try to push the envelope, whereas a facility's engineering department will not. They will try to go for the cheapest approach or something that's least complicated for them. They want to lower their risk, basically."

There is a further advantage to having immediate feedback on what is feasible, he adds: "It's allowed us not to embarrass ourselves. When we present a concept to the owner we can prove that it works rather than going through the modification project, finding out what doesn't work, then going back to the owner and saying, 'Well, that didn't really work in terms of our lighting solution or this decorative item, we're going to have to redesign this area in order to come close to the vision that you wanted'."

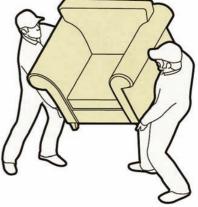
Doret lists two other factors that have helped streamline the design and completion process: "Over the years, I've found hiring the right people to do multiple tasks helps move the projects along a lot faster than having a dedicated person who's good at one speciality. Another thing that we've done is we used to outsource renderings or illustrations. Now we do that in-house, which again is a huge help in terms of speeding up the project."

Worlds apart At ACES, Herbert Artinger says facility and customer often seem to inhabit different worlds. "We have meetings sometimes as far as two years in advance of a project," he says. "But when the actual aircraft arrives at the facility and work begins, it is amazing how many things have to be reinterpreted."

He believes engineering and a comprehensively written specification is the key. The specification, moreover, should be written in two parts: one for the design philosophy and design principles – "the visions and dreams of the designer"; and the other containing



FACILITY'S FACILITY'S ENGINEERING DEPARTMENT WILL NOT



the technical criteria for the systems – "two separate things, but merged into one common document at the end".

While happy to define shape, space, contour or spatial orientation, he says, some designers will not specify anything relating to systems such as lights, air conditioning, acoustic or insulation values. "In the end," he maintains, "the customer feels comfort not from the design, but from the actual physical interaction between his physical body and what he is sitting or laying or walking on, or seeing." Yet many designers refuse to specify the interior except in very generic terms: "That is where 90% of the problems will start."

Clients who have used ACES' services in the past see the advantage, Artinger says. "Over the years, facilities have enjoyed the freedom of a nearly blank cheque scenario, where the client would bring an aircraft and say 'OK, I want this put in', and they would say 'Yeah, it's going to cost so and so much', and already there was a cushion put in there for additional work – what is additional work? It's like you're building a house and the garage is included and the contractor says, 'Would you like a roof?', when you had assumed the roof was included."

Artinger gives a recent example: "The cabin specification said the aircraft

THE BETTER THE PREPARATION, THE BETTER THE END PRODUCT WILL BE

should have three stages of dimming in the cabin for the lighting. Obviously you have a zero position where the cabin is dark, and a position that represents 100%. Are they two of the three positions? Or are there to be three stages between full-on and full-off?" He says the answer will affect system definition, system architecture and how much it costs: "The better the preparation, the better the end product will be, because we have found that every discrepancy at the time of acceptance of an aircraft represents a flaw in the definition of the original text."

ACES' role is to bring to the attention of the designer areas that need to be clarified or made more precise in order to prevent problems later on: "A leather chair or sofa, for example, will be stitched at the corners," explains Artinger. "Some designers will specify a particular type of stitch – and there are many different types – and some will tell you how many stitches per inch they want to produce a particular pattern. Some will just say double stitch, and then you leave it at the discretion of the facility."

As the new wave of VIP 747-8s, 787s and A350s looms, Artinger sees an opportunity to correct the errors of the past. The way forward, he suggests, is to "write a preparatory spec in mutual agreement, where everybody sits down at the table, facility, certification, engineering, customer and designer, and says, 'This is what I want, this is what I expect at the end,' and not wait until delivery time to find the facility has interpreted it one way and the customer says, 'Oh no, that's not what I though I was going to get'. Thinking is nice, but putting it on paper is the only proof of what you're going to get."

With regard to some of the more offthe-wall ideas that designers can sometimes dream up, Artinger cites an example of a design that included a large window in the top of the fuselage that would allow passengers to look out and see the stars: "We did another aircraft where we had little LEDs in the ceiling in the bedroom, and if you were laying down at night you couldn't tell whether you were looking at that or looking out of the window. And it has the advantage he could change it to match the constellation of the stars on the day that he was born."

The same effect could be achieved using holographic projection in the cabin, he adds: "The possibilities are unlimited, I don't dispute that. I think it's great, but it has to be feasible." **END**

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EXIT

EX-T

Standent and Entrance AMAC Aerospace proved it is a player to be reckoned with this

year by delivering its first WIP A320 to a Middle East client

hen Basel-based AMAC Aerospace rolled-out its first Airbus A320 to a head-of-state in the Middle East in

January, the high-end completions world sat up. Equipped in full VIP configuration including 48 seats, a bedroom, shower and state-of-the-art cabin entertainment system, the aircraft also incorporated audio and video on demand, wireless LAN and SATCOM. Remarkably, the installation took just nine months and the aircraft was delivered on time and on budget.

This was the result of tight project management and cooperation from all the parties involved, including two companies that were new to the VIP interiors field. At the start of the process AMAC was still in embryo form – albeit headed up by ex-Jet Aviation chief Heinz Köhli and comprising experts with decades of experience. The project was also Cyprus-based Altair Aero Projects' first foray into VVIP completions.

Banking manoeuvre Headed by exbanker and chairman of the French Aeronautical Banks Association Christian Castang, Altair has a 20-year history of asset management and overseeing technical support and regulatory compliance for airlines.

In 2007 Castang spotted a gap in the VIP airliner conversion sector. Banks are frequently happy to finance such aircraft for heads-of-state or wealthy individuals securitised against other interests in regions or markets they wish to penetrate. Castang says: "I have kept the mentality of a banker and have a strong network in the banking community. When a bank wants to





finance an aircraft like this, usually the owner knows nothing about fitting-out the asset. He wants to choose the colour of the seat leather, but that is about it."

He continues: "We are there to help manage the project. We can walk the client through the process and the completion centre is happy that we are the interface. We understand the language on both sides and act as a buffer between them."

In this instance Altair kept all costs under a tight reign and worked closely with the owner from the outset to



AMACA320



THE KEY THING IN OUTFITTING IS TO HAVE PEOPLE WHO KNOW THE BUSINESS

Velupillai says: "The key thing in outfitting is to have people who know the business. You need managers who know how to produce veneers and wood finishes, and engineers who know how to do cabin interior design in order to make a project like this work."

Speedy delivery Despite the fact that AMAC had to act fast, building portacabins on the tarmac alongside its new hangar to house engineering staff, the project ran smoothly, engendering harmonious relationships between all parties concerned. Velupillai says: "Even if we have no involvement with the completion, we want our customers to be happy with the cabin as it reflects on us. We are confident we build quality products, but the cabin is what the customer sees most on a trip."

The resulting aircraft is a practical, simple space, which is luxurious because of the quality of the materials used. Munch is reputed to be a stickler for detail, having been a mechanical engineer before turning to design. The major structural challenges came from installing the onboard shower, as well as adding a humidification system to

determine exactly what he needed, including specific destinations, number of flights per year, when he was likely to fly and whether the aircraft would be for personal or business use or to carry significant freight.

Altair then recommended either a Boeing BBJ2 or an Airbus A320 as the most suitable platforms for the job. However, in 2007 there were no new Airbus or Boeing aircraft available until 2013, so Altair had to source and negotiate a position on the Airbus assembly line for delivery in January 2008. 1. Sitting area

2. Bedroom

Altair then hired a designer – Francis Munch of Studio Emotion – and audited four completion houses before opting for AMAC. At that point the outfitter consisted of five people in an office in downtown Basel with several drawings of hangars and a business plan (today the company employs more than 200 people at its EuroAirport Basel-Mulhouse-Freiburg HQ). Castang says: "We made our decision an hour after meeting them. We felt they were by far the most talented people for the job."

Airbus product marketing director executive and private aviation David

cater for the typical missions between the Middle East and Africa that this aircraft will fly. There are also five toilets on board.

"The main hurdle was keeping the cabin weight down," says Castang. "To fly nine hours direct in an A320 against strong head winds in winter we had to improve the range, working closely with Airbus." In addition to adding extra fuel tanks, this meant weighing each cabin element kilo by kilo, from the onboard video screen, to the panel lights and seats.

Of course, the interiors don't just have to look good – they also have to last, notes Velupillai: "This is where the skill of the completions centre comes in – to produce high-quality items that look good and do what they were designed to do for a long time."

According to Castang, another challenge is marrying the technology that exists at the time of design to the client's future expectations. He says: "The lead-time from design to completion is usually close to 18 months and technology changes quickly, so you have to factor that in."

Bright future After the success of the A320 conversion, AMAC and Altair are developing their VIP completions

Dining room
Separate lounge

ALTAIR NOW HAS TWO MORE VIP AIRCRAFT ON ITS BOOKS AND AMAC IS WORKING ON AN AIRBUS A319





businesses further. Altair now has two more VIP aircraft on its books and AMAC is working on an Airbus A319.

Today the Swiss completion centre has one maintenance and completion hangar able to cater for A320/BBJ/ G550-sized aircraft, as well as offices and 20,000m² of tarmac space. There are also on-site workshops dedicated to cabinetry, upholstery, sheet metal, composite and electro/avionics.

At the time of going to press, AMAC is set to open an 8,400m² wide-body hangar in April, which will house aircraft up to the size of an Airbus A380.

Most tellingly, it is now working with Airbus to become one of the OEM's approved completions centres. Velupillai says: "We are very careful about who we choose to work with and it is a tribute to the team that they did such a great job." **END**

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quickchange

The BBJ-C, which reconfigures from all-passenger to allcargo configuration in less than eight hours, is an attractive option for governments, corporations and private individuals looking for an extremely flexible transport solution



ow entering its third decade of production, the Boeing Business Jet (BBJ) continues to fill an ongoing niche market need for the most rarified

world travellers who demand speed and capacious comfort. The BBJ was spawned in 1996 from a partnership between Boeing and General Electric (maker of the CFM-56 series of engines for newer-generation 737s). Now in its sixth decade of production, the 737 twinjet is the most successful and ubiquitous jetliner ever produced.

The BBJ took components of two 737 models: the 737-700 series airframe; and the larger 737-800 series wing, landing gear and centre fuselage section. Anywhere from three to 10 auxiliary fuel tanks can be installed in the belly of the aircraft, giving it a maximum unrefuelled range of 6,196 nautical miles (eight passengers) or 14 hours in the air. A larger, stretched version called the BBJ2 boasts 25% more cabin capacity, but at the expense of slightly reduced range. In 2005, Boeing announced the even larger BBJ3, based on the Next-Generation 737-900ER. The BBJ3 has 1,120ft2 of cabin space. More than 147 BBJs have been sold.

