

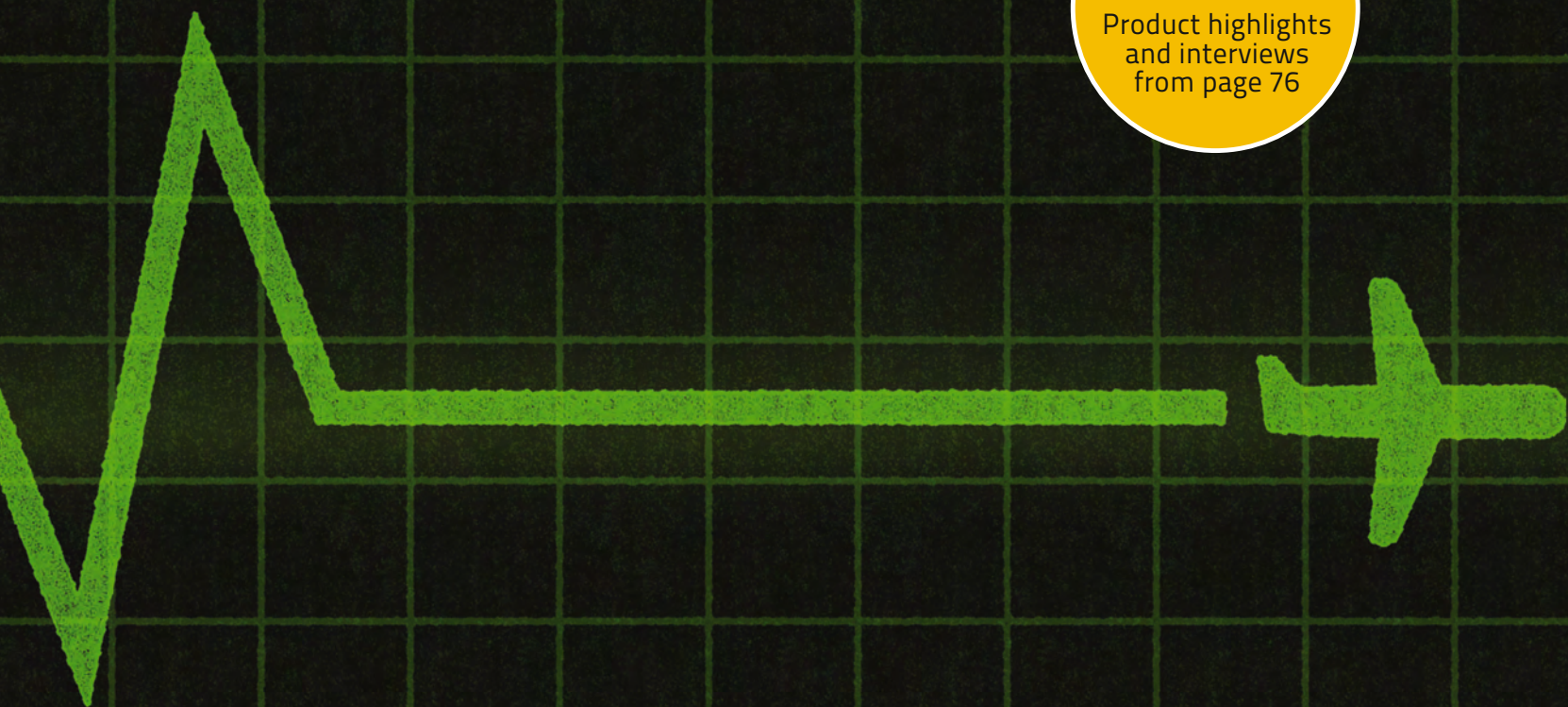
Business Jet *interiors* INTERNATIONAL

WWW.BUSINESSJETINTERIORSINTERNATIONAL.COM

APRIL 2016

EBACE PREVIEW

Product highlights
and interviews
from page 76



IS IFE DEAD?

AS PASSENGERS TURN TO THEIR
PEDs, ARE EMBEDDED SCREENS
AND CONTENT ON THE WAY OUT?

G600 MOCK-UP

Gulfstream reveals the changes its customers
recommended, and how it is ensuring flexibility

ELECTRIC AIRCRAFT

Could an electric jet have a place in the business
aviation sector, and what would the interior be like?

QUICK-CHANGE INTERIORS

Those who have created chameleon-like cabins
discuss the many challenges involved



EXCEPTIONAL COMPETENCE IN MATERIALS LEADS TO EXCEPTIONAL INTERIOR

BASED ON THIS PRINCIPLE F/LIST DEVELOPS AND MANUFACTURES CABIN INTERIORS FOR BUSINESS & PRIVATE JETS, CABIN REFURBISHMENTS & RETROFITS AS WELL AS CUSTOMIZED VVIP INTERIOR FOR NARROW & WIDE-BODY AIRCRAFT, MEGA YACHTS AND LUXURY HOMES. BREAKING GROUND BY COMBINING TRADITIONAL CRAFTS AND APPLIED INNOVATIVE SPIRIT. DRIVEN BY A PASSION FOR PERFECTION ROOTED IN THE RELIABILITY OF A FAMILY-RUN AUSTRIAN COMPANY.

F/LIST

WWW.F-LIST.AT

Wheels up

Head down the runway with a selection of the latest cabin designs, product launches, case study news, completion announcements, material insights and topical discussion


- O10 **Pinboard:** In this issue the gallery includes a Falcon 2000 modified by West Star and a custom interior developed by Constant Aviation for the Nextant 400XTi, as well as IFE and glass product launches
- O12 **News in Focus:** Duncan Aviation and designer Bruce Shoemaker reveal how they created the first interior for a 1954 Albatross seaplane
- O14 **Completions Roundup:** This quarter's announcements from completion centers around the world
- O16 **Design Brief:** Aerion discusses its aims for the cabin of the supersonic AS2
- O18 **Working With:** How to make the most of carbon fiber's strength, versatility and light weight
- O23 **The Big Question:** This new regular feature will tackle contentious issues. We start by asking if the industry does enough to protect the environment

Features

- 028** PEDS AND IFE
Smartphones and tablets have become essential entertainment tools in the air. Will they eventually render embedded IFE obsolete?
- 038** ENTERTAINMENT SPACES
Designers who have created concepts for alternative entertainment spaces discuss the technical challenges of bringing them to life
- 046** QUICK-CHANGE CABINS
Careful planning is needed to create super-flexible cabins that can be converted quickly to different uses
- 054** G600 MOCK-UP
The updated G600 mock-up reflects Gulfstream's focus on customer feedback and cabin flexibility
- 062** ELECTRIC AIRCRAFT
Electric aircraft development is gaining pace, but will the technology ever be applicable in the VIP and business jet market?
- 068** ACJ319 COMPLETION
ACJC engineered several clever solutions for an Asian customer's highly customized ACJ319

OEM

AVIONICS



Give yourself and your passengers the peace of mind that comes from putting flight-critical information at your fingertips while increasing the resale value of your aircraft. Contact your Textron Aviation company-owned service center today to discuss upgrading your avionics.

PROVED

UPGRADES



Beechcraft



Hawker

TEXTRON AVIATION

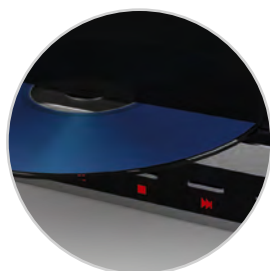
service.txtav.com

U.S. +1.844.44.TXTAV | INTERNATIONAL +1.316.517.8270

© 2016 Textron Aviation Inc. Cessna's logo and Cessna are registered trademarks of Textron Innovations Inc., used by permission. Beechcraft and Hawker are registered trademarks of Beechcraft Corporation.

- 076** **EBACE PREVIEW**
Exhibitors reveal the innovations they will highlight at EBACE 2016, to be held in Geneva, Switzerland, on May 24-26

- 086** **SOFT FURNISHINGS**
Take your pick from the latest leathers, fabrics, carpets and other floor coverings



091



095



096



102

- 091** **PRODUCTS AND SERVICES**
The latest product news and case studies from our advertisers

- 104** **DESIGN SPY**
Inspiring designs from other sectors, including the renovated Lanesborough Hotel



THE TEAM

EDITOR Izzy Kington
isabel.kington@ukipme.com

ART EDITOR Anna Davie

DEPUTY ART EDITOR Louise Adams

DESIGN TEAM
Andy Bass, Andrew Locke, Craig Marshall,
Nicola Turner, Julie Welby, Ben White

PRODUCTION EDITOR Alex Bradley

CHIEF SUB EDITOR Andrew Pickering

DEPUTY PRODUCTION EDITOR Nick Shepherd

SENIOR SUB EDITOR Christine Velarde

SUB EDITOR Alasdair Morton

HEAD OF PRODUCTION & LOGISTICS Ian Donovan

DEPUTY PRODUCTION MANAGER Lewis Hopkins

PRODUCTION TEAM
Carole Doran, Cassie Inns, Chada Issa, Frank Millard

CEO Tony Robinson

MANAGING DIRECTOR Graham Johnson

EDITORIAL DIRECTOR Anthony James

ART DIRECTOR James Sutcliffe

PUBLICATION MANAGER Simon Hughes
simon.hughes@ukipme.com

INTERNATIONAL ADVERTISING SALES
Roger Baker
roger.baker@ukipme.com

Sally James
sally.james@ukipme.com

CIRCULATION AND SUBSCRIPTIONS
MANAGER Suzie Matthews

published by UKIP Media & Events Ltd
Business Jet Interiors International
Abinger House, Church Street,
Dorking, Surrey RH4 1DF, UK
Tel: +44 1306 743744

Email: aircraftinteriors@ukipme.com
Website: www.businessjetinteriorsinternational.com

Annual subscriptions (four copies)

Worldwide rate: £70/US\$108

Airfreight and mailing in the USA by agent Air Business Ltd,
c/o Worldnet Shipping USA Inc, 155-11 146th Street, Jamaica,
New York 11434. Periodicals postage paid at Jamaica, New
York 11431. US Postmaster: Send address changes to *Business
Jet Interiors International*, c/o Air Business Ltd, c/o Worldnet
Shipping USA Inc, 155-11 146th Street, Jamaica, New York 11434.
Subscription records are maintained at UKIP Media & Events
Ltd, Abinger House, Church Street, Dorking, Surrey, RH4 1DF, UK.
Air Business is acting as our mailing agent.

ISSN 1755-8182 (print)

ISSN 2397-6462 (online)

Business Jet Interiors International April 2016

This publication is protected by copyright. ©2016

The views expressed in the articles and technical papers are
those of the authors and are not endorsed by the publishers.

While every care has been taken during production,
the publisher does not accept any liability for errors that
may have occurred.

Printed by: William Gibbons & Sons Ltd, PO Box 103,
26 Planetary Road, Willenhall, West Midlands, WV13 3XT, UK

Cover image: Allan Sanders

EBACE Booth K097



THE GREATEST IDEAS ARE SIMPLE.
THIS ONE ALSO FLIES.

Experience unique intuitiveness with our
IFE, CMS & Communications solutions.

For more information about IDAIR, please visit www.idair.aero

A joint venture between Lufthansa Technik AG and Panasonic Avionics Corporation



IDAIR
simply high-end

GIVE YOUR IMAGINATION
THE ROOM TO SOAR.



BOEING BUSINESS JETS





BBJ. A BETTER WAY TO FLY. From the 737 to the 747, the family of Boeing Business Jets provides so much more than traditional business jets. It begins with spacious interiors, unmatched for comfort, that allow you to custom-design your environment. So whether it's dining with family, holding a business meeting, or resting in the privacy of your bedroom, your flying experience is perfectly matched to your lifestyle needs. And the BBJ family offers significantly more range, so now both your imagination and your airplane can take you farther.





WATCH THIS SPACE



hen I am out and about, I turn to my tablet and smartphone for information, communication and entertainment.

They occupy a much smaller space in my luggage than the numerous devices they replace, they bring extra functionalities that I didn't even realize I needed, and the content and interface of each is highly personalized. But does that mean I would find no need for embedded IFE and CMS on board a jet?

For the cover story on page 28, IFE specialists were asked if they thought PEDs were a threat to traditional entertainment, information and even cabin control systems on board. Many argue that the quality and size of embedded screens secures their place in passengers' hearts; there is more debate over how best to deliver content.

Regardless of whether passengers rely solely on PEDs, the ability to use them on board, at least for some functions, is no longer a revelation but

an expectation. So what is there that can provide the wow factor these days? Some alternative entertainment ideas for business jets are presented from page 38. They range from a new café/theater concept to a casino, a mezzanine entertainment lounge and a jet with sidewall screens in lieu of windows. Across these two features you'll find plenty of discussion on the next generation of technologies that could be making their way into aircraft – from quantum dots to curved screens and virtual reality.

Other highlights in this issue include all the details of a highly customized ACJ319 completion by ACJC (page 68); our preview of EBACE 2016 (page 76); and a look at the feasibility of electric propulsion for business jets (page 62). The march of technological change is relentless. Luckily, a *Business Jet Interiors International* app is available, so you can read all about it on your Apple or Android tablet!

Izzy Kington, editor

Jormac Aerospace and Cabin Innovations are now...



Advent Aerospace, Inc.

A More Experienced Team in a Competitive World.

At Advent Aerospace, we've brought the best of what Jormac Aerospace and Cabin Innovations have to offer under one name, with singular focus.

Whether you are looking for installation fittings, ECS parts, metallic or composite tie-rods, latches and hinges, or VIP aircraft monuments, liner systems and complete turnkey galleys, Advent Aerospace is committed to providing you with superior quality and workmanship.

Advent's program management capabilities eliminate the challenges associated with scope creep, schedule overruns and profit drain. Our seasoned designers, engineers and craftsmen work with you to define your needs precisely, so your project finishes on-time, on-budget, with no surprises at the end. When you want your project done right,

Make Sure It's Advent.

**Contact Us at
EBACE 2016**

Frank Nelson
frankn@jormac.com
727-560-9854

Shawn Bucher
shawn.bucher@cabininnovations.com
602-703-4414

Brian Barber
brian.barber@adventaerospace.com
918-991-9900

Colt Mehler
coltm@jormac.com
208-340-0102

www.AdventAerospace.com



Advent Aerospace, Inc.

PINBOARD

CONSTANT AVIATION
RECENTLY COMPLETED
THIS CUSTOM INTERIOR
FOR THE NEXTANT 400XTI



AN OFFICE CONCEPT FOR
A BBJ 787, DESIGNED BY
ASSOCIATED AIR CENTER



ASSOCIATED AIR CENTER'S
CONCEPT FOR A MASTER
LAVATORY ON A BBJ 787





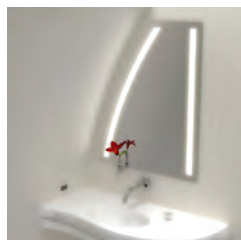
LAUNCHES



1



2



3



4

1. A NEW EDGE SERIES 4K DISPLAY FROM FLIGHT DISPLAY SYSTEMS, COMPLETE WITH A CARBON-FIBER PATTERN PRINTED ON ITS BEZEL
2. ASTRONICS PGA AVIONICS HAS LAUNCHED A UHD MEDIA CENTER THAT CAN PLAY BLU-RAYS, DVDs, CDs, MP3s AND 4K FILES
3. THE AEROGLOSS LIGHTING MIRROR, FROM AVIATIONGLASS & TECHNOLOGY
4. ORION, A NEW RANGE OF LEATHERS FROM MOORE & GILES, MADE FROM EUROPEAN HIDES

Visit businessjetinteriorsinternational.com for full news coverage

1954 ALBATROSS SEAPLANE FITTED WITH FIRST INTERIOR

When Joe Duke's G-111 Albatross arrived at Duncan Aviation's facility in April 2015, it had never had an interior. The seaplane flew home in January 2016 with a hand-crafted interior designed by Bruce Shoemaker of SDesign.aero and completed by Duncan Aviation.

"Mr Duke and I had the goal of combining utility and purpose with aviation and nautical themes," says Shoemaker. "We resolved to blend modern furnishings with period design elements from the golden age of air travel."

Beyond the flight deck, the aircraft features a forward salon with full lining, overhead storage and hardwood panels on the exit doors; two galley cabinets painted to complement the aircraft's exterior; an aft cargo cabin featuring an overhead cargo hatch with curved teak slats; and an aft lavatory with custom teak flooring, vanity, medicine cabinet and closet.

"We used teak veneer and trim as a nod to traditional nautical design, and combined it with modern materials including mohair, quilted suede, embossed synthetics and a mix of hard-coat anodized and brushed nickel metal finishes," says Shoemaker. "The result is a blend of vintage luxury and robust industrial detailing."





Q&A

Matt Spain

COMPLETION SALES REPRESENTATIVE,
DUNCAN AVIATION



LED lighting was installed throughout the Albatross's interior. "It was chosen for its durability and low power consumption," comments Shoemaker. "In some cases, we designed and fabricated adapters to retain the aircraft's vintage light lenses and bezels."



The refurbished seat frames are vintage Grumman parts. Removable foam cushions and modern button pull style upholstery were added during the completion.



A wide-open cargo zone is included to accommodate all the owner's recreational equipment – a 12ft Zodiac inflatable boat, paddle boards, scuba equipment and camping gear.



There are many custom parts, including the curtain glides, exposed bracketry, switch bezels, cargo hatch batten hardware and the certification holder in the cockpit. "All of these parts were designed and fabricated specifically for this interior," says Shoemaker. "The owner was great to work with because he encouraged this level of customization."



The team sought out materials that possessed "timeless integrity," says Shoemaker. "We wanted materials that will age with distinction. The interior finishes are intended to wear in with use. The cabinetry was designed to have a modern look. We choose smooth teak veneer and subtle detailing that tips its hat to modern Scandinavian style."

What is the history of this Albatross?

This Albatross started out in 1954 as an HU-16 military sea and rescue aircraft. It was recertified as a civilian aircraft (G-111) in 1980. To carry the additional payload, its wings were lengthened, the engines were upgraded, and a titanium spar was added to give it more power and lift. The intension was to use it to transport people to offshore casinos, but the interior was never finished. With approximately 12 hours of flight time, it was left in the Pinal Airpark boneyard in Arizona, USA, where it sat for 25 years. Joe Duke bought it in 2008 and restored the exterior. He has shown it at airshows, and flies it around the Caribbean for fun.

How did you prepare to work on this aircraft type?

In the industry, people know that if you want something that's never been done before, you take it to Duncan Aviation. We've had plenty of unique projects, but never anything like this. It took 18 months from when I first talked to Bruce Shoemaker about the project before the aircraft came here. During that time, working with Bruce's preliminary designs, we put a proposal together. We researched every aspect of the plan and the designs. We hand-picked every person who worked on this project and briefed them on the plans. Roughly 200 people touched this aircraft at some point while it was here, but there was a core group of around 45-50 team members.

What was challenging about the installation?

There were quite a few challenges. Most of the interior was hand-built, and the result is just unbelievable. It's all custom – right down to the curtain glides. The interior completions team, led by Jeff Morgan, built and installed the cabin shell structure that covers the skeleton of the aircraft. Once that was in place, we could put in the pretty stuff – the teak window framing, suede lower panels, vinyl coverings over the center headliner and bulkheads, and the whole lavatory shell. That shell structure was just as complex and unique as the cabinets and woodwork. Another challenge, resolved by Jared Gunderson, avionics installation team leader, was how to retain the vintage look of the instruments with the updated electronics.

What was special about this project?

The whole project excited me; it epitomizes why I wanted to work on interiors. There's just nothing as challenging as creating something that no one else has. When I walk into that aircraft, it is an emotional experience. Nothing we're going to ever see or do is going to come close to this – it's a one-off.

Visit businessjetinteriorsinternational.com for full news coverage



COMPLETIONS ROUNDUP

This quarter's announcements from completion centers around the world

BASEL, SWITZERLAND:

AMAC Aerospace opened a fourth hangar, dedicated to wide-body maintenance.

The 78,000ft² hangar is supported by a 65,000ft² apron area. The company's many recent projects include a satcom installation on an A340, as well as a C-check, satcom and passenger information system modifications on an ACJ319.

HAMBURG, GERMANY:

Lufthansa Technik completed its second BBJ 747-8. The CMS/IFE system incorporates broadband, GSM, WLAN, Live TV and satcom equipment. A third BBJ 747-8 is currently undergoing completion at the facility.

TOULOUSE, FRANCE:

ACJC delivered an ACJ319 to a government customer following a full refurbishment, systems and connectivity upgrades that included fuselage modifications for new antennas and a 10-year C-check. A lounge area was removed to create a nine-seat zone for delegations. The company also announced the delivery of an ACJ319 to an Asian customer (see page 68).

BASEL, SWITZERLAND:

Jet Aviation Basel is to install Ka-band satcom on a B747-400, developing an STC and installing the system with Honeywell's satcom hardware and the JetWave MCS-8200 fuselage-mounted antenna.

SAN ANTONIO, TEXAS, USA:

Aeria Luxury Interiors completed its first green BBJ. It features a crew lounge, galley, conference room, lounge and master suite, and is equipped with HD screens, digital IFE and humidification. Designed in-house, the interior includes decorative 3D printed items.

DALLAS, TEXAS, USA:

Associated Air Center (AAC) redelivered its first BBJ 747-8 to a Middle Eastern head of state. The interior was designed in-house and includes a medical area and a 393ft² module above the aft cabin. Additional potable and gray water tanks were installed to support the nine lavatories – three with showers – and three galleys. Equipment includes AVOD IFE, multiregion satellite TV, broadband satcom, external HD cameras, LED moodlighting and humidification. AAC also redelivered a head-of-state BBJ 787.

EAST ALTON, ILLINOIS, USA:

West Star reconfigured a Falcon 2000 to seat 13 passengers. The team created a reduced-size galley and auxiliary galley/IFE center, modified the forward and aft bulkheads, and extended sideledges and window panels. Structural modifications were required below and above the floor to accommodate the new loading. The aircraft was finished with various new materials and switch panels. The company also earned FAA ODA.

PETERBOROUGH, CANADA:

Flying Colours Corp began work on a 6,500ft² extension of its cabinetry finishing shop, which will accommodate two new downdraft tables and a new downdraft spray booth.

SINGAPORE:

ST Aerospace is offering VIP interior design, engineering, installation and maintenance for narrow-body aircraft at Seletar Aerospace Park. Design and certification will be supported by Aeria in the USA. ST Aerospace also announced five refurbishment and maintenance contracts, including an ACJ319 and a BBJ 737 to be completed in Singapore.

MUHARRAQ, BAHRAIN:

Comlux America is teaming with Texel Air to serve narrow-body ACJ and BBJ aircraft at Bahrain International Airport. Texel Air will provide hangar, maintenance and certification services, while Comlux America will work on system upgrades and cabin modifications.

DUBAI, UAE:

Greenline Interiors and Finaero plan to develop interior refurbishment, design, engineering and manufacturing capabilities at Al Maktoum International Airport.

SINGAPORE:

Jet Aviation Singapore completed its first 8C inspection on a Global Express, also refurbishing the interior and repainting.

Visit businessjetinteriorsinternational.com for full news coverage



Swiss Excellence in Business Aviation

The largest privately-owned facility in the world
offering VIP, private and corporate aviation services.

Three Core Services:

- Maintenance
- Completion and Refurbishment
- Charter

AMAC AEROSPACE

AMAC Aerospace Switzerland AG
Henric Petri-Strasse 35
4051 Basel, Switzerland

Telephone +41 58 310 31 31
info@amacaerospace.com
www.amacaerospace.com

sonic boon



Excitement has been building up around the Aerion AS2 for quite some time, and grew still more when Airbus jumped on board to lend its weight to the task ahead – making supersonic private travel a reality. Now Inairvation, a supergroup of interior experts, has been enlisted to help develop the interior.

Inairvation is a joint venture between Lufthansa Technik and F/List, with preferred partners Schott (lighting) and Design Q (interior design). The idea is that the cabin's major component suppliers work together closely from the outset, enabling integrated innovations and efficiencies (for example, in terms of wiring) to be built in.

In November 2015, the public got a glimpse of the first fruits of Inairvation's work with Aerion. The design is a work in progress, but the renderings shed light on Aerion's aims. The company has sought to provide supersonic performance with cabin comfort on par with today's long-range business jets.

"The physics of supersonic flight pose a real challenge when it comes to cabin space," says Jeff Miller, vice president of marketing and communications at Aerion. "Readers may recall that Concorde had a rather constrained cabin, in which the level of cabin service was very high, but individual passenger space was about what you would find in a coach section today. This is not the case with the AS2. Careful attention to fuselage aerodynamics has yielded a surprisingly spacious cabin. Its interior cross-section dimensions approximate those of the Gulfstream G550 or Dassault Falcon 7X."

However, Miller says a supersonic aircraft can't offer the same cabin length as other jets over the same long range. "Some jet owners may wonder why there aren't three or four cabin sections, as on the largest of today's business jets," he says. "These proportions are not feasible when aiming for supersonic performance and intercontinental range. Supersonic aerodynamics (the need to minimize wave drag) dictate long and slender airframes, with room for fuel storage in the fuselage, rather than long and wide cabins."

Aerion and Inairvation are now investigating configurations, using a full-scale engineering mock-up assembled at Design Q's facility. The aircraft is scheduled to enter service in the 2020s.



CEILING

The ceiling design will divide the cabin into zones that can be lit separately. Instead of a longitudinal accent along the upper cabin panels, the lighting units will run laterally across the cabin, visually widening the space. The lighting system will offer many mood settings for day and night, including a starry night effect.

SEATS

The seats are designed to look and feel comfortable while appearing streamlined, as befits a supersonic jet. A horizontal accent has been used to optimize the visual width of the seats.

GUIDED TOUR

Crew lavatory and galley

The forward part of the cabin will incorporate a crew lavatory and a galley, with counter space and storage on each side. "Galley service will match any of today's intercontinental jets," says Miller.

Passenger seating

Three standard configurations are currently envisaged for the passenger seating area. Owners could choose from a double club-four setup (shown), or replace the aft club four with a dining/conference table and credenza. Alternatively, two of the seats in the aft area could be replaced by a three-place divan.

"The objective for the AS2 was not to maximize the number of passengers on board, but to maximize comfort for groups of up to eight," says Miller. "However, higher-density seating arrangements can be created." Elbow room and legroom are designed to match that offered on today's large business jets. Miller says customers will be able to personalize the interior materials (including stone, wood, metal and fabric), and that cabin systems (currently undefined) will be state-of-the-art when the aircraft enters service.