Recent convert Last year Boeing introduced a new version of the original BBJ, with a twist - the BBJ-C. The 'C' stands for 'convertible' - and no, that does not mean that the roof comes off, similar to what happened to a corroded Aloha Airlines 737 in 1988. The BBJ-C is basically a Next Generation 737-700 convertible with the BBJ's auxiliary fuel tank system from DeCrane's PATS unit. Boeing says the US\$58 million C allows the aircraft to be reconfigured from allpassenger to all-cargo in less than eight hours. The company says the aircraft is ideal for governments, corporations and private individuals with a need to





quickly change an aircraft's configuration from VIP transport to troop transport, medevac and various flavours of cargo. The C differs from a standard BBJ in two important ways: the addition of a massive cargo door forward of the left wing; and strengthened floor beams that allow the loading of 10,000 lb cargo pallets. This limits the number of auxiliary belly fuel tanks to six, and can somewhat limit range: with 20,000 lbs of cargo, range drops to 4,945 nautical miles.

Like a standard BBJ, it is delivered in all-passenger configuration without seats, galleys, or lavatories – except for the forward crew lavatory. However, the C is delivered with sidewall and ceiling panels, as well as overhead storage bins. But it also comes with a cargo conversion kit with all the necessary hardware installed in the existing seat track to carry eight standard 88 x 125in cargo pallets or containers. However, the containers must be limited to 59in in height (LD-7 containers) to clear the overhead bins, but customers can remove the bins post-delivery.

The kit consists of ball transfer panels, roller trays, outboard conveyers (including vertical restraint), door sill protectors, forward end stops (longitudinal restraints), aft end stops, pallet locks, cargo locks, folding side restraints, and lateral guides. Boeing adds seat tracks at the outboard cabin edges and one on the centerline, combined with the four standard seat tracks, for a total of seven to secure the cargo-handling system and passenger features such as monuments. Provisions

Airbus Corporate Jet Centre's CEO.

ACIC creates first VIP kit for multi-mission A320

narrow-body category, but as of yet it cannot be configured for cargo

Airbus Corporate Jet Centre has also fielded a 'convertible' in the single-aisle,

operations. The dual-role A320 VIP kit converts the forward passenger area

into a VIP section. The kit includes two double-VIP seats, two 'club four' VIP

seats, and hi/lo tables. The forward area also features leather upholstery,

woolen carpets and upgraded curtains. "This kit gives the customer the

flexibility to make even wider use of its aircraft," says Benoit Defforge,

are not made for loose cargo, therefore the interior linings do not require additional protection.

Monumental decisions The forward lavatory and a G1 position galley can be permanently installed forward of the cargo door because the forward cargo barrier net attaches to the aircraft structure slightly aft of the door. Likewise the large tranverse aft galley and aft lavs fall outside the cargo system envelope.

Old 9g aircraft interiors with similar schemes used heavy, palletised systems. The seven-track design saves weight over this design and also meets newer, more rigorous cabin crashworthiness standards under FAA TSO-127c. If additional interior features are desired, some customers opt to forego the last one or two cargo pallet positions and permanently install monuments such as large lavatories, changing rooms, communications centres, and expanded galleys in the aft cabin, according to Christine Hadley at Greenpoint Technologies, a leading US BBJ completion centre. In these cases,

- BBJ-C in passenger configuration
 BBJ-C in medevac
- 2. BBJ-C in medeva configuration for Scandinavian Airlines (SAS)

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- Interior design
- Engineering design
- Installation
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THE BBJ-C CAN BE CONVERTED FROM PASSENGER TO CARGO IN LESS THAN EIGHT HOURS

all business-class, VIP, head-of-state, and medevac.

HVAC, electrical and IFE are largely unaffected with the proper planning. The environmental control system (ECS) is unchanged if the cabin remains generally open or utilises under-bin divider panels to separate compartments. If full-height bulkheads or dividers are incorporated, the new interior design needs to be analysed for appropriate reconfiguration and rebalancing of the aircraft's ECS by the completion centre.

If the overhead bins are retained, the Boeing-installed PSUs are still available to provide reading lights, attendant call and passenger oxygen, eliminating the need to design removable versions of these connections. Greenpoint dealt with what could have been a tricky IFE problem on its first BBJ-C completion by using a system built around portable, battery-powered Bluebox IFE devices that provide subscription service movies, video, audio, and moving maps. Due to the long-range capability of the aircraft, Greenpoint installed battery charging connections and a seat-mounted arm for each passenger to create a more 'installed' feeling. The Bluebox players are autonomous and receive passenger announcements and moving map data wirelessly, so no complicated seat-to-

 BBJ-C recently completed by Greenpoint Technologies
Greenpoint opted for Bluebox's portable, batterypowered IFE devices

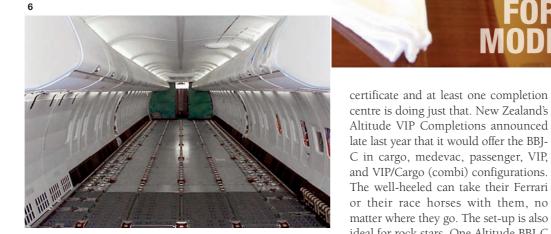


Hadley says Greenpoint "can design the required interior feature support structure, systems and utilities modifications and reconfigure and recertify the cargo handling system" to a six- or seven-pallet system as opposed to the as-delivered eight-pallet system. The seven-track set-up also facilitates quick installations of interior features that do not require unique attachments or utility connections, such as a mid-cabin galley.

Quick change Boeing says the C can be converted from passenger to cargo configuration in less than eight hours by a four-man crew; converting it from

cargo to passenger takes a tad longer, primarily due to the time required to re-install the carpet. While not terribly practical due to the need to store seats and other interior components, the conversion does not require any special equipment and could be done in the field. The job goes faster with a main deck cargo loader or similar movable platform to optimise use of the aircraft's large main deck cargo door.

Like all BBJs, the interior of the C is largely a blank canvas. The delivered aircraft includes a forward lavatory and provisions for forward galley, aft galley and two aft lavatories. Interior concepts fielded to date range from all first-class,



seat IFE wiring was needed. The electrical connections for the battery charger circuits were made with pigtail connectors at the sidewall of each row.

There is no limit to the number of reconfigurations with respect to the aircraft's hardware; no special design life limitations are typically imposed on convertible BBJ-C interiors.

The BBJ-C is a convertible, as opposed to a 'combi' (half cargo/half passengers) due to certification limitations, although a combi can be developed via a supplemental type It's hard to imagine that this BBJ-C could be stripped back to cargo use in just eight hours!
BBJ-C in cargo

configuration

centre is doing just that. New Zealand's Altitude VIP Completions announced late last year that it would offer the BBJ-C in cargo, medevac, passenger, VIP, and VIP/Cargo (combi) configurations. The well-heeled can take their Ferrari or their race horses with them, no matter where they go. The set-up is also ideal for rock stars. One Altitude BBJ-C configuration features a forward cargo area followed by a mid-cabin galley and aft lounge, stateroom, lavatory, and a shower. "To offer a solution that enables the same aircraft to deliver a head of state in the morning and fly a humanitarian mission in the afternoon is innovation and flexibility not yet seen by the industry," says Altitude's Matthew Woollaston. He said the BBJ-C "offers operators true flexibility and maximizes asset utilisation".

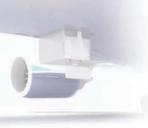
The first BBJ-C (pictured in this article) was delivered to Peregrine Point

BOEING SAYS THE CONVERTIBLE OPTION WILL NOT BE OFFERED FOR BBJ-2 AND -3 MODELS – FOR NOW

LLC and is configured for its business model. Greenpoint outfitted the passenger interior with seats from Brice and B/E covered in Garrett leather. The Bluebox system incorporates the Rockwell Collins Airshow 4000 system and veneer is from Carl Booth. The lighting, sidewalls and headliners are all retained from Boeing.

Boeing says the convertible option will not be offered for BBJ-2 and -3 models – for now. But for operators who want to make the most of their aircraft, the BBJ-C currently has no equal. It offers those who do not fly an executiveconfigured aircraft to its potential, the ability to rationalise costs over the long-term. And for customers who are willing to invest in a 'combi' STC, the aircraft is the penultimate toy-hauler or special mission aircraft. **END**

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18

747-8 elevator

Ground level to main deck Fully automatic operation Designed to meet ADA standards Maximum occupancy = four adults



Mark Huber Business Jet Interiors International

Embraer Phenom 300

Cabin width: 5ft 1in (1.55m) Cabin height: 4ft 11in (1.50m) Cabin length: 17ft 2in (5.23m) Seats: 2 crew + 7 passengers Range: 1,800 nautical miles (3,334km) Top speed: 45okts (834km/h) Max altitude: 45,000ft Price: US\$8.14 million **Orders:** Undisclosed* (*800+ orders for both the Phenom 100 and Phenom 300)

CABIN STATS

lightjetreport

Three new twinjets are reaching the market as questions continue about the progress of an equal number of single-engine programmes

Embraer Phenom 300

Embraer entered the light jet market in 2005 promising more for less – and the US\$8.14 million Phenom 300, certified late last year, delivers in spades. It's fast, has long legs, and sports a well-equipped and comfortable cabin with an array of option choices matching aircraft that cost millions more.

Embraer offers a generous selection of cabin options for aircraft in the light jet categories. Basic available cabin colour palletes include Agate, Citrine, Obsidian, Onyx, Quartz, Topaz, and Tourmaline; however, customers can select fabric and colour combinations beyond these offerings.

Cabins feature enclosed, pleated window shades; ultraleather upper sidewalls; carpet or wood floors; laminate, gloss, or veneer cabinet finishes; and carpet or fabric lower sidewalls.

The IFE suite of options includes XM Radio, inseat power outlets, audio source for MP3, speakers, subwoofers, VIP control panel and separate passenger and cockpit environmental controls.

Embraer fabricates the seat tracks, window frames, and flooring, as well as the cabin monuments. A variety of well-known vendors do the rest: cockpit seats from Goodrich; cabin seats from DeCrane; headliners and shades from C&D and Fischer; cabin insulation from EAR Specialty Composites; PCUs from Avionics Services; environmental controls from ENVIRO; and cabin pressurisation units from Honeywell.

The 18in-wide cabin seats feature longitudinal tracking, adjustable recline from 8-20°, integral threepoint seatbelts, breakover backs, and inboard armrests. Maximum seat pitch is 42in. The interior lines and appearance is cool and clean and borrows heavily from upscale automobiles. That's no accident. For interior design, Embraer turned to BMW DesignWorksUSA in Newbury Park, California USA.

The 300 comes in two basic floorplans that seat six to nine passengers and customers can choose between either a full wardrobe or a sink in the externally-serviced lavatory. The 300's galley can also be equipped with a hot jug and a wine rack. The large after baggage hold can accommodate golf clubs and skis. Embraer plans to transition final assembly from Brazil to a new US\$50 million, 150,000ft² production, paint, and flight test facility on 25 acres adjacent to the airport at Melbourne, Florida, USA. The campus will employ 200 and be fully operational by 2011. It will also feature a customer delivery and acceptance centre, as well as a customer design centre for the company's entire line of business jets.