Aft lavatory

The rear of the cabin will house an 8ft-wide passenger lavatory and a baggage compartment that is accessible in flight.



WORKING WITH
carbon fiber

An artisan and a designer explain how best to use this strong and lightweight material, and shed light on its versatility



Tim Leihser
CARBON-FIBER ARTISAN,
WEST STAR AVIATION



Jim Dixon
HEAD OF AVIATION,
WINCH DESIGN



The Artisan

TIM LEIHSER

CARBON-FIBER ARTISAN, WEST STAR AVIATION

WHAT IS SPECIAL ABOUT CARBON FIBER?

I love the color options it offers, and how it can transform an interior into something really special and up to the minute. Carbon fiber also provides a durable alternative to wood veneer, helping meet environmental targets. The strength of carbon fiber is remarkable.

WHAT DO YOU LOOK FOR WHEN SOURCING THE MATERIAL?

There are many companies that manufacture carbon fiber. We look for depth and consistency in the grain.

WHAT IS CHALLENGING ABOUT WORKING WITH CARBON FIBER?

It takes a lot of time and expertise to wrap and miter corners to ensure the grain matches up when using carbon-fiber veneer.

WHAT EQUIPMENT DO YOU USE?

We normally use standard aerospace cabinetry tooling, the same as is used for veneer. This includes contact adhesive, a Fein saw and other miscellaneous hand tools. Carbon-fiber applications also require vacuum bagging to reduce air pockets and ensure a good contact with the substrate.

1-2. CARBON FIBER WAS USED THROUGHOUT THIS CHALLENGER 604, WHICH WAS REFURBISHED AND PAINTED AT WEST STAR AVIATION

HOW IS CARBON FIBER TYPICALLY USED IN VIP AIRCRAFT?

We've covered many items, including handrails, countertops, bulkheads, escutcheons and lavatory seats. Mainly though, carbon fiber is used on tables, sideedges, or indeed any area of the aircraft that would typically be covered with a wood veneer or laminate.

ARE THERE ANY TYPES YOU WOULD LIKE TO SEE USED MORE?

I would like to see some of the different colors used, for example a black and blue or a red and black twill weave.

WHAT IS YOUR MOST MEMORABLE PROJECT INVOLVING CARBON FIBER?

I definitely have a project that stands out: it was a Bombardier Challenger 604 refurbishment carried out here at West Star Aviation. The interior scheme featured a lot of black, with carbon-fiber countertops, sideedges, window line inlays and monitor shrouds. This was complemented by black seats with gray stripes. The interior is just gorgeous; one of the best out there today. And it didn't stop there – the paint job was also special, with airbrushed carbon-fiber tail, winglets and striping. What an aircraft!





The Designer

JIM DIXON

HEAD OF AVIATION, WINCH DESIGN

WHAT ARE SOME OF THE ADVANTAGES OF THIS MATERIAL?

Carbon fiber is a lightweight, stiff material – ideal for aircraft. Winch Design has used it for a multitude of interior applications, including for window mullions and decorative frames around dividing walls. There have also been instances of using carbon fiber on cabinetry. It gives a contemporary feel and is a very good alternative to a timber finish.

WHAT ARE THE DISADVANTAGES?

Disadvantages include the cost of tooling to make the parts, and also the difficulty of achieving a high-gloss finish when using aircraft-certified resins and lacquer finishes. Creating and producing the parts is a specialist process, so to achieve the correct finish, an outsourced company is often required. We have found a number of excellent suppliers, many from the Formula 1 industry.

HOW MUCH VARIETY IS POSSIBLE IN TERMS OF COLOR AND PATTERN?

People often think of carbon fiber as a black matting with a high-gloss finish. It is actually available in a multitude of colors, even including off-white and silver. In addition, various sizes and patterns are available for the weave. Two personal favorites are the larger-scale weave, and materials incorporating silver metal wires.

HAVE YOU NOTICED ANY TRENDS IN USE?

There is a trend for some clients to request contemporary materials, and only use timbers when they are applied with different techniques. Carbon fiber tends to be a favorite for clients looking for a clean, contemporary theme to their aircraft. We control the amounts used in the interior, as although it's a beautiful material, it is best used for smaller areas and for details.

WHAT ARE YOUR TIPS FOR OBTAINING THE BEST RESULT USING THIS MATERIAL?

The best results would be achieved by taking advantage of carbon fiber's inherent strength and decorative finish quality to create a lightweight high-strength piece, for example a credenza. The final product would display an honesty in its construction. This would also be an alternative to cladding the cabinet and would create more space inside for storage.

WHAT ELSE WOULD YOU LIKE TO BE ABLE TO ACHIEVE WITH CARBON FIBER?

We would like to use carbon fiber where high strength and low weight are required; this would help us to reduce cabin weight and enable us to control weight distribution so that we could use even higher grade materials elsewhere.

IF YOU WERE DESIGNING YOUR OWN JET, WOULD YOU USE CARBON FIBER?

I would use carbon fiber on the inside of the fuselage to give the impression that the aircraft was constructed as a carbon-fiber tube.

1-2. THIS ACJ318, DELIVERED IN 2011, FEATURES DECORATIVE CARBON-FIBER FRAMES



UNIQUE RETROFIT

SMART CABIN UPGRADE, PRE-ENGINEERED FOR QUICK
INSTALLATION DURING HEAVY MAINTENANCE CHECKS



VISIT US AT

EBACE
Booth L089

INAIRVATION offers an integrated cabin retrofit solution for Bombardier Global and Challenger families. Our baseline retrofit package includes the nice® HD CMS/IFE system, functionally integrated into new ergonomic sideedges. Optional features such as elegant 7" pop-up monitors or INAIRVATION's unique illuminated wood floor can be added. INAIRVATION retrofit solutions create a complete new cabin interior - adding real value to your business aircraft.

For more information contact us at contact@inairvation.aero

INAIRVATION

INTEGRATED CABIN INNOVATION

AEROLUX

THE ART OF CUSTOMISATION



From ovens that can roast whole goats, to plate warmers and combination ovens, through to ice makers and ice cream makers, medical refrigeration and even towel warmers, we have made them all for private passenger aircraft and airlines.

Equipment can be supplied in multiple voltages from 28V/115V/110V/230V and in a range of frequencies to suit your application and aircraft. Just ask us.

www.aerolux.co.uk

AEROLUX LTD, Chorley Road, Blackpool, Lancashire, FY3 7XQ, England
Tel: +44 1253 396670 • Fax: +44 1253 300074 • Email: sales@aerolux.co.uk • www.aerolux.co.uk



the big question

DOES THE INDUSTRY DO ENOUGH TO MINIMIZE ITS ENVIRONMENTAL IMPACT? REPRESENTATIVES OF TWO COMPLETION CENTERS SHARE THEIR THOUGHTS



Steve Daschel

SENIOR DIRECTOR OF PROJECT
DEFINITION AND INTEGRATION,
GREENPOINT TECHNOLOGIES



Glenda Palacios

LEAD DESIGNER,
ASSOCIATED
AIR CENTER

Is environmental responsibility a growing concern in the industry?

SD Environmental concern has affected the equipment used for some VIP interior systems, and some functions. For example, drain masts used to discharge gray water from sinks and showers are being phased out on newer aircraft and replaced with holding tanks that must be serviced on the ground.

GP The successful businesses of the future will be those who embrace environmental initiatives today. More companies are taking action to operate in a way that protects the environment and reduces risk for their business, taking preventive measures to avoid incidents. We employ the AS9110 and ISO 14001 management system standards, to keep all our processes up-to-date. An internal auditor team ensures compliance.

What strategies are there for making a business jet cabin as environmentally friendly as possible?

SD As the cabin interior becomes lighter in weight, range is extended and fuel burn is reduced. New lighter-weight materials are continually being introduced by suppliers. We can also use 3D CAD modeling to optimize the geometry and strength of interior components. In addition, OEMs are driving their supply chains to be greener throughout their product cycles.

GP It is definitely an improvement when we reduce the number of components installed. To achieve this requires a collaborative effort from initial concept to final product. ►

"We use only water-soluble lacquer systems for real wood veneer," says Wolfgang Reinert, a spokesperson for Lufthansa Technik. "Our interior workshops are equipped with the most advanced absorption and hold-back systems in the industry, approved by the local environmental control administration."

Examples of ways to minimize the number of components include the use of wireless CMS and combined control boxes. We also recently installed Rosen's slim monitors, which have a removable metal frame, removing the need for a shroud.

What sort of materials do you use to reduce cabin weight?

SD We can use honeycomb build-ups and faux stone effects. Complex formed or machined metal components can be replaced with 3D-printed parts made of Ultem or nylon.

GP We can use hydrographic films, paints and polyvinyl fluoride (PVF) films where appropriate. The use of unique painted finishes in combination with soft goods can create a spectacular aircraft interior while reducing the number of decorative panels needed.

Carbon fiber is becoming one of the industry's favorite materials, because of its strong and lightweight properties as well as its distinctive appearance.

At the start of a project we determine the number of aluminum panels actually needed for the cabin, paving the way to use more fiberglass panels, lighter epoxy resins and single-ply panels.

We have also had a lot of success reducing the weight of drawers. We construct them from a single

"On average, VIP cabins are used for fewer than 10 years," says Wolfgang Reinert of Lufthansa Technik. "Should a client want to refurbish some or all of the cabin, Lufthansa Technik is obliged to recycle removed components in the most environmentally friendly way."

ABOVE: 3D MODELING IS USED BY GREENPOINT'S ENGINEERS TO OPTIMIZE COMPONENTS' WEIGHT AND STRENGTH

BELOW: A HAWKER SIDDELEY 125 THAT WAS DISMANTLED BY AIR SALVAGE INTERNATIONAL

BOTTOM: A CHALLENGER 601 AT AIR SALVAGE INTERNATIONAL

fiberglass panel, eliminating the need for panel pins and additional adhesives.

What ways are there to minimize onboard power consumption?

SD Technologies that consume less power are continually being introduced by lighting, IFE and galley equipment suppliers. For example, in the IFE field, wireless technologies and batteries are replacing hard-wired systems.

GP LED lighting offers energy efficiency in addition to durability and design flexibility. Smart monitors have a sleep mode to diminish power consumption. There is also a trend to use iPads as the main point of communication with the CMS, which reduces the need for in-arm switch panels. ▶

SALVAGING AN INTERIOR

There are several companies that specialize in disassembling and dismantling aircraft. One such firm is Air Salvage International in the UK. Managing director Mark Gregory says it is not that common for interior components to be processed for reuse or recycling at the end of an business or VIP jet's life, although it is slightly likelier on older HS 700s and Challenger types.

Aircraft undergoing refurbishment are more fertile ground for aircraft components, and depending on the aircraft's type and age, between 60%

and 90% can be recycled or reused. However, Gregory says it is not common to reuse interior parts. "Not much of the interior can be reused, because it is so personalized to the aircraft type and the customer's taste," he says.

To get to the components required, Air Salvage International's crew often have to go behind sidewalls and under floors. When a part is removed a work pack has to be issued, in accordance with the aircraft maintenance manual.

When interior parts are salvaged, Air Salvage International typically sells them to film companies, and sometimes private individuals. Overall, Gregory believes the business jet interior completion/refurbishment industry could definitely do more in terms of aircraft recycling.



AEROLUX

THE ART OF CATERING



REFRIGERATION



RICE COOKERS AND
SOUP WARMERS

TOASTERS



SKILLETS



Unique products and the art of customisation
working together for all of your aircraft galley
equipment requirements.

How have you optimized your production processes in terms of environmental responsibility?

SD We have implemented lean manufacturing processes, which reduce material and energy waste. We also recycle material remnants.

GP Continuous improvement is the key to going beyond environmental compliance. Our workshops are equipped with a modern air filtration system, which captures airborne particles and delivers fresh air to the environment and our employees. We use paint and finishes with low volatile organic compounds, reducing toxin emissions. Continuous improvement is part of our culture. We conduct weekly walkthroughs of all departments and enable employees to share ideas and concerns so that we can constantly improve the work environment and our end product.

What happens to interior components taken out of the aircraft when a new interior is fitted?

SD Removed parts belong to the aircraft owner. There are recycling and salvage companies that focus on selling repurposed components. Newer interior components in good condition can be sold and reused or refurbished. Older damaged parts, or parts no longer in demand, are recycled or otherwise disposed of. Aircraft part recycling is rapidly expanding to include more materials. Complete or large sections of aircraft interiors removed from new aircraft can be purchased by airlines for use as spares. Refitting an entire interior into another aircraft is not typical.

"The FAA does not regulate the environmental impact of airplane interiors," comments an FAA spokesperson. "The Environmental Protection Agency has jurisdiction over chemicals used in production. The Food and Drug Administration has jurisdiction over sanitation-related issues in aircraft interiors, including drinking water, sewage and galleys."



TOP: A GREENPOINT ARTISAN CREATING A WEIGHT-SAVING FAUX MARBLE FINISH

ABOVE: IN 2015, ASSOCIATED AIR CENTER INSTALLED DUST COLLECTION SYSTEMS TO IMPROVE AIR QUALITY IN ITS SANDING ROOM, CABINET FABRICATION AND SHEET METAL SHOPS, USING A SONIC HORN TO PREVENT THE BUILD UP OF DUST IN THE DUST COLLECTOR

LEFT: GREENPOINT'S FACILITY SHOWCASES A WIDE VARIETY OF MATERIAL SAMPLES, INCLUDING THESE FAUX OPTIONS

GP All components removed from the aircraft are the customer's property, so they are given to the customer at redelivery. They can choose whether to take the parts with them, call a third party to process them, or instruct us to dispose of them properly. Items not wanted by the customer – most commonly electrical wires, foams, textiles and structural panels – are recycled if possible.

In green aircraft, our engineers and technicians are mindful of the environment by using parts removed from one area of the aircraft for use in another, where they can. For example, sidewall panels and baggage bins can sometimes be reused in this way. On aircraft refurbishment projects, most parts are upgraded to the latest technologies and most of the removed equipment is discontinued or obsolete, so they are seldom kept for use as spares. ✕

AEROLUX REFRIGERATOR FREEZER



Low maintenance – high reliability
Years of proven use
Full customisation available
Short lead times
Hygenic food grade materials throughout

AEROLUX LTD, Chorley Road, Blackpool, Lancashire, FY3 7XQ, England
Tel: +44 1253 396670 • Fax: +44 1253 300074 • Email: sales@aerolux.co.uk • www.aerolux.co.uk



PLAYING DEAD?

SMARTPHONES AND TABLETS HAVE BECOME
ESSENTIAL ENTERTAINMENT TOOLS IN THE AIR. WILL
THEY EVENTUALLY RENDER EMBEDDED IFE OBSOLETE?

Words by Paul Eden. Illustration by Allan Sanders

In small aircraft, where space and weight restrictions are particularly acute, PEDs enable IFE where none was possible before. A good example is the Pilatus PC-12NG. “Passengers bring the latest devices outfitted with their favorite content,” says Tom Aniello, vice president of marketing at Pilatus. “Traditional integrated displays – together with the wiring and equipment to drive them – were typically heavy, expensive and complicated. Further compounding the challenge to integrate them was the fact that the consumer electronics world advances very rapidly. As soon as one configuration was certified, a new technology was superseding it in the market. This made fixed costs very high relative to the number of installations over which the investment could be amortized.”

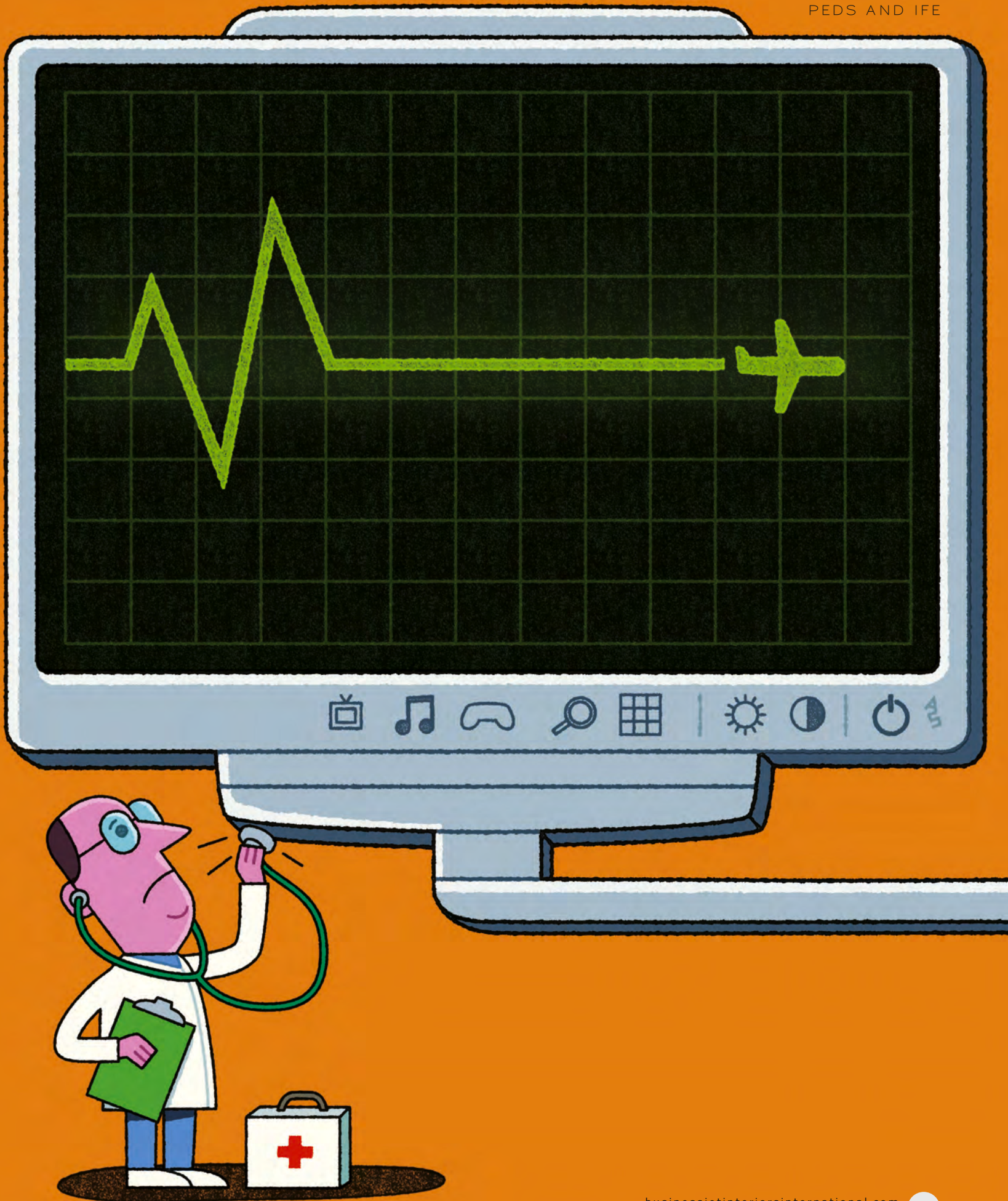
Delivering the connectivity to support PED use remains a challenge. “The major technical challenge for an aircraft the size and price of the PC-12NG is to provide passengers with the connectivity speeds they are familiar with on the ground, at a reasonable cost,” says Aniello. “Antenna solutions for this are very expensive and too large to integrate on a PC-12. We see antenna

sizes and installation and connectivity costs coming down, though; it will be only a few years before we can offer this high-speed connectivity to our owners.”

THE LURE OF THE BIG SCREEN

Tim Fagan, design manager at Bombardier, is one of many industry insiders who do not believe PEDs will completely replace embedded IFE in large cabins. He says screen size is one of the major reasons for this. “PEDs are excellent for carrying content with us everywhere,” he says. “However, they are limited in size and most individuals will naturally gravitate toward the largest screen available to view media. Large onboard displays will continue to be a key asset on our aircraft.”

Meanwhile, Christi Tannahill, senior vice president of interiors at Textron Aviation, believes that even if passengers were content with PEDs for entertainment and connectivity, embedded equipment would still be needed to enable CMS functionality. “Controlling the environment and audio manually will likely always be a need,” explains Tannahill. “IFE is now combined with CMS functions, including dimming the lights, controlling





RIGHT: PASSENGERS WILL BE ABLE TO USE THEIR PEDs ON THE UPCOMING PC-24

MAIN: ROCKWELL COLLINS' STAGE OFFERS STREAMED ENTERTAINMENT AND INFORMATION CONTENT, LOADED FROM A CLOUD-BASED MANAGEMENT SERVICE



VIRTUAL REALITY

The golden standard of virtual reality, according to developer Southern California Immersive Entertainment, is an experience that immerses participants in a fully interactive and emotionally engaging 'living' world. This is what the company aimed for in developing its Grand Canyon VR Experience (pictured). Company CEO Ciaran Foley believes that this technology is not yet viable for application in aircraft.

"There's a spectrum of hardware that can render experiences of varying quality," he says. "We're focusing on the high end, with real-time rendering and complex interaction, which dictates that you need a desktop PC and head-mounted display for each participant. But that will change in time."

Foley says that at the lower end of the spectrum there's 360° video, pre-captured through a camera mounted on a 360° rig. "This technology demands less computing power and is likely to be mature enough for aircraft application within 12 months," he says. "The caveat

is that this form of entertainment is largely passive and linear."

He also points out hygiene will have to be considered. "There are already entertainment venues opening up to offer VR experiences," he says. "They require robust hardware that can be worn by many users and disinfected, because the equipment is worn close to the eye. I believe there are manufacturers who could produce the hardware for business jet applications if there is the demand."

Gulfstream's William Gay says that responses to a media room concept for the G500 and G600, incorporating immersive, virtual reality technologies, have been "very favorable".



the temperature around your seat, adjusting the surround sound equalization and interacting with the installed monitor. It's about making the environment and experience of flying more pleasing through total cabin management."

Joël Frugier, general manager at Airbus Corporate Jet Centre, notes that PED integration is generally offered as an additional option rather than a replacement for embedded IFE systems. "Passengers appreciate being able to bring their own media on board, especially music," he comments. "Our systems, coupled with connectivity, can support that non-embedded content. However, embedded media servers, wired to large HD screens, remain a must because of the quality and content they offer. To achieve the fluid, uncorrupted HD picture and sound quality expected today, you need storage space and a very clean transmission segment. Embedded content is the solution."

Likewise, Flying Colors Corp has noted demand for both PED integration and embedded systems. "We've seen an increase in PEDs, especially in the younger

Recent developments

Joël Frugier enthuses over ACJC's latest IFE developments, which include a fully integrated karaoke system; a 52in screen lift system (hidden in a low sideboard) that can rotate $\pm 15^\circ$; and an HD AVOD system that can stream hi-fi music and video to a personal device.

Gulfstream's recent IFE advances have been focused on improving overall quality. "The fiber-optic cabling in our HD video system, which provides zero signal degradation and no signal latency, results in a very high-quality entertainment experience," says William Gay.

He's also keen to highlight the OEM's new audio/video cabinet. "It provides power, Ethernet and HDMI connections, and flexibility for operators to add additional Blu-ray players,

media servers and other source equipment without certification effort for the components," explains Gay.

Bombardier's most recent development is WAVE, a wi-fi solution that enables content streaming. It uses Inmarsat's Jet ConneX Ka-band service and Honeywell Aerospace's JetWave hardware, offering coverage everywhere except for the North and South Poles.

Textron Aviation's Christi Tannahill believes that customers aren't necessarily looking to be wowed by IFE. "They just want everything to work as it does in their home, office or car," she says. "They want a low-stress, shallow learning curve environment where they can get to their digital accounts and use their own devices easily, reliably and quickly."



generation of private aircraft operators," says Sean Gillespie, executive vice president at Flying Colors Corp. "We also have some customers who still rely on fixed screens and Blu-ray players. Overall, a combination remains the preferred option."

LOW-COST RETROFIT

Installing wi-fi to enable PED use on board can be a low-cost way of retrofitting an aircraft with IFE. "Smartphones can replace smaller touchscreens and tablets can replace larger screens," says Nicolas Duchéron, IFEC/CMS product manager at Astronics PGA Avionics. "However, some customers prefer wired solutions to enjoy the best video quality."

Mark van Berkel, CEO of TrueNorth Avionics, believes PED-based IFE is popular because it offers 'convergence' – access to entertainment, communications and information in one place. "The customer also has more control over what they watch, and can personalize it," he contends. "Overall, PEDs could be viewed as a competitor to the traditional IFE structure, but they could also be complementary – and they certainly can be considered disruptive."

As evidence of PEDs' influence, van Berkel points to modern IFE systems' user interfaces, which he believes take inspiration from the design of PED applications.

"Passengers appreciate being able to bring their own media on board, especially music"

ABOVE: GULFSTREAM'S UPCOMING G600 WILL OFFER BOTH EMBEDDED HARDWARE SUCH AS THIS 32IN SCREEN, AND THE ABILITY TO USE PEDs TO CONTROL THE CMS



ABOVE: PURCHASERS OF FDS'S DO CAPSULE CAN LOAD PERSONAL CONTENT ON A 1TB SOLID-STATE DRIVE, AND ALSO SUBSCRIBE TO A FULLY LICENSED CONTENT SERVICE. CONTENT IS PLAYED ON EMBEDDED SCREENS OR STREAMED TO PEDs



ABOVE: TEXTRON IS FOCUSING ON PROVIDING EASY INTEGRATION OF PEDs ON BOARD

CONTENT WITH CONTENT?

Then there is the issue of the content available to experience with various systems. William Gay, director of customer completions at Gulfstream, contends that embedded media servers, pre-loaded with a variety of content, are more convenient for passengers. "Embedded IFE will continue to be a customer expectation," he says. "The convenience of simply stepping on board and watching the latest releases on a big screen – without having to plug anything in or remember to collect your PED when leaving the aircraft – is very important to many of our owners."

However, some feel the idea of pre-loaded embedded content may be out of date. "Today it's not as important to provide pre-loaded content," says Tannahill of Textron. "As high-bandwidth data uplinks become available, streaming media from the internet/cloud will become the expectation for our customers. The paradigm has shifted from providing a means to view entertainment to providing a reliable, high-speed, broadband datalink so

that users can access their own entertainment. They require connectivity more than a larger TV."