CABIN STATS

Cessna Citation CJ4

Cabin width: 58in (1.47m) Cabin height: 57in (1.45m) **Cabin length** (forward pressure bulkhead to aft pressure bulkhead): 22ft 4in Seats: 2 crew + 8 passengers Range: 2,000 nautical miles (3,700km) Top speed: 45okts (834km/h) Max altitude: 45,000ft Price: US\$9.04 million Orders: 150+



Cessna Citation CJ4

Deliveries are anticipated to begin later this year for Cessna's latest entrant in the popular CJ series, the US\$9.04 million CJ4. The aircraft features a slicker wing, more powerful engines, and tried-and-true, four-screen Collins Pro-Line 21 avionics with the latest safety enhancements. While these refinements unquestionably make the CJ4 a better jet, it is inside the redesigned cockpit and passenger cabin where you will notice even more dramatic changes.

Compared to the CJ3, the CJ4's fuselage has been stretched 21in, yielding more passenger leg room. Passenger capacity has grown to nine (co-pilot seat, belted aft lavatory seat, and side-facing kibitzer opposite the cabin entry door, plus six standard single executive seats). Up front, the pilots' seats have two inches more leg room and the instrument panel has a more logical, ergonomic layout. The Goodrich cabin seats are a new design with a much more robust mechanism and the seat pitch and foam sculpting have been changed for improved comfort. They also have a unique and sturdy flip-up arm that can be stowed out-of-the-way to improve the comfort of plus-sized passengers. The cabin floor was lowered to provide a wider surface and more ergonomic eye reference points for window placement. The CJ4 also gives customers the option of quick-change monuments that allow customers to quickly alter the aircraft configuration to better meet specific missions. For example, the large forward refreshment centre can be swapped for a smaller one and a side-facing seat when extra passenger capacity is needed. The change-out

relies on a proprietary pin mounting system developed by Cessna that dramatically chops installation and removal times. Although a comparatively small business jet, Cessna offers its customers a wide variety of choices when it comes to colours, fabrics, materials and finishes.

Passenger electronics have been upgraded with the Rockwell Collins Venue cabin management system. There are switch panels at each seat position and electrical power outlets for laptops or other accessories at seat positions #5 and #6 and at both pilots' seats. The Venue system controls all on-board IFE including iPod connectivity, Blu Ray player, moving maps, and a 100Gb hard-drive storage for personal media. A single XM satellite receiver and two plug-in, arm-mounted 10.6in HD monitors are included in the standard package. Additional receivers and monitors can be purchased and each of the six main seats is wired to accept them, allowing the monitors to be plugged and unplugged at the various seat positions around the cabin. Venue also controls all indirect cabin lighting and the electronic window shades. They can be set anywhere between clear, shear, and full black-out mode.

The LED reading lights are not dimmable, but are installed as part of an integrated light/gasper combination. The environmental system has been fortified and improved with the addition of an extra evaporator, separate controls for pilot, co-pilot, and passenger cabin, and redesigned air valves. The new valves can be swivelled 360°, have louvres, and a separate shut-off ring.

HondaJet

Honda Aircraft had planned to fly its first conforming prototype HondaJet in January, but that flight has now been delayed to later this year (no official date given at time of printing). A spokesman blamed the delay on the time required to assemble the first conformal aircraft to production standards, but said the company remained committed to beginning customer deliveries by the end of 2011.

While the interior appears well defined, Honda was still announcing interior vendors for the five- to six-passenger, US\$3.9 million aircraft late last year. Honda credited supplier problems with delaying the programme up to another year. "We have been working very closely with our suppliers over the past year in an effort to minimise the effect of the ongoing worldwide economic instability on HondaJet development," says Michimasa Fujino, Honda Aircraft Company president and CEO. "Unfortunately, we now have no choice but to revise our schedule."

Last year Honda announced that it will offer EMTEQ's SkyPro integrated cabin management and IFE system as an available option. SkyPro features all-digital high-definition touchscreen interface technology that includes audio/video on demand (AVOD), interactive 3D high-definition moving map, and extensive cabin control capabilities such as cabin/cockpit communications, climate control and interior lighting. AVOD is available through the system's removable media storage unit, which is capable of storing virtually an entire media collection. Passengers can interface through the onboard system's multiple media inputs with audio, video or gaming systems brought onboard, and play content on cabin speakers and HD monitors. HondaJet will also offer an XM Satellite Radio option, where the system will interface with XM and allow passengers to select their desired station presets at their seats.

The basic cabin layout features two pilot positions, a side-facing kibitzer opposite the entry door, a clubfour grouping, and a small aft lavatory with bi-fold privacy door. The cabin measures 5ft wide, 4.83ft high, and 17.8ft long bulkhead-to-bulkhead. The 57ft3 luggage compartment is accessible through an external loading door and there is another smaller 9ft3 baggage locker in the nose. Renderings to date show light-coloured combinations of leather, veneers, ledges, walls, and headliner tied together with highend automotive accents.

CABIN STATS

Hondajet

Cabin height: 4.83ft (1.51m) Cabin length: 17.8ft (5.43m) Cabin width: 5ft (1.52m) Seats: 2 crew + 5 passengers (standard); 2 crew + 6 passengers (air taxi) Range: 1,180 nautical miles (2,185km) Top speed: 420kts (778km/h) Maximum altitude: 43,000ft Price: US\$3.9 million Orders: 100+

The Singles

Cirrus, Diamond, and Piper are all working on single-engine jets that are in various stages of development. However, these companies all rely on the sales of propeller aircraft for their current revenues and sales of those aircraft as a class have basically fallen off a cliff, declining by more than 50% in the last two years. This has significantly reduced the available revenues these companies have to devote to these jet programmes. All of these new single VLJ programmes will cost anywhere from US\$95 million to US\$150 million by these company's own accounts, and most likely more in actuality, just to get the aircraft to certification and probably another US\$100 million each to put the aircraft into significant serial production.

Diamond D-JET's director of sales and marketing Mark Lee says the company still plans to certify the five-place aircraft this year. The D-Jet is now in its eighth year of development. Diamond says it holds orders for 300 of the aircraft. Development of the five- to seven-place Cirrus SF50 (pictured below) has slowed to a crawl and the company will not commit to certification or delivery dates. Meanwhile, Piper has moved certification of the five- to six-passenger PiperJet out to 2013. In July 2009, Piper's new CEO Kevin Gould announced that the programme would be hiring 50 new engineers over the next nine months, however key design and vendor decisions remain to be made. To date, Piper has approximately 204 contracted orders for the new aircraft.





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Mecaer Aviation Group's interiors and completions unit specialises in luxury AW139 interior projects

he 165kts AgustaWestland AW139 medium twin is one of the hottest-selling helicopters in the world today and a major contributor to the overall success of the company, says CEO, Giuseppe Orsi. The US\$21 million ship is quickly becoming a top choice for oil and gas platform servicers, law enforcement, coastal patrol, search-and-rescue, medevac, and even aerial firefighting. Since 2003, more than 400 have been sold to diverse customers worldwide.

For most operators, the AW139's value equation comes down to pure power: its pair of Pratt & Whitney PW PT6C-67Cs provide nearly twice the horsepower of a Bell 412 for only a small increase in direct operating costs. "The bang you get for your buck is much cheaper," says Los Angeles (City) battalion chief Joseph Foley. The AW139 also carries a hefty useful load of 5,909 lbs and has a maximum range (no reserves) of 675 nautical miles.

The helicopter first flew in 2001 and is assembled at plants in Italy and Philadelphia, USA. Last year Orsi announced a plan to also assemble up to seven of the helicopters per year in Russia under a joint venture with Oboronprom. Plans are in the works to assemble other AW139 kits in other countries as well. The helicopter has sold well worldwide – Japan's Coast Guard alone ordered 24 in 2006 – but is particularly popular in the Middle East. A militarised version designated the AW149 was unveiled last year. In heli-taxi configuration, the AW139 can carry up to 15 passengers and the baggage compartment is accessible both through the cabin and an outside access door. The helicopter's five-bladed main rotor delivers a smooth ride even at high speeds and weights. The helicopter's state-of-theart avionics package – Honeywell's Primus Epic system – includes large flat-panel cockpit displays and a fouraxis flight control system and digital autopilot. Optional anti-icing protection makes this a true, all-weather aircraft.

Executive role Increasingly, due to its capacious cabin, the AW139 is also being tapped for executive and VVIP missions, and Mecaer Aviation Group's (MAG) interiors and completions unit (formerly Servizi Elicotteristici Italiani S.p.A) has established itself as one of the leading providers of these interiors. The unit, an EASA-approved design organisation, has a long history of providing VVIP, VIP, corporate and EMS interiors and has performed more than 400 of these completions to date on various aircraft from its facilities in Europe and North America, which are co-located or close to AgustaWestland's assembly facilities in Italy and USA.

MAG has a natural affinity with AgustaWestland – its Italian operation, formerly Savoia Marchetti, was once part of Agusta. In 1995, it was acquired by private investors who expanded the business into a major helicopter and light fixed-wing aircraft maintenance, repair and overhaul (MRO) facility. Its

Have you met our Chief Executive?



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Borgomanero headquarters features a 95,000ft² plant and employs 200 staff on site. In 2001, MAG acquired Servizi Elicotteristici Italiani S.p.A (SEI), located in Monteprandone, central Italy, and renowned for its helicopter MRO and interior design, completion and component manufacture.

SEI was founded as Breda Nardi S.p.A in Milan in 1971 and began operations manufacturing Hughes 500 helicopters

DURING FLIGHT TESTS AT 140KTS, SILENS REDUCED CABIN NOISE FROM 76 TO 71DB SIL4

 Rendering showing oval credenza option with pop-up, swivelling IFE monitor
MAG also specialises in AW109 corporate interiors under license. It moved into the Montreprandone plant in 1976. Over a period of 15 years, the company built 180 Hughes 300 and 300 Hughes 500 helicopters, and also developed at thriving MRO business. The Montreprandone site employs 160 and features a 151,000ft² physical plant, a private heliport, and test pads. All core component manufacture is concentrated at this site.

Meanwhile, MAG's 16,000ft² Vergiate plant employs 70 and is located near Milan Malpensa Airport and within the Agusta Westland main assembly facility and provides seamless completions and modifications for factory-new aircraft. The company's 13,000ft² Philadelphia plant employs 30 and is located proximate to AgustaWestland's assembly plant there.

The plant fabricates its own composites and thermoplastic materials including

MECAERAW139

acrylic and polycarbonate optical windshields. It also conducts autoclave primary bonding of composites, metal to composite bonding, metal-to-metal bonding, heat treating, and painting.

EASA approved MAG's interiors and completions unit has its own division fully-dedicated to helicopter interior completions and has EASA Design Organizational Approval (DOA). The unit employs more than 30 in-house engineers. It can design, manufacture, and certify custom helicopter interiors under its own Supplemental Type Certificates (STCs) and has completed the interiors of more than 700 helicopters in EMS, multirole, heli-taxi, and other configurations. This includes approximately 280 corporate and VIP interiors on AW109 and AW139 helicopters. The unit is working with AgustaWestland to design VVIP interiors for the heavy AW101 helicopter, a version of which was recently considered for use by the President of the United States.