Whether or not PEDs are the future of IFE, it is clear their integration into IFE/CMS is important to passengers today. Naveed Aziz, director of completions research and development at Gulfstream, emphasizes that it is vital to consider PEDs as an integral part of the system. "A good portion of app development and PED integration is included in IFE and CMS development," he says.

ENDLESS VARIATION

Which PEDs should be accommodated? Bombardier is committed to catering for "a multitude of PEDs," says Fagan. "We don't expect our customers to have to adapt to a standard type to be able to

GOOGLE'S ANSWER TO APP FATIGUE

Scott Jenson is a user-interface expert, now leading Google's Physical Web project. He believes the biggest hurdle to any application-based scenario is the reliance on the user installing the app. "Most people today have app fatigue and just can't be bothered in many cases," says Jenson. "High-end flyers who use their own jets frequently may be bothered; the problem increases with infrequent use. The Physical Web is about allowing people to use something in their environment without an app."

A beacon on the smartphone picks up URLs transmitted by nearby smart devices, bringing up a associated web page on the phone, through which the user interacts directly with the device. In the aviation sector, it could perhaps be used by maintenance personnel to view diagnostic information on a part, and by passengers to browse IFE/CMS options without an app. "We're excited to see how it'll be used now that it's shipping in Chrome for iOS and Android," says Jenson.

"We don't expect our customers to have to adapt to a standard type of PED to be able to interact with our aircraft"



ARINCDirectSM

**The most comprehensive suite
of flight services in the world.**

Your best-in-class flight support solutions:

Intuitive desktop and mobile flight planning

Seamless, high-speed cabin connectivity

Award-winning international trip support

Integrated flight operation and
scheduling system

**All with the superior customer support
you expect from the industry's
innovation leader.**

Learn more at
rockwellcollins.com/arincdirect

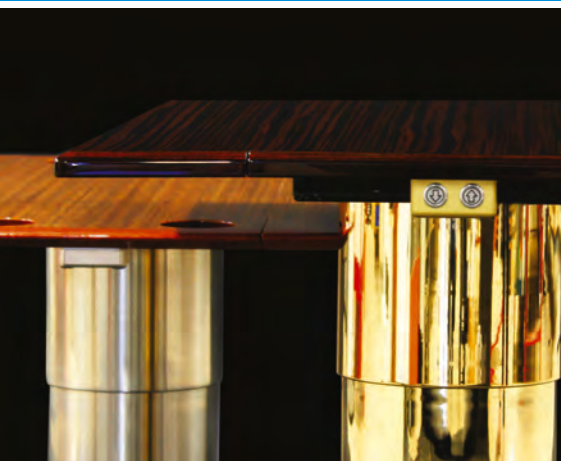
**Visit us at EBACE2016 –
Rockwell Collins booth U073**

© 2016 Rockwell Collins. All rights reserved.



EXPECT. EXPERIENCE.

ENGINEERING AND MANUFACTURING
SPECIALISTS FOR INTERIOR COMPONENTS



INFINITE HI-LO TABLES



CUSTOMIZED INSERTS



CABINETS AND MONUMENTS

Come and visit us at:

EBA

Booth #Y103
24-26 MAY 2016

INFINITE POSSIBILITIES
msbexpertise.com | +1 514.667.9399

A  **SOGECLAIR** company
aerospace

Content solutions

TrueNorth has teamed up with Display Interactive to offer a new app, Optelity Experience (OE). Along with films, moving maps and magazines, OE includes a concierge service whereby users can book special and one-off events at their destination. TrueNorth gave the examples of a personal shopping tour and a professional tennis lesson. The content is delivered to tablets at the gate using LTE communication, to save bandwidth.

"OE addresses the new realities of users boarding jets with their own devices, and takes it to the next level through exclusive content, flexibility and simplified upgrade paths," says Mark van Berkel, CEO of TrueNorth.

Rockwell Collins also recently announced a new subscription content service, Stage. Flight departments choose from a cloud-based catalog of DRM-protected films and TV shows, and personal content can be loaded too. Rockwell Collins says there will be many ways of loading the content to the aircraft. Once on board, up to 70 passengers will be able to stream the media from the server to their PEDs, making use of wireless access points.

interact with our aircraft. This is a key design principle when developing products: to ensure that our cabin systems allow customers to use their devices – phones or tablets – to control the cabin environment; distribute and receive music, movies and other content; and connect to family and business contacts. It should be as simple as downloading an app on a phone."

With its Optelity IFE platform, TrueNorth can accommodate new PED types with a software update. "Otherwise, the costs associated with accommodating the increasing variety of PEDs could be prohibitive," says van Berkel. He also notes that other potential downsides of PED-based IFE are that "it can be a bit cumbersome and the user needs to be a bit more tech savvy".

CONSISTENT DESIGN

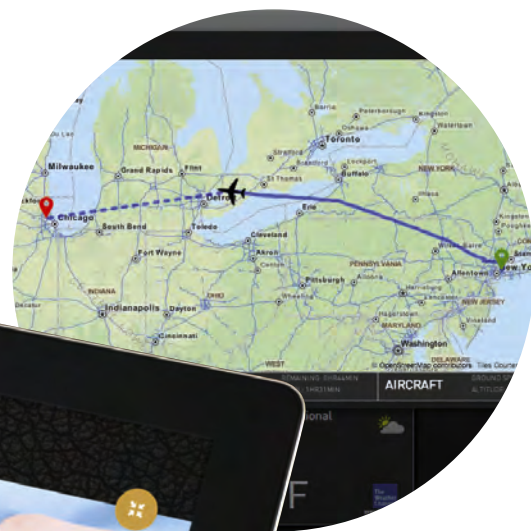
Frugier of ACJC emphasizes the importance of providing a consistent experience for the customer. "One of the challenges is offering a common platform, with the same design, to provide customers with something that is easy

to use without having to open many applications," he says.

Variation has certainly been a challenge in the physical integration of PEDs. "The main issue we've seen with PEDs is charging connections," says Gillespie of Flying Colors Corp. "Apple has changed its connectors over the years and for a while that was an obstacle when we installed fixed iPad docks. Now the move toward the wireless transmission of content has eliminated the need for fixed docks and the issue is going away."

Gay of Gulfstream agrees that wireless technologies are the future. "We're responding to customer requests by investing in the development of wireless content transmission technologies that go beyond today's charging, storage and connection solutions," he says. ☒

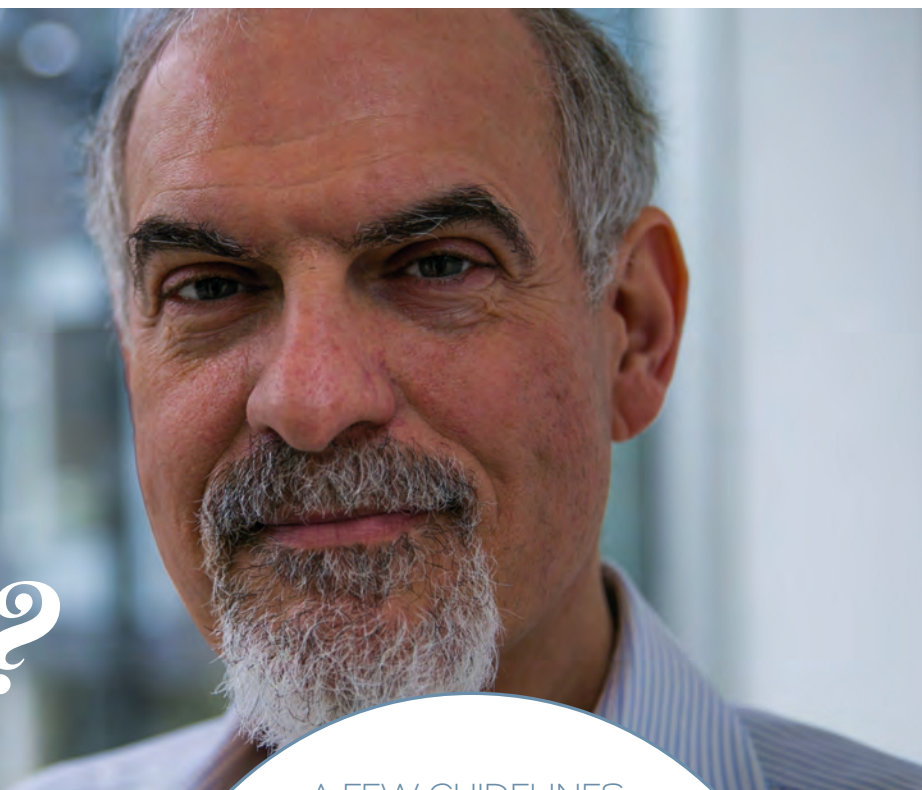
"The main issue we've seen with PEDs is charging connections"



ABOVE: GOGO VISION CONTENT CAN NOW BE UPDATED IN CUSTOMERS' OWN HANGARS. THE SYSTEM USES WI-FI TO TRANSFER THE CONTENT AUTOMATICALLY UPON THE AIRCRAFT'S ARRIVAL

LEFT: TRUENORTH'S OPTELITY EXPERIENCE ENABLES PASSENGERS TO SHARE PERSONAL AND CORPORATE CONTENT, AS WELL AS USE CONCIERGE SERVICES

What makes a user interface successful?



*Words by Brad Myers,
Professor at the Human-Computer Interaction Institute,
School of Computer Science, Carnegie Mellon University*

The field of human-computer interaction (HCI) has developed a wide variety of methods, processes and guidelines that have been shown to be successful at helping teams create successful user interfaces (UIs). Probably the easiest path to success is to hire and empower a well-trained HCI professional, since there are now many degree programs that teach HCI skills.

If you want a highly usable and successful UI, the first requirement is to integrate HCI concerns and methods into the development process. For example, an important HCI method is contextual inquiry, which requires watching target users performing their real activities using the system or an analog, and helps teams understand the real requirements for the system from the user's point of view. HCI professionals next recommend iterative design using low- and high-fidelity prototypes, to repeatedly test design ideas with the target population,

exposing barriers and problems early before they are too expensive to fix. Target users are asked to articulate what they are thinking while testing the prototype, so that testers can understand why users are confused or stuck and what they want instead. The HCI mantra is that if the user can't use it, it doesn't work. Testing for usability is just as important as any other kind of quality assurance.

These – and other – kinds of user tests are necessary for a UI to be successful, but they are not enough; you also need a good design. The most successful companies have a culture where design and usability requirements are given equal or even higher priority compared

A FEW GUIDELINES

Consistency: Throughout the interface, use the same words, navigation scheme, colors, etc.

Prevent errors: Design the interface so that users are unlikely to make errors. For example, gray out or remove unavailable choices.

Easy error recovery: Users will still make errors, so error messages should give specific and clear instructions on how to recover.

Make status visible: For example, it should be obvious whether the user is logged in or not, what media is playing, etc.

Easy for novices and efficient for experts: First-time users should be able to figure out what to do from only the displays, whereas experts should be able to skip directly to the desired operation.

with engineering and marketing. HCI professionals also use guidelines to evaluate and improve the UI design. These cover everything from general information architecture issues, including the need to have a clear and consistent navigation scheme across the whole UI, to low-level design choices including which fonts and colors to use. ☒

PEACE OF MIND



Introducing Optelity Care

TrueNorth Optelity Care is a new philosophy for supporting cabin communications systems. Better than a warranty, membership includes exclusive benefits and covers hardware and software. Now your inflight connectivity capabilities will always keep pace with the latest mobile devices, and no more costly surprises.

Talk to us and learn more:

Call: +1 (613) 224-3301

+1 (877) 610-0110

Email: info@truenorthavionics.com

Visit: truenorthavionics.com



© 2016 TrueNorth Avionics, Inc. All rights reserved. TrueNorth Simphonē, Stylus, ClearCall and Optelity are trademarks of TrueNorth Avionics Inc. All other trademarks are those of the respective holders.

TRUENORTH

RETHINKING ENTERTAINMENT

DESIGNERS WHO HAVE CREATED CONCEPTS FOR
ALTERNATIVE ENTERTAINMENT SPACES DISCUSS THE
TECHNICAL CHALLENGES OF BRINGING THEM TO LIFE

THE PANEL



SYLVAIN MARIAT
*head of the creative
design studio, ACJC*



GARETH DAVIES
*design director,
Technicon Design*



JEAN-PIERRE
ALFANO
*founder and creative
director, AirJet Designs*



JACQUES
PIERREJEAN
*design office manager,
Pierrejean Design Studio*





THE VISION

The upper deck of the ACJ380 is the setting for ACJC's Voyage café/theater concept, created by the company's in-house design team, led by Sylvain Mariat. The space is designed to offer an elegant dining/entertainment experience, where passengers eat gourmet food and are entertained by a singer and pianist. Each dining table would feature an interactive touchscreen, where passengers could make their menu selections. Imagery on the 'mood ceiling' would be tailored to match the reception's theme, and would move in response to the music. Passengers could also use the interactive table to share their experience on social networks.

TECHNICAL CHALLENGES

As well as the interactive mood ceiling with active media display, and the touchscreen tables, the concept incorporates a window vibration speaker and GSM communication via a wi-fi network. ACJC says it has already certified some of these technologies for aircraft use, and the others are in development, close to certification.

CURVED SCREENS

A curved 75in HD screen could soon make its way onto an ACJC-completed aircraft. It is just one technological development the company is working on with its partners, along with 4K, virtual reality glasses, and better sound quality. "There is always a time-lag between technologies being available on the ground and being approved for installation on an aircraft, although it tends to be shorter as the manufacturers invest more in R&D than in the past," says Joël Frugier, general manager at ACJC. "The main technological challenge in implementing curved screens and virtual reality is finding the balance between the quality of the video and its fluidity; an increase in one leads to a decrease in the other. Add-ons such as wi-fi can also degrade real-time performance."



THE VISION

AirJet Designs has presented a couple of alternative entertainment spaces. The Casino Jet Lounge was originally designed to provide entertainment to airline passengers on ultra-long-haul flights, but could equally be applicable on private BBJ777s. A blackjack gaming table occupies one side of the space, and a professional croupier would be on board to create a casino-like atmosphere. "The space could be used for corporate events or would be ideal for sports teams or other groups traveling together on charter flights," says Jean-Pierre Alfano of AirJet Designs.

The concept includes transparent glass touchscreens using holographic technology, which could display the flight path or videos, and a touchscreen bar surface, where passengers could place food and drink orders.

Another interesting concept from AirJet Designs is an ACJ320 incorporating an aquarium. Lighting, filtration, heating and feeding features have been integrated into the surrounding credenza. "A motorized mechanism enables the aquarium to be raised and lowered, facilitating tank cleaning and maintenance," says Alfano.

The cabin also features a transparent shower. "The glass separation between the bedroom and bathroom not only gives a spacious feeling, but also integrates a transparent OLED TV monitor, which is linked to the CMS," says Alfano. "When the TV is switched off, the glass becomes transparent again."

TECHNICAL CHALLENGES

The technologies and materials used on the Casino Jet Lounge are compliant with EASA/FAA certification requirements, according to Alfano, although passengers would have to leave the space during turbulence, take-off and landing. "The touchscreen bar is a technological innovation yet unseen in aircraft, but foreseeable," he adds.

The ACJ320's aquarium would be positioned over the aircraft wingbox to minimize weight and balance issues. "The aquarium has been designed to withstand flight turbulence loads and changing cabin pressure during flight at 30,000ft," says Alfano. "A specially designed watertight canopy and cover prevents the aquarium water from spilling during flight." He adds that the technology for the OLED screen is available now.

QUANTUM DOTS

In the pursuit of ever-better image quality, consumer screen companies have turned to quantum dots. "The technology greatly improves image quality in terms of contrast and color," says Nicolas Duchéron, IFEC/CMS product manager at Astronics PGA Avionics. "Major screen manufacturers – including LG, Samsung and Sony – have been using this technology for about a year for their high-end 4K product lines. We are already working on this technology, and will propose 55in and 65in UHD screens based on quantum dot backlighting in 2017."



How important is entertainment to your clients? How often do they want a dedicated area for it?

SYLVAIN MARIAT

Entertainment remains a priority for our customers, on a par with monuments. A dedicated entertainment area is quite a common request. ACJC has always developed fully customized entertainment solutions for its VIP clients. For the latest VVIP ACJ319 that we delivered to an Asian customer, we designed a lounge area with a fully integrated karaoke system, and a zone with two bars hidden behind mirrors.

JACQUES PIERREJEAN

Entertainment is always very important for an aircraft owner, not only for relaxation, but also to support their business activities. For example, one of our customers expected to be able to screen various movies during the flight to promote his international construction projects to his guests. The screens could also be used to present company reports, and information about shareholder activities. Aircraft owners also want to be able to continue working on board, and to be reachable everywhere, making video conferencing a popular option. On all of our aircraft programs, our philosophy is not only to create a nice and cozy interior, but also to enable customers to make a profit from their investment.

GARETH DAVIES

Entertainment is a massive consideration in a private jet, whether it is used for business or leisure. There is demand for both tailored spaces on board and totally portable IFE. Our customers expect the same level of entertainment content and connectivity wherever they are, be it in a domestic setting, a car or a jet.

Q&A: DAVID VELUPILLAI, MARKETING DIRECTOR, AIRBUS CORPORATE JETS

How much demand is there for specialist IFE equipment such as karaoke systems and video game consoles?

There is a demand for specialist equipment, although to a lesser extent than for traditional audio and video systems. Airbus has delivered at least one corporate jet with a karaoke system.

Do you see demand for areas of the cabin dedicated to playing board games and cards?

We do know of one ACJ customer who spends his time playing backgammon when he flies, and of a VVIP ACJ operator that carries a selection of board games, including chess and draughts, for the benefit of its guests.

Have you seen demand for alternative spaces such as a dance floor, golf putting area and casino?

No – most customers want a practical cabin arrangement that is more like their home or office. We did deliver one ACJ with a bar – like the kind some people have in their homes.

Business Jet *interiors* INTERNATIONAL

- › All the latest news ‹
- › Exclusive features ‹
- › Video gallery ‹
- › Recruitment section ‹
- › Image gallery ‹
- › Digital edition and magazine archive ‹



www.businessjetinteriorsinternational.com



THE VISION

The Ixion concept by Technicon Design was designed around the idea of a private jet with a windowless passenger cabin. "Although driven from the technical standpoint of weight reduction and improved aerodynamics, it quickly gave rise to a whole new approach to jet interior design," says Gareth Davies of Technicon Design. Windows and traditional lining panels are replaced with flexible OLED displays covering the walls and ceiling. "This opened up an entirely new and totally interactive experience whereby passengers can be immersed in, and have total control of, the content displayed on the screens," says Davies.

TECHNICAL CHALLENGES

Davies says the design adapts hardware that is already available to new uses. "Much of what we propose – for example passenger tracking to allow digital avatars that follow you around the cabin, gesture control of the environment, parallax barrier technology (which enables you to see two images on one display, depending on the viewing angle) and streaming content from external cameras – is already possible," says Davies. "However, there would need to be advances in optical technology to fully resolve the on-screen first-person perspective as a passenger moves through the cabin."

How do you think IFE will evolve? Will embedded IFE be replaced by tablets and more specialized onboard areas?

SYLVAIN MARIAT

While PEDs are much appreciated, they can't offer the quality and content offered by embedded media servers and large HD screens. In any case, we tend to duplicate what customers can already experience at home, introducing the latest technologies in our designs.

JEAN-PIERRE ALFANO

I would make a clear distinction between VIP/private aircraft and corporate/business aircraft. In the first category, I think the trend will continue to grow in line with what is happening in luxury homes and hotels. Passengers will want to use IFE as they use their TV or home cinema, therefore, I see a greater role for tablets in this case. In corporate and business aircraft, the trend will align with commercial aviation. IFEC is still alive and well in business and first class. Passengers still like to turn entertainment on at the switch of a button, as opposed to taking out their tablet and connecting to some unknown onboard system that they will have to get used to.

JACQUES PIERREJEAN

In the future most aircraft will fly without windows, so interior designers have to drive further research with vendors into the use of cameras to show landscapes and front and aft views. We should be free to focus and zoom in as we wish. This can be done on our iPads, but there are also some new products in the process of certification.

GARETH DAVIES

Satellite wi-fi will play an increasing role, offering fast connectivity that gives people access to on-demand content on PEDs. There are obvious advantages over terrestrial wi-fi as there are no problems managing transmission towers and ISPs across borders. The other major advantage is that hardware can be reduced, saving weight. There is still an argument for embedded IFEC though, as not all customers will board with a fully organized device – they may lack the inclination or time to prepare. However, embedded hardware and content will need to keep pace with change, so hardware interfaces need to be easy to update.



THE VISION

Inspired by the huge dimensions of the BBJ747-800, Jacques Pierrejean of Pierrejean Design Studio set about creating a concept incorporating a mezzanine media lounge/cinema room. "When a customer is thinking about an BBJ747-800, it usually means they are looking for a large and comfortable space to prevent feelings of claustrophobia," says Pierrejean. This is why the designer decided to open up the upper deck, which is often used as an enclosed crew rest compartment, to instead offer an open mezzanine level. The result is a high ceiling in the main lounge, and a cozy mezzanine in which to enjoy movies. The vertical space also provides room to install screens on the sidewalls above the window panels.

TECHNICAL CHALLENGES

"For this concept we would need a new generation of very thin, slightly curved TV screens, to be mounted on the inner lining of the aircraft structure," says Pierrejean. "This technology is not yet available, but a lot of potential customers are extremely interested in a TV wall. Looking at the military market, it seems possible to expect vendors to investigate this kind of product. We would be very keen to work with a team on this idea."



“Are there any other entertainment ideas that could be translated from other industries?”

JEAN-PIERRE ALFANO

There will be a paradigm shift in aviation entertainment: humans will become the focus, rather than machines. In other words, people might place more importance on having an interesting and entertaining conversation with crew members or fellow passengers, rather than the features offered by the latest IFE system.

JACQUES PIERREJEAN

We developed a lot of new ideas for our last yacht program, a 141m motor yacht called Yas. For example, we developed a TV screen table that kids can use to play games, and a wall display that moves in response to your body's movement. We

are open to developing new conceptual ideas with partners. I believe that working with specialists, we could push such technology further, using screens to create 3D areas out of 2D surfaces in aircraft. The technology could be used not only for games and movies, but also to display pictures, materials and messages.

GARETH DAVIES

As demonstrated by the use of OLED screens in our Ixion concept, the latest developments from other industries will always filter through to the aviation sector. The challenge is always to achieve certification in time for customers to benefit before the next disruptive technology changes the game.



Other companies may
just lease you a jet...

Only Comlux offers you the most comprehensive range of business aviation solutions for the most demanding VIP travel needs.



- ✦ Flying your own routes to your own timetable
- ✦ Buying and managing your aircraft personally and professionally
- ✦ Designing and building your own cabin following your own vision
- ✦ Maintaining your asset and its value



This is exactly what our crew, dispatchers, designers, engineers and mechanics do for you everyday at Comlux.