The Monteprandone-based unit makes its own composite interior shells, liners, cabinets, seats, stretchers, structural assemblies such as doors and landing gear skids, and windshields and windows. MAG is AgustaWestland's preferred supplier for aircraft doors on the A119 Koala and A109E and A109S (Grand). It also makes the cabin liners for the A109 and AW139. Recently, it developed two new important systems for the AW139 that greatly increase passenger comfort, especially in VIP configurations.

Its SILENS system minimises cabin noise and vibration levels through the use of a self-supporting separation barrier between the passenger cabin and the fuselage. During flight tests at 140kts, the system reduced cabin noise from 76 to 71dB SIL4, allowing normal conversations without the use of



headsets. The system uses a highstiffness, low-weight shell that makes extensive use of composites and is mounted to the aircraft structure with a system of vibration and noise insulators. The shell is complemented with several different computer-designed and tested soundproofing materials that use special geometry and installation techniques. MAG's director of completions, Davide Marucco, says SILENS "is compatible with a full range of corporate and VIP cabin layouts" and can be retrofitted to all AW139s, either with hinged or sliding passenger doors. Murocco says the system is easy to remove to gain access to maintenance items and does not increase aircraft weight.



 AW139 rendering
Ten different seating configurations are available to AW139 operators

Feel the difference MAG's interiors and completions unit has also developed a new, integrated, and fully customisable IFE and cabin management system ideally-suited for the AW139, called the In-Flight Entertainment Enhanced Lounge (I-FEEL). Designed on the Windows PC and with open architecture, I-FEEL can control audio, video, communications, passenger settings, and cabin function. The system features a built-in hard drive for audio and video storage, as well as moving maps. It also offers connectivity with CD, MP3, I-Pod, DVD, laptops, and cameras. Passenger touchscreens can be loaded with customisable icons. The system is integrated with GSM, satcom, and pilot call telephones and is linked to the environmental control system, as well as controls for cabin lighting, speakers, cockpit partition window and cabin window shades. The system can also be used for multimission integration with a law enforcement, surveillance, and searchand-rescue package that includes integrated avionics, Forward Looking Infrared (FLIR), video cameras, search radar, and data link systems.

MAG offers executive and VIP customers up to ten different standard

interior layouts for the AW139 cabin, accommodating five to 10 passengers, as well as quick-change options that can add or subtract seats of various widths given varying loads. SEI says the most requested configuration is with eight seats: 2 VVIP forward-facing chairs and six corporate-class seats: four of which are forward-facing and two aft-facing. However, some ultra-plush layouts feature only five VVIP seats.

Customers have a wide range of available cabinetry: "We try to accommodate as much as possible the customer's request, provided it is compatible with certification requirements," says Niccolo Devoto, MAG's marketing and sales manager. An oval credenza option features a popup, swivelling flat-screen entertainment monitor. The monument also has storage space for satellite telephones, plug-in devices such as iPods and MP3s, and snacks and beverages.

MAG uses LED lighting with dimmable controls. Passenger windows can be tinted to various degrees and/or equipped with manual or electricallyactuated and controlled window shades.

Price tag Costs for interior completions vary depending on the materials selected and the amount of engineering and certification required, but the average cost ranges from US\$400,000 to US\$500,000 for an executive completion and US\$1million to US\$1.3 million for a VVIP finish. Completions take from eight to 20 weeks on average. MAG has completed approximately 50 AW139 interiors to date for a variety of governments, heads-of-state, corporations, and private individuals. "Needlesss to say, each completion is different and its cost is tightly connected with the selected layout, options, specific needs, quality of material, level of finishing required by the customer, or any other special request that requires additional certification work," says Devoto.

MAG takes considerable pride in the artisanship of its AW139 completions and its supplier network that provides "the highest levels of quality" he concludes. **END**

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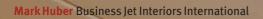
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narrowmargin

The SJ30 may have a small cabin, but some clever features and impressive overall performance offer exceptional value he hallmarks of Ed Swearingen's aircraft designs were short wings, a narrowtubed fuselage and speed. Swearingen didn't design the swift Concorde or the

Cessna Citation X – but he could have. His Metroliner commuter turboprop of the 1970s, an aircraft that helped build the US regional airline industry, sadistically sat 19 in Procrustean comfort and was aerodynamically slippery - until you lost an engine and then it became a brick. Because of this, pilots who flew it called it, not entirely affectionately, "the lawn dart". And if passengers had to do a limbo dance to squeeze through the cabin door and make it down the aisle, well, too bad. They can wear sensible shoes and go to Weight Watchers. Trading roomier interiors for less speed was an aerodynamic anathema.

When Swearingen turned to a light jet design in the 1980s, he kept his design philosophy but added a pair of fuel-sipping Williams FJ44 fanjets. Voila: speed and range. So the six-seat SJ30 can cruise 2,500 miles on a single bag of gas at economy power. Trade off a little range and the small jet can be powered to over 500mph at a blistering 0.83 Mach, and you get block times like a Gulfstream or a Learjet 60. The SJ30 waxes the tails off Citation CJs and leaves even swift little Beechjets far behind in the contrails.

What Swearingen didn't have was funding – or enough of it to get his design certified and put into production in any rational period of time. So 20 years, several company owners, and nearly US\$1 billion later, the US\$7.25 million SJ30 has just begun customer deliveries in earnest under the stewardship and largesse of the current company owner, Emivest Aerospace of Dubai. And the first crop of owners, including actor Morgan Freeman, think PAAD

THE SEA-LEVEL CABIN IS REALLY COMFORTABLE, WHICH IS AN ADDED BONUS WHENEVER I TRAVEL – MORGAN FREEMAN, ACTOR

E

1

EXI



it was worth the wait. They are breaking speed records and flying the little jet on long, international hauls few could have imagined in an aircraft with only a 190ft³ passenger cabin. Freeman logged over 100 hours the first month he had his jet, flying in it from the Unites States to Europe and Africa to promote his film Invictus. At a hand-over ceremony last year in Dubai, Freeman explained his rationale for acquiring the aircraft. "I've had my eye on the SI30 for a while. It's fast, economical to run, and will allow me to undertake long flights without having to stop for fuel all the time," said Freeman. "I have been extremely pleased with its range and overall performance. The sea-level cabin is really comfortable, which is an added bonus whenever I travel." Freeman's distinctive, custom-painted SJ30 has the logo of his Mississippi blues club, Ground Zero, emblazoned on the tail.

Besides pure range, there is another reason why the aircraft's owners willingly deploy it on such far-flung missions. While the SI30's cabin may be small, it is very clever, incorporating features and conveniences you would expect to find on larger aircraft. This is not your father's Metroliner. Opposite the airstair door is a side-facing forward lavatory with electric flushing toilet no passive chemical bowl - and a refreshment and storage area. The refreshment centre has LED work light, two ice bins, liquor bottle drawer with room for four bottles, pull-out work tray, 34oz stainless steel carafe, condiment dispenser, and a dual cup



dispenser. The drawer cabinet has a 0.5ft³ storage drawer and a 2ft³ shelf area. The lavatory can be isolated for privacy with a solid partition that deploys between the cockpit and airstair door, and the cabin and the entryway. The Hiller cabinets can be painted or finished in the customer's choice of Carl Booth veneer.

Take a closer look Benn Isaacman, he of Learjet fame, mapped out the original interior and it was later updated by Gore Design Completions and the SJ30's own in-house team. At first blush, the 'club four' passenger cabin is reminiscent of a 1960s Lear 20 series - four facing seats behind the pilots, lavatory and refreshment area that is no-nonsense and at a cursory first glance screams to any six-footer, "When can I get out of here?" The cabin measures 4.71ft wide, 4.3ft tall, and 12.45ft from behind the pilots' partition and 17.6ft from bulkhead to bulkhead. The cabin door is 2.67ft wide and a smidge under 4ft tall. But look past the SJ30's cabin dimensions and take a closer look at the designs and amenities. There is a lot to like.

 Cabin looking aft from the galley/ entrance area
Extra-wide fullberthing seats provide plenty of comfort, while a large table provides an ideal space to work

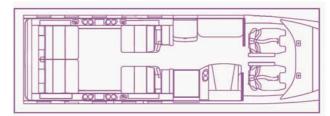
 Optional computer ports and 110V plugs can be fitted at the work tables
Galley unit



Take the luxurious leather seats. They're made by IAI Golan and they track forward, aft and recline. The two forward-facing seats recline to berthing and have an inboard armrest that stows in the seat back. The forward lavatory allows the forward-facing passenger seats to be extra wide since no aisle is required for access aft of the seating. The bottom seat cushion is 21.5in wide, 19.7in deep, and 5.8in thick. The back cushion is 29.6in tall (37.4in with headrest). The aft-facing seats recline 34°. The bottom seat cushion is 18.1in wide, 20.1in deep, and 6.8in thick. The backrest cushion measures 23.2in tall (35.4in with headrest). Inboard armrests stow in the seat backs and these seats have four-point restraints.

The EADS Sogerma leather cockpit seats can be outfitted with optional sheepskin covers. The bottom seat cushion measures 17in wide, 19.6in deep, and 6.8in tall with thigh support. The seats have a 3.2in vertical adjustment, adjustable lumbar, inboard armrests that stow in seat back, and back recline to 8°. They are equipped with five-point harnesses with inertia reel locking mechanisms and life vest stowage.

Climate control utilises a two-zone cooling and heating system, with controls located in both the cabin and





COMPLETIONS TAKE ABOUT TWO TO THREE WEEKS AND ARE DONE AT THE FACTORY IN SAN ANTONIO AND COMPLETION CENTRES



 The SJ30 is cherished for its speed and range – In 2007 it flew from San Antonio to Dubai for the Dubai Air Show in just over 16 hours
The SJ30 cockpit features the Honeywell Primus Epic (CDS) avionics package the cockpit. Several aircraft in this category only have one-zone controls, so either the passengers or the pilots are frying or freezing. Not so with the SJ30. The passenger climate control is located next to the right-hand forward facing cabin seat.

The vapour cycle air conditioning can be run on the ground via a ground power cart or with the right engine running. A major selling point is the sea-level cabin. The SJ30 maintains it to 41,000ft and cabin altitude is only 1,800ft way up at 49,000ft. This significantly reduces – by some accounts even eliminates - the fatigue generally associated with flying in a pressurised cabin. The SJ30 can do this because of the way it is built – with a closer spacing of frames, a slightly thicker fuselage skin, and more efficient structural design. The SJ30 has a pressurisation rating of 12psi and has been tested up to an astonishing 31.4psi. The cabin controller is fully automatic and all that is required during normal operation is to set it to the destination elevation prior to take-off. The air mufflers are from Aerocon Engineering.

Each passenger seat has its own 19-LED EMTEQ reading lamp and there are 11 overhead flourescent lamps with

plated bezels. Natural light can be filtered with MSA window shades. A variety of connectivity/IFE options are available, including: Iridium SATCOM telephone (standard equipment); XM Radio; Alto speakers; iPod compatibility; flight displays; Rosen monitors; and VX systems with DVD, CD, MPEG, wireless headphones and wireless remotes. Jet Works Air Center in Denton, Texas is currently installing this equipment in the SJ30. The aircraft comes with four 110V outlets; one in the cockpit, one in the refreshment centre, and two in the passenger seating area (one on each side). There are two cup holders for each seated position.

Other interior vendors include AIP (carpet) and Nordam (sidewall panels and headliner).

At 53ft³, baggage space is a little sparse, but it is accessible via an outside 17.5in-wide by 21.5in-tall loading door below the left-hand pylon. The compartment is capable of holding 500 lbs and is finished in a Grosspoint covering and includes tie-downs and a baggage net. It is big enough for golf clubs.

SJ30 completions take about two to three weeks and are being done at both the factory in San Antonio, Texas and at authorised completion centres. The SJ30 is being sold through dealers including Action Aviation in the UK, which holds orders for approximately 160 aircraft. While decidedly a niche player, the SJ30's combination of economy, speed, range, price, clever design, and sea level pressure cabin make it an ideal choice for international entrepreneurs, celebrities and anyone who needs to move small, high-value cargo on an exigent basis.

Cost cutter Hamish Harding, Emivests first SJ30 customer in Europe, thinks the SJ30 is the right aircraft for a financially challenging world: "In today's more cost-conscious aviation world, it is nice to operate a jet with one of the lowest costs per mile, due to it covering 70 miles more per hour than many other light jets but burning about the same amount of fuel per hour," he says. "We can also do anywhere-to-anywhere in Europe without tech stops, which cuts down travel time and airport handling charges."

Expect to see more SJ30s at an airport near you. The SJ30 may have a small cabin, but it offers big value. **END**

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A round-up of the latest leather and textile products and technologies on the market

creamdream

Moore & Giles says its Olympia leather is tanned on the finest selection of European bull hides by skilled master tanners, to achieve a soft leather with substantial body and fine grain, which is also compliant with the FAR 25.853 test. The leather has a thickness of 1.0-1.2mm, with an average hide being 50ft² in size. It is available in a variety of colours, including fresh snow, au lait, brioche, baked clay, harvest grape, anjou pear, smoky quartz, ravine, atlantic, black lava, and porcelain.

www.mooreandgilesinc.com



moving mountains

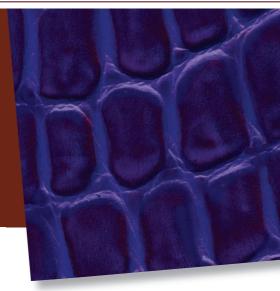
Garrett Leather's new Torino leather is inspired by the mountain landscape of the Turin region of Italy. The company says that the Italian cowhides used ensure a soft hand, pebble grain texture, and a uniform grain that provides consistency and high cutting yields. The leather, which is available in 17 colours, has a waterproof finish, designed to ensure superior UV protection and requiring minimal maintenance. www.garrettleather.com



partyanimal

Edelman Leather has launched a colourful range of crocodilepatterned leather, Croco Loco, and a complementary range of cow leather, Napa Loco, for aircraft interiors. Croco Loco is available in Croco Loco Grande and Croco Loco Pequeno, which has a smaller pattern. The company wanted to create a fun, tequila-fuelled party look, with a range of 13 colour combinations for Croco Loco (including blue and green, white and

gold, black and white, and red and orange), three colour combinations in the Croco Pequeno variant, and nine colours in Napa Loco. The Croco Loco leathers are actually made from fullgrain cowhide, which is vegetabletanned and aniline-dyed and then antiqued by hand. Edelman Leather says these leathers are 1.2-1.3mm thick, and available at an average half hide size of 28ft². www.edelmanleather.com





artdeco

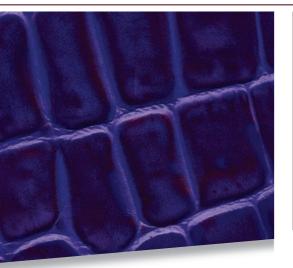
ownsend Leather's Milano collection is a range of aniline embossed leathers that are machinetooled and hand-rubbed with multiple colours and effects. The rich colours of the Milano collection have been inspired by the culture and cuisine of Milan in Italy. The designs have been selected from the company's most popular patterns, as well as to reflect the design, fashion and art trades that Milan is so well-known for. The collection includes two patterns that are available in 14 colours with an average hide size of 55ft2 - Milano Alligatore and Milano Serepente - as well as two patterns that are available in 45ft2 average centre cuts without pattern match lines - Milano Gaufrage.

www.townsendleather.com



tailormade

Tisca Tiara's Waron loop-pile embroidered carpet is constructed from longstapled worsted yarn, which is made from 100% pure new wool. Tisca Tiara says that the quality of the wool makes the carpet very long lasting, even under heavy wear and tear. The yarns are marled according to the client's wishes – an infinite number of hues can be produced, so the carpet can be made to match other cabin interior elements. In fact, the carpet can be produced seamless up to 13.5m in width, and with no restrictions in length, and can be made to fit the entire aircraft's floorplan exactly, eliminating waste during installation. Tisca Tiara says Waron is available with no minimum order quantity and a delivery time of four weeks, and has passed the FAR 25.853 flame retardancy test. **www.tisca.com**



germwarfare

The Leather Institute's newest offering is a silver-based antimicrobial coating that can be applied to real or faux leather. The product is designed to destroy bacteria and inhibit the growth of new microbes on the surface of the product, responding both to passenger concerns, and the need to prevent odours. www.leatherinstitute.com



greenshoots

TrueNorth Avionics says that the success of its software-centric Simphone OpenCabin voice and data system indicates that the worst of the downturn is over

TrueNorth Avionics, developer of advanced executive voice and data solutions, enjoyed record sales in the fourth quarter of 2009, with December 2009 representing an all-time record sales month. The company sees this as an indicator that business aircraft operators are feeling more confident and are ready to invest in cabin improvements. TrueNorth credits its upturn to the

TrueNorth credits its upturn to the introduction of its software-centric Simphone (pronounced 'symphony') OpenCabin system at last year's NBAA Annual Convention, held in Orlando, Florida, USA, from 20-22 October 2009. Incorporating an enterpriselevel operating system on an all-digital hardware platform, Simphone OpenCabin is designed to have an unlimited service life, with built-in WiFi and data routing, and a suite of upgradeable user-specified 'apps'.

Truenorth says that operators of the Bombardier Global Express, in particular, have discovered that Simphone OpenCabin provides a level of voice quality, data handling, security and ease of use that matches their international operating needs. Recent orders have come from companies ranging from a multinational financial services conglomerate to an industrial construction firm, and include Bombardier itself for its corporate flagship aircraft.

Simphone OpenCabin is a standard option on Sikorsky's S-76 and S-92 executive helicopters, and custom Simphone OpenCabin packages have also been specified recently for Bizjet's Airbus Elite A318 programme, Gore Design Completion's A340 VIP business aircraft completion programme, and Flying Colours Corp's Challenger 850 programme. The system has also been chosen for various head-of-state aircraft, including the US government's fleet of VIP transport aircraft, as well as head-of-state aircraft in Canada and Mexico.

Other successes Supplementing the capabilities of Simphone OpenCabin, TrueNorth has also recently certified its Simphone Global Broadband System, which it describes as "an affordable worldwide solution that works throughout all phases of flight"; earned EASA certification for its cockpit DataLink Unit (which provides ACARS communications) on a Falcon 2000EX; and introduced a new version of its menu-driven telephone handset, which is



designed for compatibility with other airborne telephone systems.

Reflecting on what it sees as signs of recovery among heavy, intercontinental business jets, TrueNorth is anticipating that mid-level and light jet categories will see improvement later this year. To meet the need of operators in these categories, TrueNorth has introduced the compact Simphone Prelude, an all-digital voice system that can be upgraded to add WiFi, smartphone voice and text, broadband internet, voice over internet protocol (VoIP) and a raft of other network options as the aircraft operator's needs dictate. In a typical example of this entry-level system's utility, a Simphone Prelude was installed aboard a Falcon aircraft to provide dual-channel voice communications for a Grammy-winning recording artist during her 2010 tour. A WiFi and data upgrade is planned for later in the year when the tour is complete and the cabin is scheduled for refurbishment.

In short, TrueNorth says that it is seeing a trend in increased new aircraft delivery and cabin upgrades that go beyond required maintenance, indicating that the worst of the recent downturn is over.

FrueNorth Avionics

eader Enquiry No. 50:

- Prelude system
- 2. The Simphone
- handset in use



 $[\]textbf{1}. \ \text{The Simphone} \\$





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spreadingitswings

Gore Design Completions is expanding its facility in line with its growing workload

Gore Design Completions (GDC), a completions centre focusing on narrow- and wide-body aircraft, is in the midst of an expansion to add an extra 108,000ft² to its facility in Port San Antonio, Texas, USA. The company broke ground on the addition in September 2009 and expects to complete the project by late summer this year. Owners Jerry Gore and Kathy Gore-Walters built the existing 120,000ft² hangar and office complex in 2004 after signing the company's third head-of-state B767 completion. Since that time, GDC has grown by more than 300 employees and has completed or provided maintenance for over 20 aircraft.

WIIIII Completions

ANNUM PERSONAL AND

The expansion comes as GDC prepares to welcome a BBJ3, a B767-300, a B777-200LR and an A340-500 – all as green completion projects – in 2010. These are in addition to the A340-200 already at GDC for completion. Almost 44,000ft² will be added to the existing 100,000ft² hangar, allowing four wide-bodies and a narrow-body to be housed there at one time. This extension is due to be completed in May.

An additional 45,000ft² of shop space will also be built, as an attachment to the hangar facility. The shop space will be completed in two phases, with phase one due for completion in March, and the second phase in July. GDC currently runs its upholstery, cabinetry, sheet metal, machine and paint shops out of a 43,000ft² building adjacent to its hangar, which will continue to be used.

"The size of our workload over the next two to three years has mandated that we provide additional workspace to complete the interior work for each project more efficiently," says Ron Soret, chief operations officer for the company. "With the new addition being attached to the hangar, we are able to provide direct access to the hangar floor for our craftsmen, without having to move between multiple buildings and disrupting the flow of work."

disrupting the flow of work." The final area of expansion to GDC's facility is a new 20,000ft² executive office space, which will be added to the existing 31,000ft² office space. New conference and reception rooms as well as a new employee cafeteria will all be part of the addition. The office space is expected to be ready for use in May.

Despite its rapid growth over the past five years, GDC has maintained its reputation as a turnkey completions centre. In October 2008, the company's operations were certified to the ISO 9001:2000 (w/o design) International Quality System Standard. GDC also champions a hands-on approach, executed from the owners right down to the craftsmen and technicians who work on every project. The preference to maintain total control of a project from beginning to end is enhanced by the company's ability to perform every task at its San Antonio facility. The hangar and shop expansion will allow GDC to continue with this approach. "We have been blessed by the growth in this company over the last decade and the need to

"We have been blessed by the growth in this company over the last decade and the need to expand our facilities is a direct reflection of the quality of work we have provided in the course of this time," says Gore.