FLY | OWN | CUSTOMIZE | MAINTAIN

www.comluxaviation.com

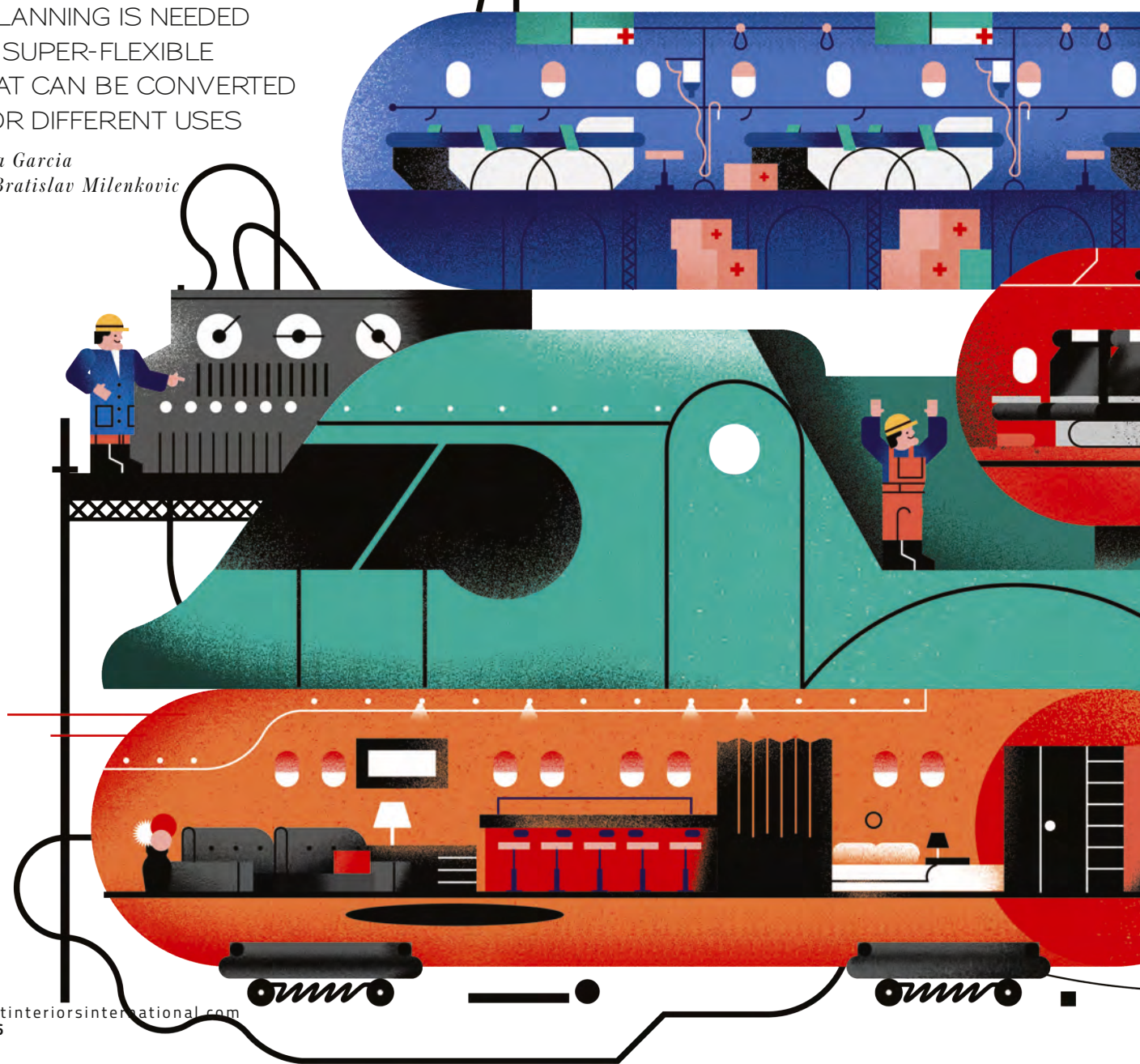


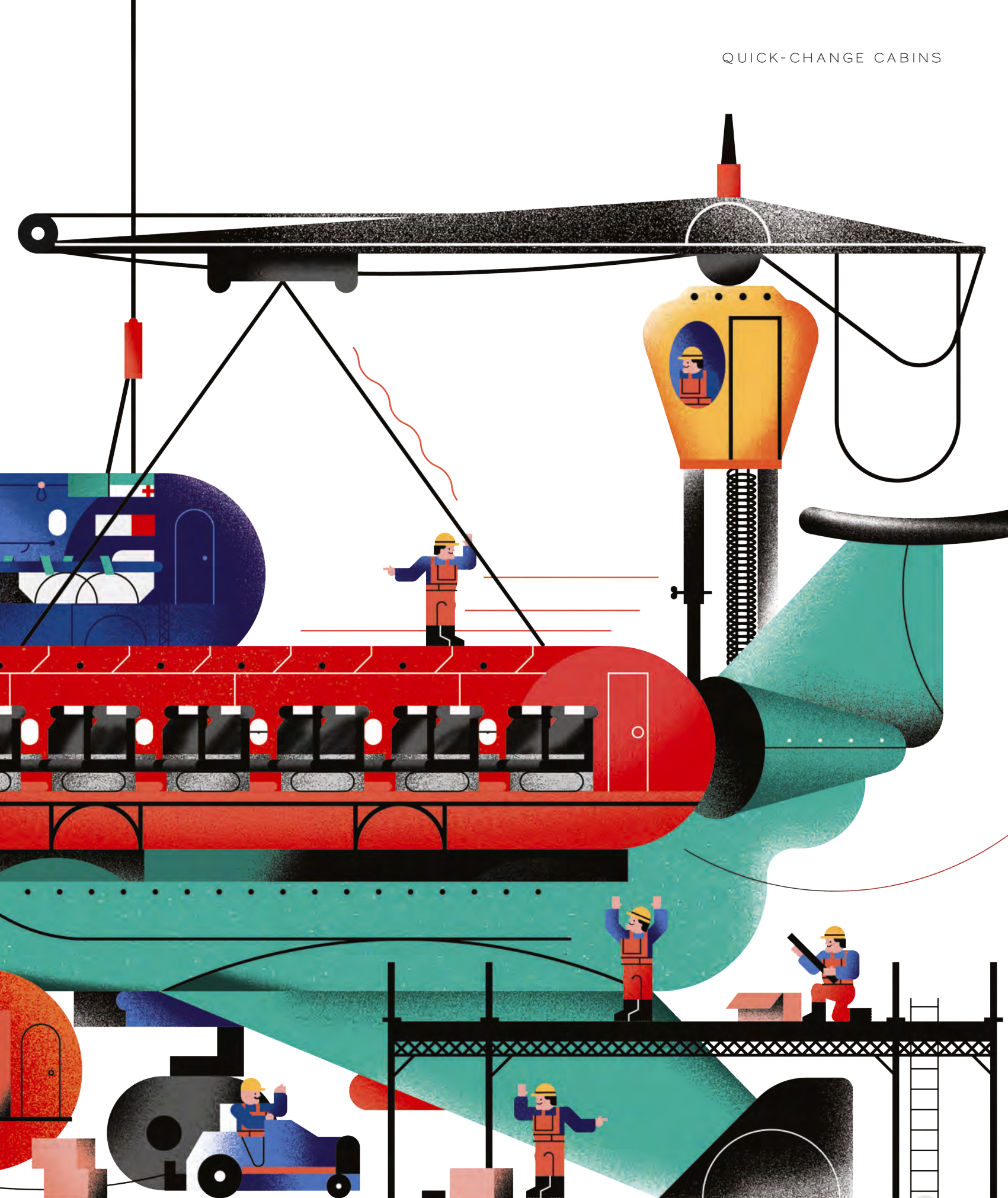
quick smart

CAREFUL PLANNING IS NEEDED TO CREATE SUPER-FLEXIBLE CABINS THAT CAN BE CONVERTED QUICKLY FOR DIFFERENT USES

Words by Marisa Garcia

Illustration by Bratislav Milenkovic





Jacques Pierrejean, founder of Pierrejean Design Studio, has worked on two separate projects that involved transforming the front cabins of commercial airliners into custom VIP suites suitable for the transport of high-net-worth individuals and world leaders. In both cases – an A330 and an A340 – the suite was inserted between the first and second door of the aircraft, separated from the rest of the cabin by a clear divider, and furnished to the standards of a private jet.

Pierrejean says the installation could be completed in a day or a day and a half. The furnishings (including seats, tables and beds) are fixed to a mounted floor pallet, which can be secured to standard seat tracks and then carpeted. “For certification purposes, the completion center has to keep the wiring – for table lamps, reading lights and power plugs – wholly independent of the existing aircraft,” says Pierrejean.

When the VIP modules are not in service, they are stored in custom-made containers to protect their appearance, extending their service life. “The containers can be stowed in the aircraft’s cargo compartment or in the airline’s hangar,” says Pierrejean.

Pierrejean says similar solutions might suit governments and charter operators that occasionally

want to transport VVIPs in aircraft that are usually configured like first- or business-class commercial cabins. “That’s not a comfortable environment to offer a president,” he says.

SELECTIVE CHANGES

Lufthansa Technik has developed a similar solution for narrow-body aircraft – a quick-change VIP cabin that is designed to fit under the overhead bin. Jan Grube, head of Asia sales for VIP and special-mission aircraft at the company, emphasizes that the idea is to work with the aircraft’s existing systems and structures to avoid complications with certification. The cabin is installed on the aircraft’s existing seat tracks. “If you alter the structure of the aircraft, it might affect its resale value, as the aircraft would have a unique modification status within the fleet,” says Grube. “Therefore our kit was designed to be installed without such structural alterations.”

BELOW: LUFTHANSA TECHNIK’S VIP QUICK-CHANGE KIT ON AN A320 AIRCRAFT

BELOW INSET: THE KIT FROM LUFTHANSA TECHNIK CAN ALSO BE INSTALLED ON B737 AIRCRAFT

RIGHT AND INSET: A VIP MODULE DEVELOPED BY MAHLER INDUSTRIAL DESIGN AND OFFERED BY INNOVINT TO AIRLINE CUSTOMERS

“If you alter the structure of the aircraft, it might affect its resale value”





IMAGES THIS PAGE: GEEST DIGITAL - PERSPEKTIVEN



THE BBJ-C

Back in 2009, Boeing Business Jets (BBJ) unveiled the BBJ-C, an aircraft that could be converted from all-passenger to all-cargo configuration in less than eight hours.

"BBJ is currently talking to customers about the viability of the aircraft and believes the market for the aircraft is growing," says Elizabeth Bieri, spokesperson for the company. "BBJ believes the aircraft could be easily used in corporate, government and charter application, and sees the potential in the business aviation market."

A range of layouts and furnishings are available, and trims and finishes can be fully customized. The module can also accommodate IFEC equipment. The kit can be installed by a qualified Part 145 facility, working from a manual provided by Lufthansa Technik, in 8 to 16 hours.

Grube also suggests the commercial galley could be upgraded to support the mission by swapping in galley inserts including coffee makers, rice cookers and inductive cooking surfaces. "It only needs power and the space in the galley," he says.

Grube describes the market for the solution as small and stable, rather than growing. Typically customers are governments, but he believes the kits could attract charter carriers wanting to offer an exclusive experience to top clients. "For example, it could be an additional option for casinos and cruise ship operators, which usually use narrow-body aircraft configured with business class."

HAPPY FAMILIES

Flexible cabins also appeal to some business jet owners. Robert Connolly, director of specification and design for Dassault Falcon Jet, recalls an individual who wanted to convert his Falcon 2000LXS from an 8-seat layout to a 10-seat configuration whenever he took his family on holiday, then back again. "We educated ourselves on the customer's requirements well in advance, then did our due diligence with engineers and delivery," explains Connolly. "We agreed to the work scope, then targeted a delivery date."



SPS AIRCRAFT SERVICES



DUBAI



MEXICO



CHINA



SINGAPORE



FRANCE

Saving our Customers up to
\$30,000,000 **PER YEAR**

by providing our cleaning & protection products and repair services

Leather Cleaning & Protection Products
Leather Ink Removal & Ink Prevention Products
Textile & Carpet Cleaning & Protection Products
Multipurpose Cabin Cleaners
Leather Hides Supply
Plastic Repair Services
Wood Laminate Repairs
Cut & Sew Services
Biocide Disinfection Products
Leather Repair & Restoration Services
Bespoke Cabin Touch Up Kits

SPS AIRCRAFT SERVICES will be exhibiting at
Aircraft Interiors Expo
Our stand is 6C109

5-7 April 2016
Hamburg Messe, Germany

Aircraft **EXPO**[®]
interiors

Although Dassault offers aircraft with both 8- and 10-seat layouts, designing a cabin that could change between the two configurations required additional certification. “We had to certify both floorplans to meet 16g requirements, which involved a bit more engineering than normal,” says Connolly. “Once the interiors were completed, we had to run the aircraft through the flight line twice.”

SEAMLESS DESIGN

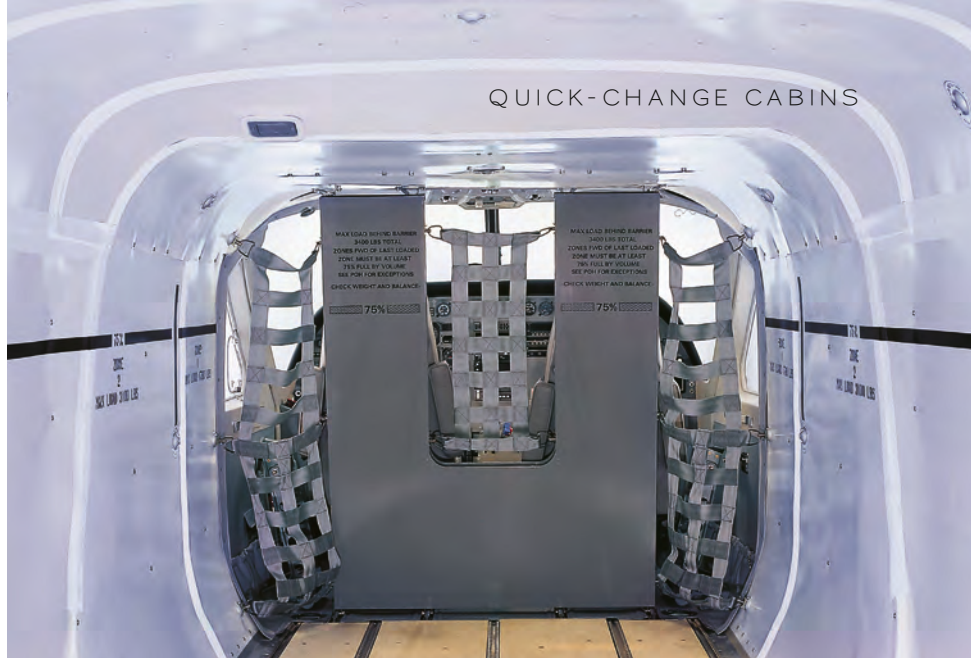
Ensuring that the aesthetics of the cabin were not compromised required careful attention to detail. “The floorboards are configured for a dining room,” says Connolly. “We had to put in additional seat tracks to support two individual seats, each of which had a 26in-wide footprint. It’s the same carpet, cut in such a way that when you take out the dining room legs, magnetic plugs can be installed with carpeting on top of them. When the dining room configuration is out, these plugs are well concealed visually.”

With fine-tuning, Connolly says the Dassault specification team was also able to reduce the time required to change the cabin to around two hours, without sacrificing appearance. “It’s one thing to design for ease of removal, but you may lose aesthetics,” says Connolly. “In this case, we achieved both.”

While this was a unique case, Connolly believes there could be a greater market as owners consider the resale value of alternative cabin layouts.

SPECIAL CARRIAGE

Another potentially useful incarnation is a cargo configuration. Pierrejean says one of his charter customers used a BAe 146 to transport passengers during the day, and put the aircraft on cargo services overnight. Passenger seats were removed, windows were protected



“It’s one thing to design for ease of removal, but you may lose aesthetics”

ABOVE: A CESSNA CARAVAN IN CARGO CONFIGURATION

BELOW AND BELOW RIGHT: A CRJ 200 AIRCRAFT COMPLETED BY FLYING COLOURS CORP, FEATURING A QUICK-CHANGE DIVAN/MEDEVAC UNIT

with panels, and special cargo pallets were fixed to the floor tracks and further secured with cargo nets.

But while other experts interviewed for this article have also run across quick-change cargo aircraft, most said these were most often used by the military.

EMERGENCY RESPONSE

Pierrejean has also worked on medevac projects for VIP aircraft, usually involving the creation of a medevac kit that can be installed in place of the master bed.

Sean Gillespie, executive vice president of Flying Colours Corp, says the company receives a lot of requests for partial medevac changes on Bombardier Global and Challenger aircraft. “It’s not overflowing demand,” he qualifies. “On an annual basis, we have 4-6 discussions with clients, governments and OEMs.”