Gore Design Completions

Reader Enquiry No. 502



- 1. GDC says having everything on one site will give it complete control over projects
- 2. How GDC's facility will look when its expansion is completed
- GDC is adding almost 44,000ft² to its existing hangar

human element

While materials and technologies are moving VIP cabin design ever forward, ACES says an old pitfall is still lurking – the incomplete interior completion specification

A new generation of VIP aircraft - the B747owners. The interiors themselves have also come a long way – with innovations such as composite materials, modular concepts and system adaptability, or even quick conversion kits. However, a relic of the past is still enduring – incomplete cabin specifications. "A wealth of information is slumbering in each operator's archives, detailing snags

encountered on previous projects before or upon delivery to the client," says Herbert J Artinger, president of Aircraft Conformance Engineering Services (ACES). "Every anomaly listed, for whatever topic, is a void in the specification, and generates costly extra work," he adds.

ACES, which entered the VIP aircraft cabin interior completion market in 1998,

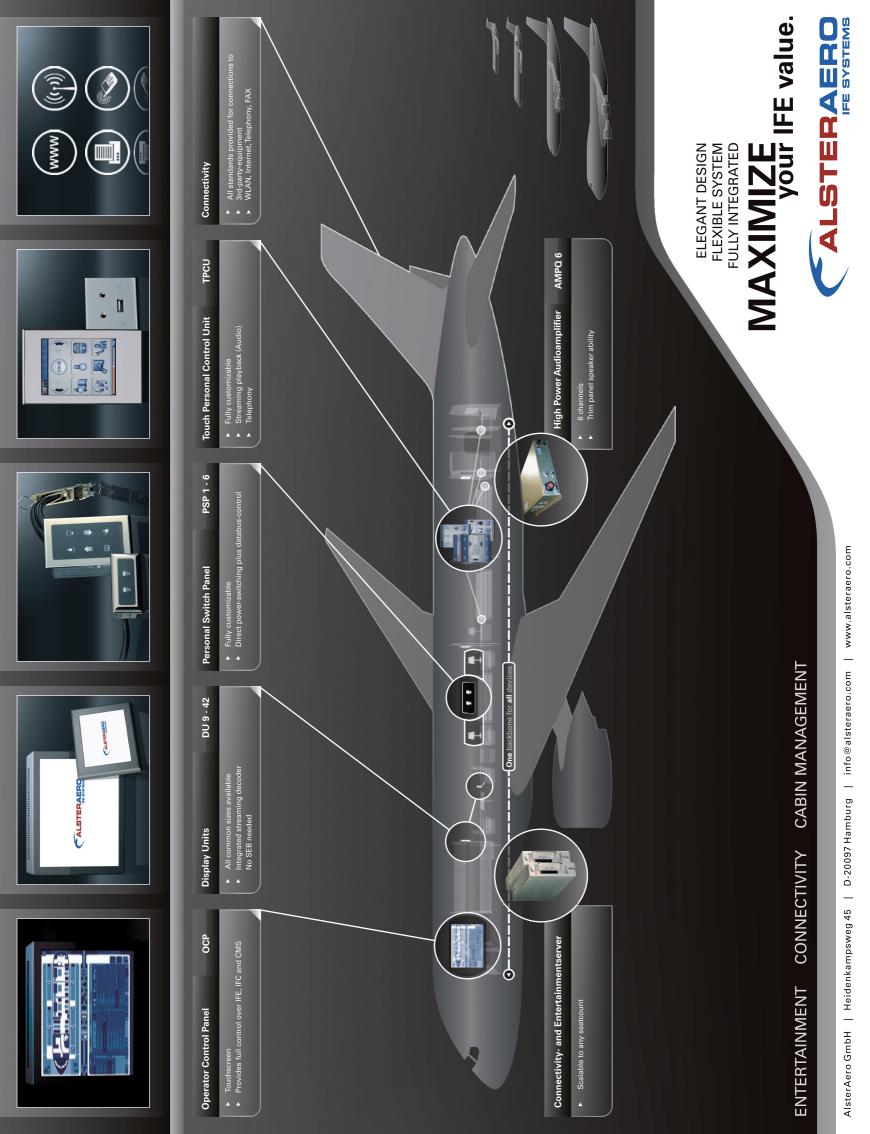
offers independent completion management comply with the client's requests (as stipulated in the cabin specification), perform their services to a high standard, and provide value for money. "Quality assurance guarantees value for money, essential when you consider how

much money is actually at stake in an interior completion," says Artinger.

Artinger recommends spending up to two years on cabin design and system specification before the aircraft is delivered to the completion centre, to make sure there is no room for misinterpretation or misunderstandings. He also emphasises that the cabin specification should cover the design philosophy and the technical criteria

separately, detailing the quality criteria, system performance, cabin usage ergonomics and process limit values. "Designers who decline responsibility for anything except conceptual design and materials create a blank cheque scenario for the completion facility costs. It is comparable to equipping a living room without defining the building's shell," says Artinger. "Most VIP operators do not have the time or the in-house resources to create such a detailed document. Anything that is not defined can generate a costly additional work request and endless arguments. But with proper cabin completion quality management founded on a comprehensive interior specification, we can iron out the inefficiencies and ensure value for money."







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Airbus Corporate Jet Centre delivered three VVIP ACJ cabins in 2009 – the latest for a customer based in the Middle East

Airbus Corporate Jet Centre (ACJC), which specialises in Airbus Corporate Jet (ACJ) VIP cabin completion and associated services, has achieved the milestone of delivering three cabins in a year, with the handover in December 2009 of a VVIP cabin for an undisclosed customer in the Middle East, the company's fourth cabin in total.

This fourth cabin design makes full use of the extra space afforded by the ACJ's wide and tall cabin. It features a forward area divided in two parts – a dining area with club-four and club-two seating, and a lounge area that has two sofas and four adjustable cocktail tables. The aft cabin offers a VIP area with 'mini-suite' executive seats, which can all be converted into beds, and are equipped with 20in LCD monitors, pull-out tables and retractable ottoman seats. The cabin also includes a bedroom with an electrically operated bed and a bathroom with shower.

The luxurious materials used – which include semi-precious stones, bird's eye marble, nubuck, leather and wood – are complemented by a mood-lighting system. The cabin also offers entertainment and communications for passengers – including a passenger flight information system (PFIS), WiFi internet, and AVOD.

"Our goal to deliver three VVIP cabins in 2009 has been successfully achieved and

demonstrates our success in becoming the specialist for ACJ cabin completion," says Benoit Defforge, CEO of ACJC. "After two and a half years in the business, we will further improve our capabilities in 2010 by delivering more cabins and offering tailored services to ACJ customers."

The company recently launched VIP Pass, a package of services specifically developed for executive and private operators of ACJ aircraft. The VIP Pass package is available for all ACJs – including the A320, A330 and A340 families. "It confirms the ACJC team's commitment to supporting every client's Airbus aircraft throughout its life, maintaining its airframe and engines at the highest standard of quality and certification," says Fabio Beretta, head of customer support and services at ACJC.

Since its creation in 2007, ACJC has grown steadily – taking on nearly 40 new employees in 2009. The company is backed by the full resources of its shareholder, aircraft manufacturing giant Airbus, and is based in Toulouse, France. The company has already contracted with prestigious customers in Asia, Europe and Middle East, and attributes its success to a strong technical background and its 200 highly skilled employees.

Airbus Corporate Jet Centre Reader Enquiry No.504



- 1. ACJC staff at work on
 - an aircraft completion
- 2. The company's
- design office 3. ACJC's 9,500m²
- ACJC'S 9,50 hangar



moreforless

Thermax's <u>Max</u>FliteÆ Gigabit Plus cable Trends such as improving IFE systems and the integration of electronics are increasing aircraft network data requirements Wire manufacturers are being challenged to provide faster data rates and more capacity with the minimum amount of cable

As routine day-to-day activities move toward accessibility, the aerospace industry has been accessibility, the aerospace industry has been challenged to keep pace. "In our era, where continuing globalisation and geographical connectedness are at the forefront of technological advances, many businesspeople are travelling so regularly that time in the air cannot be used as downtime. A seat on an aircraft, previously a place of relative inactivity, has become many a businessperson's second (and in some cases, third) office. Additionally, leisure travellers have come to expect more ways to stay connected while flying," says Don Slutz, senior product manager at Thermax, which manufactures wire and cable. Consequently, IFE systems have grown into interactive encompassing moving maps, on-demand movies in multiple languages, live TV, satellite radio,

Slutz says that wireless technology is gaining "While weight and space savings are the more obvious reasons for the elimination of cabled connections, what may be more important is the flexibility wireless networks provide." However, although these systems are described as wireless, Slutz says the internal 'nervous system' continues to be wire, and the

systems can be more accurately described, from a cabling standpoint, as 'wire-lite'. "The direct link to terminals, and some cable, may be



replaced by radio frequencies (RF) as a means of data transfer, but the electronic transmitting technology requires a vast amount of information flowing through the connections, and this actually increases the demand on the wired inflight network."

The travelling public's ever-increasing appetite for new forms of media and entertainment hints at a need for increased capacity and speed of data transfer in the future. Slutz says there is also a desire to 'future proof' the backbone, so as to minimise reconfiguration costs as systems evolve. "The challenge given to wire and cable manufacturers is to increase the quality of where the focus, simply put, is data rate," says Slutz. "Improved IFE systems, the glass cockpit, and the integration of consumer electronics into

seamlessly to avoid an excessive profusion of incompatible wiring types." When looking back to the implementation of the first aircraft databus systems, Thermax began working within the Ethernet networking aircraft industry. Initial implementations consisted of the 10 Base-T cable (10 Mps), but as these systems were being implemented, the trend almost immediately began moving towards 100 Base-T transmission speeds (100 Mps). Today's systems are now typically based on the 1000 Base-T standard (1Gps) transmission rate. products. Slutz says that 10GigE (10Gps on the drawing board, and will soon be required.

As the technology installed on aircraft continues to improve, the wire and cable that functions as the veins through which the information flows will continue to improve as well, keeping passengers productive, happy and safe in flight," says Slutz. "Thermax and other wire manufacturers are poised to meet the need – to provide more performance with less."

Thermax

Reader Enquiry No. 505

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liftoff

Greenpoint has won a new BBJ contract and is in talks with clients for the installation of its new B747-8 products – Aerolift and Aeroloft

2010 started well for Greenpoint Technologies, with a head-of-state BBJ contract win in January. The company is currently in discussions for both a private BBJ3 and a head-of-state B747-8, and expects the B747-8 contract to be awarded during the second quarter of 2010. This client wants to minimise the aircraft completion downtime while integrating Greenpoint's unique B747-8 products.

Greenpoint's design team is developing a patent-pending lift for the B747-8 VIP aircraft, called Aerolift. The lift is capable of transporting passengers from the ground to the main deck, providing an elegant and secure method to board the aircraft.

The Aerolift is a turnkey installation, consisting of an automatic door on the fuselage, a power unit and lift structure from the keel up though the main deck, and a lift carriage with internal doors and a cabin enclosure.

Boarding and exiting a wide-body aircraft requires the use of a ground-based stair, because of the heights involved and the lack of a built-in airstair. Greenpoint's Aerolift solution offers a secure, selfcontained means to transport up to four passengers at a time from the ground to the main deck. From a security standpoint, the enclosed carriage descends directly to the tarmac, reducing the occupant's exposure to the public and enabling them to board ground transportation at close quarters. Greenpoint says it has already received much positive feedback for Aerolift from B747-8 clients.

Greenpoint also provides the B747-8 Aeroloft, which can be installed at the same time as the Aerolift, prior to the aircraft's delivery to the completion centre. The Aeroloft consists of sleeping berths and lounge modules located above the main deck between doors four and five. It features a custom-designed interior with a finished staircase. "This programme has turned out to be a very popular option among B747-8 VIP customers," says Sloan Benson, executive vice president of Greenpoint. "Greenpoint's experience with Boeing airframes from a structural and systems standpoint is a core competency, and provides the expertise to undertake the most demanding of modifications.

Aeroloft installations are scheduled to begin at the end of 2011. For the time being, Greenpoint is focusing on multiple BBJ completion programmes, and also positioning itself for future business jet and B747-8 modifications. "The flexibility to execute complex projects and adapt to new technologies enables Greenpoint to serve its client's best interests – time and money," says Benson.

Greenpoint Technologies Reader Enquiry No.506



- 1. The Aeroloft's changing room and staircase
- 2. Greenpoint's B747-8 Aerolift concept
- Aeroloft sleeping berths



oneforall

Together, AirCaD's four departments offer engineering services for all stages of cabin interior completion

Founded in 2003, AirCaD offers engineering services for cabin interior completion and products. AirCaD assists in each step of the aircraft cabin project, from design to certification, and can provide a complete engineering package for all series of aircraft – from flying 'luxury hotels' to the smallest jets, and even private helicopters. With its alternative design organisation approval (A-DOA) issued in June 2008, AirCaD can support a full certification package.

AirCaD's organisation now boasts more than 70 engineers – a strong team working with efficient design and calculation tools, based a few miles from Roissy CDG Airport in France. The company is organised in four departments – Integration, Engineering Mechanical Completion, Stress Engineering, and Method Engineering.

The Integration department offers a range of services, including project management, interior reconfiguration, mechanical and electrical engineering, documentation, and certification. Its mechanical and electrical engineering expertise covers modifications of standard linings and the aircraft structure to create all the attachments needed for the new layout, modifications to electrical systems and avionics (including producing schematics, wiring diagrams and electrical load analysis), as well as the installation of new systems such as IFE, satcom, lighting and cameras.

Meanwhile, the Engineering Mechanical Completion department (EMC) is in charge of the design of interior furnishings and new structural parts, developing installation drawings for the team on site and checking and adapting the design package according to the aircraft's existing environment.

The Stress Engineering department performs simulations and tests to ensure that the aircraft structure and furnishings comply with applicable airworthiness requirements (FAA/EASA), using tools such as finite element software and analytic calculus. As well as producing the documentation to assist with certification, the department also gives advice on aspects such as choice of materials and part sizing.

Finally, AirCaD's Method Engineering department monitors the quality and



accuracy of the company's work, producing flow charts, checking drawings, working on cost optimisation, adapting to the customer's production processes, and identifying where improvements can be made.

"Each department is independent, but our internal synchronisation process also enables us to manage a project all the way from the beginning through until STC approval with our A-DOA agreement," says Nicolas Roberval, president at the company. "This way, we can support the customer with on-site technical assistance, right up until delivery of the aircraft."

The company provides its services for aircraft from various manufacturers, including the A318, A321, A330, A340 and A380; B737, B747, B767 and B777; Falcon 20, Falcon 50, Falcon 2000 and Falcon 7X; Fokker 28, EMB120 and CASA CN235.

"Each new project, whatever the scale, has its set of difficulties and developments which put us to the test, but also strengthens the professionalism of the team," says Roberval. "AirCaD's driving forces are innovation and efficiency."

Global expansion Secure in the strength of its reputation in the European market, AirCaD would now like to expand into other global markets. "Our customers appreciate our know-how and flexibility (we always adapt to their production tools, for example), and of course, value the reactivity of a young and dynamic company," says Roberval. "VIP aircraft should be a showcase of aeronautical know-how – offering the perfect balance of simplicity, luxury, facility, innovation, reliability, quality and efficiency."

AirCaD

Reader Enquiry No. 507

1. Nicolas Roberval, president of AirCaD







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pictureperfect

How important is it for a VIP client to see a good visual presentation of the proposed interior?

Designers and completion centres deal with approval process, since in many cases the principal is contemplating several bids. It is during this stage that the best visuals will make a lasting impact in the client's mind," says J. P. Magnano, president of Miami-based 3D Visualization Service (3D Viz). "Today, the standard for these type of percisate is 3D images. But not even thing projects is 3D images. But not everything that is computer generated is the same, as one might initially think. There are several qualities of 3D renderings, ranging from very geometric and flat to 100% photorealistic and artistic.

programme moves towards design approval and critical design review, and it is in this a high-quality presentation lies with talented artists that have been working with 3D passion for aviation, you get spectacular results that are sure to please even the most picky client," he says

The projects that 3D Viz handles range from the largest VVIP jets, such as the new 429. Each project is meticulously modelled and textured to show it in the best light and camera angles possible. High-resolution still images can be created showing the interior in natural daylight or at night. 3D Viz can also produce high-definition dynamic animations, or walkthroughs, which can be burned to Blu readians.

which can be burned to Blu-ray discs "These can show the interior and exterior of an aircraft with absolute realism, with the added advantage that the whole presentation is packaged into a five-minute video," says Magnano. "It's a great tool for



3



- A custom grain of Ultraleather was chosen by Etihad Airways for its new first-class suite
 A seat covered in
- Ultraleather 3. Ultraleather installed

Ultraleather installed on a Challenger 605

triedandtested

Tapis says the raw material used to make its Ultraleather product shows long-term performance and durability properties in testing

Designed to reproduce the look and properties of leather, but at a lighter weight, Tapis' Ultraleather has been prominent in the aircraft interior fabrics industry for more than 25 years. New performance testing by the company illustrates the advantageous properties of the raw material used to make the faux leather product – polycarbonate.

There are three categories of polyurethane resins commonly used to make faux leather - polycarbonate, polyether and polyester. Tapis tested the performance of each grade of resin construction to analyse the impact of heat and humidity exposure (using Method C: Hydrolysis/Tropical testing ISO 1419:1995), as well as a degradation analysis that includes durability testing for bond strength, flexing and abrasion. Tapis concluded that the polyurethane material used to make Ultraleather has a very high resistance to hydrolysis, heat and light; shows excellent performance for bond strength, flexing and abrasion; and promises a long lifespan. In further testing that used a 'scuffing and marring paperclip' method to simulate wear by buttons on trouser pockets, Tapis reports that Ultraleather's pure polycarbonate showed little to no wear. This test consists of applying 2lbs (750g) of pressure as the 'paperclip' is dragged back and forth once across the fabric, after hydrolysis testing.

Ultraleather has also been designed with the environment in mind, and contains no halogens or antimony trioxide. It also avoids volatile plasticisers and stabilisers.

Tapis has been supplying fabrics and floor coverings for aircraft interiors for 30 years. Under the leadership of its president, Karen Caputo, Tapis continues to respond to the evolving needs of this specialised market. Ultraleather is available in many varieties, including Ultraleather Elite, which is designed to deliver the look and soft feel of European calfskin in five patterns - Hammered, Buffalino, Raffia, Ostrich and Perforated – which are available in six to nine colours. Other Ultraleather varieties include Fusion, which has a microfibre-like grain and is infused with silver ion antimicrobial technology; Contour, a two-way stretch fabric that smoothes around curves; Brisa and Brisa Distressed, which boast a ventilation system so the surface 'breathes'; and Promessa, which has a two-toned texture and is designed for extreme durability.

Headquartered in Armonk, New York, Tapis also has a facility in Dallas, Texas, as well as a distribution network that spans the globe. The company is a qualified vendor for Boeing Aircraft Companies, Bombardier, Cessna Aircraft, Dassault Falcon Jet, Gulfstream Aerospace, Lear Jet, Hawker Beechcraft, Duncan Aviation, Midcoast Aviation, Jet Aviation and completion centres and commercial airlines worldwide. In October 2008, the company's operations were certified to the ISO 9001:2000 (w/o design) International Quality System Standard.

Reader Enquiry No. 509



Tapis



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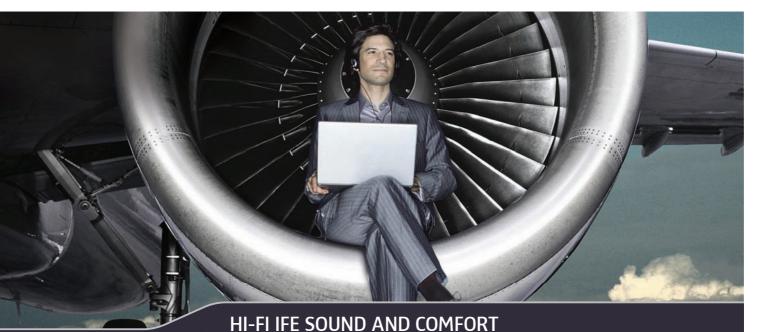
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finedining

Dahlgren Duck & Associates has developed a range of food service trolleys for elegant dining at 30,000ft

4

Dahlgren Duck & Associates of Dallas, Texas, high-flying world of private VIP jet transportation. Nigh-flying world of private VIP jet transportation. One such opportunity was the development of an aircraft food service trolley designed to complement the lavish interior decor of VIP aircraft. "After having been asked by several very prominent aircraft designers to assist them with the procurement of VIP food service trolleys, we took our charge very seriously. After all, for over 25 years we have been the 'go to' firm to meet clients' challenges for unique dinner service and galley amenities." says lim service and galley amenities," says Jim Dahlgren, one of the co-founders of Dahlgren Duck & Associates. "We recognised that the non-existence of a suitable trolley represented a significant industry opportunity. So, through considerable research and development, and understanding that limited galley storage space and weight was always of utmost consideration, we developed our own."

Customisation One of the models the company frame with removable serving tray inserts. The wheels are lockable for stability and have swivel casters for ease of movement. The trolleys can be plated with 24 carat gold or 17 other precious metal finishes, and each removable front-facing panel has space for customisation – with an engraved royal crest or personal logo for carbon fibre. Dahlgren Duck resolved the storage issue by designing its trolleys to collapse to a height of 32in and a width of only

5in. Other models, identical in size and function, are finished in pure polished or matte acrylic. Developing products that enable dining in style at 30,000ft is an assignment that Dahlgren Duck has often undertaken for top VIP aircraft modification centres, the design departments of private jet aircraft manufacturers and corporate flight departments.

·Dahlgren Duck is considered one of our most valued vendors for our VIP aircraft dinner service components and linens," says Lauri Church, design manager of StandardAero. "We confidently depend on Dahlgren Duck's expertise in the world of luxury goods to satisfy clientele. They continue to exceed our expectations with their high level of service at every phase of development.

Whether it's a standard retail pattern from vinetner it's a standard retail pattern from one of Europe's top china manufacturers or the fabrication of a one-of-a-kind sterling silver flatware product, Dahlgren Duck's expertise is evidenced by its international client list, which includes numerous heads of state, royal families, international celebrities and major fractional aviation companies. "Dahlgren Duck supports our entire design team with product expertise, sourcing and timoly dolivon." The time sources sourcing and timely delivery. The time-saving convenience of one-stop-shopping with Dahlgren Duck has been a long-standing and valuable resource for us," says Cindy Halsey, vice president of interior design and engineering development at Cessna Aircraft.



- A Mother of Pearl 1. place setting
- A custom place 2 setting featuring tiger's eye
- The VIP food 3 service trolley
- The trollev
- collapses to a width of 5in

Business Jet Interiors International.com March 2010 97

masterand commander

AST's new Master Class seat – recently chosen for three green completions – lets the passenger take control

1. AST's 16*g* Master Class seat Aero Seating Technologies (AST)'s nextgeneration 16g Master Class seat is loaded with features designed to ensure the passenger can create the ultimate seating comfort, exactly to their liking. This has not gone unnoticed – the seat was recently chosen by a major US completion centre for three green Global 5000 and XRS completions.

The seat's features include vertical adjustment for 3in of vertical travel; as well as fore, aft and lateral translation, including 360° swivel and full-flat berthing with drop-down armrest – standard on all AST's 9g and 16g Master Class VIP seats. The pivot point of the integrated seatpan lifter and articulating seat bottom is placed carefully to enable the seat to move from the fully upright position to lie-flat sleep mode at the touch of a single lever. The bottom cushion also tilts, to allow additional adjustment. Powered massage and electric lumbar support systems and legrest are also available as options. AST is also offering a new 16*a*

VIP seat for light jets, which it says weighs less than 93 lb (44kg) when upholstered. Standard features include fore, aft and lateral translation (9in x 5in), including 360° swivel and full-flat berthing. Additional features include electric

Ē

lumbar support and legrest. Optional powerassist mechanical controls are augmented by a 28V DC solenoid motor.

28V DC solenoid motor. AST seats can be used for a wide range of aircraft installations, including executive jets, wide- and narrow-body business jets, and VVIP aircraft, and can also be customised to accommodate owner/operator requirements for comfort, style and ergonomics. AST has also developed a 16g divan, designed to be light in weight, and available in single and double-place modules, to enable

AST has also developed a 16g divan, designed to be light in weight, and available in single and double-place modules, to enable multiple configurations. Standard and optional features include flexibility in the cushion design for various upholstery requirements, a stowage drawer and doors, fold-down arms, and a low back designed so as not to obscure windows.

From its operations in southern California, USA, the company provides VIP seating solutions for a wide range of customers worldwide, and boasts expertise gained from many years of developing crew and passenger seats for the aerospace industry.

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

Aero Seating Technologies Reade

Reader Enquiry No. 511

captainofindustry

BaySys Technologies' CEO says engineering is at the heart of everything the company does

BaySys Technologies started life as an engineering and certification house, before expanding into a full-service aircraft modification, completion, maintenance and overhaul centre. "We are an engineeringdriven organisation," says BaySys Technologies' CEO, Steve Walton. "In this industry, engineering and certification capability is an area of weakness. For us, it is a strength."

BaySys is located at the highly secure NASA research airport at Wallops Island in Virginia, USA, and employs 225 people, 40 of whom are engineers. The company specialises in wide-bodied head-of-state, VVIP, and government special mission aircraft, and is currently working on an A340 and a B777. Earlier this year, Boeing named BaySys as a licensed Boeing VIP Airplane and Boeing Business Jet Completion Center. The agreement covers legacy and current aircraft, as well as future production aircraft such as the B747-8 and the B787.

Walton says strong engineering is vital to hassle-free modifications and completions. He founded BaySys 13 years ago, after duty as a communications officer on a VVIP A340 operated for the government of Saudi Arabia. He also spent over a year supervising that aircraft's purchase and completion. Several of his colleagues at BaySys have similar experience and Walton says that gives the company a customerdriven perspective. "We know what to do and what not to do because we have actually operated these aircraft," he says.

BaySys' engineering expertise was recently put into practice on a three-year

test and certification programme with Boeing and Messier Bugatti for the electric braking system on the new B787. Also, in 2007 Baysys worked with Eclipse Aviation and Swift Aviation to develop the singleengine Eclipse Concept Jet, a project that went from conception to first flight in just 200 days. Baysys has also developed numerous supplemental type certificates (STCs) for wide-body completions, including for the A340. One of these is for the design and parts manufacturer approval for a proprietary reclining and lie-flat VVIP 'cocoon'. Another was for the adaptation of an A330 forward crew rest area to the A340, eliminating the need for the crew to traverse the VIP section to get to their rest area

BaySys also has considerable experience in the installation of IFE and secure communications. It holds STCs for a variety of satcom, wireless, Direct TV, Aircell, and cabin management systems, and manufactures and installs its own secure communications equipment and accessories for government and head-ofstate aircraft. Over the years Walton says BaySys' Interad division, located in nearby Melfa, Virginia, has manufactured more than 15,000 receivers, for clients including the US Department of Defense. Interad's product line includes antennas, filters, and receivers. Walton says its communications and systems experience has "been a magnet" for BaySys' head-of-state completion and modification programmes.

This vertical integration extends to cabin component build-up, from cabinetry to soft goods, manufactured at a BaySys-owned



plant 20 miles from the airport. BaySys maintains a large inventory of Nordam honeycomb interior panels, which Walton says speeds up the fabrication of bulkheads and cabinets, cutting typical cabin completion time from two years to one. Not requiring a down-payment until after the preliminary design review is another way BaySys eases completions for customers.

Going forward, BaySys is developing a large new hangar complex that should be open in time for the company to receive its first B747-8 completion in 2012. This year it is acquiring several wide-bodied aircraft on the open market, which it says it will be able to complete swiftly, because of its STCs. Walton does not envision any difficulty moving these aircraft: "We believe the market is going to recover and when it does there will be a shortage of mod centre capacity," he says. "We will be ready."

BaySys Technologies Reader Enquiry No. 512

- A state room for a BaySys B777
- completion
- 2. BaySys has
- developed a reclining
- and lie-flat VVIP 'cocoon' for the A340







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Field Aviation is converting two Bombardier Dash 8 Q400 aircraft to VIP configurations for Avitrade Belgium

Canada's Field Aviation has been selected to produce and install custom-designed VIP interiors for two new Bombardier Dash 8 Q400 aircraft, under a contract with Avitrade Belgium, on behalf of its ultimate customer. Field Aviation's extensive experience in VIP interior modifications will enable it to tailor each aircraft to the specific needs of the client.

Aviation's extensive experience in VIP interior modifications will enable it to tailor each aircraft to the specific needs of the client. "By choosing Field to complete the interior of these aircraft, we know we have made the right decision," says Albert Bloem, CEO of Avitrade Belgium. "In the past, they have continuously displayed the expertise, knowledge and dedication that have made them world leaders in interior completions. I am looking forward to completing this new project with them."

Modification work on the first aircraft began at Field Aviation's completion centre at Toronto's Lester B Pearson airport in February, and is due for completion by the end of 2010. The 62-seat economy-class cabin will be converted to a 28seat, mixed-class configuration – comprising a four-passenger VIP cabin complete with custom side ledges and foldout tables, an eightpassenger first-class cabin, and a 16-passenger economy-class section. "Interior modifications and completions – VIP and paramilitary – are a key market focus for us, and this contract reflects and underscores our capabilities and commitment in a highly competitive segment of the industry," says David Jensen, vice president of business development at Field Aviation.

David Jensen, vice president of business development at Field Aviation. Modification work on the second aircraft is due to commence in April 2010, with its 62-seat economy-class layout to be converted to eight seats in first class and 32 in economy.

Luxurious finishes Avitrade Belgium's client has also specified a number of high-end interior finishes for each aircraft, including specialised IFE systems, satellite telephones, custom galleys, unique floor coverings, wood laminates, and redesigned lavatories.

Field Aviation specialises in the modification and conversion of aircraft for special mission roles, as well as VIP and corporate interior modifications, avionics modifications and design engineering. The company also manufactures airframe parts and accessories.

Field Aviation

Reader Enguiry No. 513

A conceptual rendering of the new first-class cabin in both Dash 8 Q400s, with the seats swivelled into club configuration

1.

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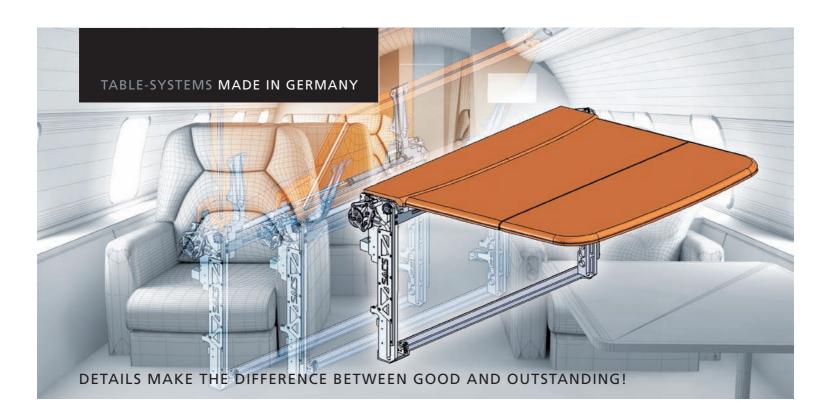
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onguard

VIP aircraft and business jets can often be parked for hours or even days without anyone on board. This can leave them open to threats and dangers including theft from the aircraft, tampering with the aircraft to obtain parts, sabotage of the aircraft, stowaways, concealment of contraband, and vandalism. Some cabin configurations can make it difficult or impossible for the crew to detect tampering or changes to the aircraft or to effectively search the aircraft before a flight.

Video security systems, such as AD Aerospace's FlightVu Defender, are designed to provide continuous all-round security for parked aircraft by having cameras monitoring the aircraft and its surrounding area, with an intelligent video server using video analytics to identify the presence of anyone within specified zones around the aircraft. When triggered, the video server begins recording and can also alert security personnel.

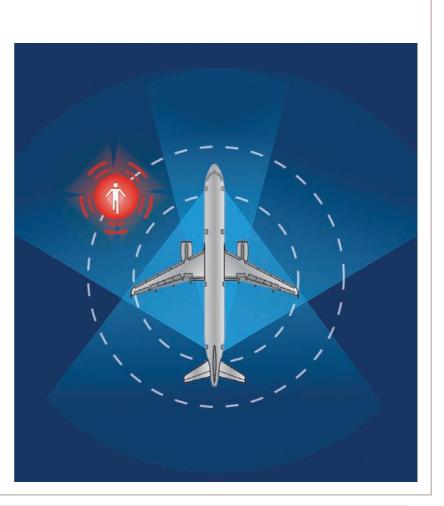
The recordings serve two purposes – firstly they can be reviewed to ensure nothing has happened to the aircraft while parked, and secondly, should any incident occur they can be stored for use as courtroom-admissible evidence.

The camera's video security system can also be linked to IFE systems to provide views of a flight's take off and landing, as well as of the exterior of the aircraft. Furthermore, the behaviour and activities of handling and engineering personnel can be monitored during routine ground maintenance.

AD Aerospace

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