Flying Colours Corp customers can expect a medevac kit changeover to be completed in about 6 to 8 hours. “There’s always complexities in how to fit the equipment,” says Gillespie. “You’ll have seat tracks for certain installations; you have to work on both configurations; the electrical systems are geared to a particular interior; and you have to make sure people





STRETCHER LIMO

Lufthansa Technik's Patient Transport Unit (PTU) was designed for installation on many Airbus, Boeing and Bombardier aircraft types, as well as C-160 and C-295 military transport turboprops.

The PTUs are, in effect, self-contained intensive care units. They can carry up to 13,000 liters of oxygen in self-contained trolleys that only require plugging in, without the carer handling the pressurized oxygen bottles. The bed is adjustable. In addition, the unit includes the necessary power plugs and converters to adjust for variable power frequencies and medical equipment's voltage requirements.

Installation requires the removal of 4-5 rows of economy class seats, or the bed in a VIP cabin. Depending on the aircraft model, and the original cabin layout, it can also require an adaptor to fit the seat tracks.

Oliver Thomaschewski, head of the Seating and Structures business unit at Lufthansa Technik, says most demand comes from government and military customers. But he suggests charter operators might use the kit to support medevac use. "There is a high demand and it is growing," he says.

can reach the oxygen. I find the more you do this, you build up your experience."

Textron Aviation offers several special-mission kits for its aircraft, including certified quick-change air ambulance, cargo and surveillance options. Customer demand for these is "somewhat common, more so outside the USA," says Christi Tannahill, senior vice president of interiors at Textron Aviation. "The air ambulance conversion is the most typical special-mission use for our Citation Jets. The King Air and Caravan special-mission interiors are also commonly used for air ambulance, as well as for utility transport."

As well as the certified kits, customers can work with the special-mission team if they have specific needs. The kits are delivered with full documentation, a floorplan, and weight and balance information. Tannahill says conversions can be made in approximately an hour.

PRACTICAL CONSIDERATIONS

Vincent Rongier, head of refurbishment at Jet Aviation Basel, describes medevac as a "niche" market, although he says some governmental fleets may include more than one quick-conversion system. Rongier says Jet Aviation aims to enable medevac cabin changes in 1 to 4 hours, but large monuments and other structural impediments can extend

that time. He cautions that emergency conditions can lead to interior damage, so overhanging components should be protected or at least considered in both functional designs.

FAI Aviation Group operates charter and air ambulance flights. Siegfried Axtmann, the company's CEO, believes core demand for medevac kits comes from the government sector. "The challenge is to enable conversion from passenger to ambulance configuration in the most economical way, with the minimum of labor," he says. Scheduling conflicts can make these cabin changes impractical for operators, Axtmann adds. "Air ambulance requests are always ad-hoc, and they need to be ready for tomorrow, whereas charter service is booked several days in advance," he says. "An air ambulance request might conflict with a VIP charter booking, so the trend is for dedicated aircraft." ✕

"The challenge is to enable conversion with the minimum of labor"

BELOW LEFT: A CESSNA GRAND CARAVAN EX WITH SURVEILLANCE INTERIOR

BELOW: THIS EMBRAER LEGACY 600, COMPLETED BY JET AVIATION IN 2012, CAN BE CONVERTED FROM A MEDEVAC CABIN TO A 14-SEAT CHARTER INTERIOR IN ONE WORKING DAY



LEARN MORE ABOUT OUR ADVERTISERS **NOW!**



FREE SERVICE!

Visit **www.ukipme.com/info/aimbj** to
request exclusive and rapid information
about the latest technologies and
services featured in this issue

www.ukipme.com/info/aimbj

Business Jet
interiors
INTERNATIONAL

THE UPDATED G600
MOCK-UP REFLECTS
GULFSTREAM'S FOCUS ON
CUSTOMER FEEDBACK AND
CABIN FLEXIBILITY

Words by Izzy Kington

mix and

and match

Uisitors to NBAA in November 2015 were able to nose around a new mock-up of the G600. Gulfstream has done a fair bit of tweaking since the first mock-up was presented in October 2014, largely to incorporate feedback from its customer advisory board (CAB), which meets roughly twice a year. The second mock-up is enabling Gulfstream to validate these changes.

"We are really fortunate that our company is investing pretty heavily in mock-ups and prototypes to enable us to bring a mature product to market," says Tray Crow, director of interior design at Gulfstream. "The mock-up enables us to look at various configurations and check items. In addition we have several prototypes, which were built before the mock-up stage. At our facility in Savannah, Georgia, USA, we have a full interior lab that is set up just like an aircraft with the representative systems, wiring and fuselage. There we perform fit and functionality checks for all systems – from IFE to oxygen to communication."

As well as the mock-up, CAB members – including customers, pilots, maintenance personnel and flight attendants – have had the full tour of Gulfstream's interior labs. "We make it an active session to gather feedback," says Crow. "We ask about likes and dislikes and explain some of the many changes we have made."

PLEASING A CROWD

Gulfstream has also listened to the views of many others, including tradeshow visitors. "Hundreds – maybe even thousands – of people have contributed feedback over the course of the program," reveals Naveed Aziz, director of completions research and development at Gulfstream.

For Crow, the key takeaway is that clients have a wide range of needs. "We need to provide a flexible interior with multiple options, to ensure that we satisfy the needs of our customers' various missions," he says.

The changes made since the first mock-up also apply to the G500, which has the same fuselage cross-section as the G600 but offers three cabin zones instead of the longer G600's four. "As appropriate we will take the updates to other platforms as well," says Aziz.

BELOW: THE AIRCRAFT WILL USE GULFSTREAM'S PROPRIETARY CMS, AND WILL ALSO OFFER SATCOM AND HIGH-SPEED INTERNET

The G600 and the G500 both have 14 windows



WATER WORKS

As on the G650, a shower will be available as an option on the G600. It will have its own built-in 10-gallon heated water tank, as well as a link to the aircraft's main 30-gallon tank. "Users will have to balance aircraft system water use against shower water use," says Naveed Aziz.

Technological developments can soon be expected in this area, believes Aziz. "There are some more changes coming to the market," he says. "Greater water capacity is definitely one, and being able to heat water more quickly is another. There are also a few projects in progress looking at lighter materials for showers."



“We need to provide a flexible interior with multiple options, to ensure that we satisfy the needs of our customers’ various missions”

SLIDING LIDS

So what exactly has changed? For a start, the sideledges have been made wider to accommodate more storage for small personal items. Storage areas will have sliding lids. “Sliding lids provide more space and the lid is out of the way while you are using that space,” says Aziz. “That got positive feedback from customers.”

Below the ledge, Gulfstream added more storage, perhaps for tablets and laptops. “We also added ample power and USB outlets around the seating area,” says Aziz. The company is looking into inductive charging, although the technology may not be viable in time for this program’s launch. “It’s at the research and development

stage,” says Aziz. “Induction adds emission fields, so we are looking into that. As long as we can get to a point where it has no adverse effects on the aircraft systems, we definitely want to offer it.”

ABOVE: BY CUSTOMER REQUEST, THE CONFERENCE TABLE’S PEDESTAL HAS BEEN MADE NARROWER, YIELDING MORE LEGROOM

stage,” says Aziz. “Induction adds emission fields, so we are looking into that. As long as we can get to a point where it has no adverse effects on the aircraft systems, we definitely want to offer it.”

SLIM FIT

Another change to the mock-up, made following internal feedback, was to make the passenger service unit (PSU) slimmer. “We worked to repack some of the components of the PSUs,” says Aziz.

The seats have been subjected to a concerted effort to enhance comfort, ergonomics, detailing and shape. They can be personalized for occupants ranging from a 95th



EST. 1983

WORLD-RENOWNED FOR A REASON.



PROVIDING LUXURY AND BESPOKE CABIN
AMENITIES FOR MORE THAN 30 YEARS.



FOR INQUIRIES: [INFO@DAHLGRENDUCK.COM](mailto:info@dahlgrenduck.com)

DALLAS, TEXAS ♦ +1.972.478.5991 ♦ DAHLGRENDUCK.COM



WHATEVER YOU WANT

In terms of floorplan options, Tray Crow believes there are “more than enough permutations to satisfy our clients’ needs and desires”. As well as all the seating possibilities, customers can decide whether they want to include a crew rest, and if they want a forward or aft galley.

However, Gulfstream is open to going beyond the options if requested. “The cabin monuments are set up in a way that we feel optimizes the space,” says Crow. “Having a crew rest area and a galley of this size is optimal for the range of the aircraft. However, if a customer prefers a larger galley or lavatory, or if they want a custom element, we are open to finding a solution.”

At Mach 0.85, the G500 offers a range of 5,000 nautical miles, while the G600 has a range of 6,200 nautical miles

BELOW: GULFSTREAM IS LOOKING AT MULTIPLE FAUCET AND SINK OPTIONS TO ENABLE CLIENTS TO PERSONALIZE THE LAVATORY

percentile male to a 5th percentile female. “We paid attention to aspects including the seat cushion height, the arm height, how the leg rest functions, and the overall back angle,” says Aziz.

The company also wanted to develop plenty of customization options for the seats. “If we know a client often sleeps in their seat, we may steer them toward a style that has a flatter surface and less bolstering,” says Crow. “We are offering a variety of foam styles to accommodate a multitude of uses.”

“We want to make sure that customers leave here with what they want,” says Aziz. “If that drives us into even more options, then we will accommodate.”

For the same reason, stone and wood selections have been added to the list of flooring options for the galleys and lavatories, joining carpet and vinyl. Crow says there is not much of a weight difference between these options. “If the customer wants something that is maybe a little more maintenance friendly, they might go with a harder surface flooring, but some want something that is soft on the foot throughout, so they would choose carpet,” he explains.

The stone and the wood flooring are both supplied by F/List, as on the G650. The stone option is showcased on the mock-up in the entryway and forward lavatory.



CENTER: A LOT OF WORK HAS GONE INTO MAKING DRAWERS AND CABINETS OPERATE MORE QUIETLY

ABOVE: GULFSTREAM HAS TESTED THE GALLEY OUT ON FLIGHT ATTENDANTS, SIMULATING SERVICE IN ITS INTERIOR LABS



“We gave our customers a totally blank canvas and they laid out the whole galley”

WHO'S THE FAIREST OF THEM ALL?

There are two lavatories on board. In the aft lavatory, the mirror has been raised, based on feedback on the first mock-up. “It’s a more convenient position for the user, and it has allowed us to open up storage below,” says Crow. “We also added a back-lit miscellaneous storage area behind the sink. It makes toiletries easily accessible and also adds a little surprise and delight.”

Changes between the two mock-ups’ galleys were made to showcase different options. While the refrigerator in the first galley was at waist height (a convenient position for attendants, and yielding storage below the countertop), in the second galley the refrigerator is below the countertop, giving more counter space. “We gave our customers a totally blank canvas and they laid out the whole galley pursuant to their needs,” adds Aziz. “And we have since done simulations in our labs with flight attendants. The response has been overwhelmingly positive.”

RIGHT: BOTH AIRCRAFT CAN ACCOMMODATE 18 PASSENGERS AND THREE CREW

BELOW: OPTIONS FOR THE GALLEY INCLUDE PLACING THE REFRIGERATOR OVER OR UNDER THE COUNTERTOP

The cabin altitude is approximately 4,850ft when at 51,000ft

G500 AND G600 TIMELINE

2009:
Development begins

OCTOBER 2014:
Program announced;
G600 mock-up unveiled

NOVEMBER 2015:
Second G600 mock-up unveiled

EARLY 2016:
Design freeze expected

2017:
G500 certification expected

2018:
G500 service entry expected;
G600 certification expected

2019:
G600 service entry expected

Gulfstream has built two manufacturing facilities in Savannah, Georgia, USA, for the G600 and G500

temperature variations, but then you could also opt for RGB lights if you want to dramatically change the colors,” says Aziz.

PEACE NEGOTIATIONS

Noise was another battleground. Gulfstream prides itself on the quietness of its cabins, but Aziz recognizes that little noises become more prominent the quieter the overall cabin. Therefore, the

company concentrated on making moving parts quieter where possible. “We have paid attention to how doors sound when they close, and how cabinet latches sound when they open and close,” says Aziz. “We looked at how slides were being used and where noise was being generated. We made prototypes and worked with our suppliers, asking, ‘What if we made this a little bit smoother at this closing point?’ Or, ‘How can we change the design of the striker?’”

Insulation was added between attachment points and the units they secure. Gulfstream uses a vibration table to assess what noises are generated by a specific component, and to see how effective its countermeasures are.

The company is now testing all the improvements on its CAB; more changes may be made. “We have to balance the feedback coming in with how close we are to freezing the design, but we are constantly adding things,” says Aziz. “If it makes sense, then we definitely change it.”

LIGHT RELIEF

A key focus throughout the program was how the lighting complements the function of each area. “We have done a lot of focused analysis,” says Crow. “One example of this is investigating if, when a storage box is opened, the intensity of the light is appropriate for the use.”

“We have studied how the light disperses, its intensity and its color temperature,” says Aziz. “For example, we paid a lot of attention to what type of cool or warm light

“We looked at how slides were being used and where noise was being generated”

would be needed for walkthrough areas versus what would be needed for areas you would relax in.”

There are different settings for day and night; currently this is achieved manually through the hardware, but Aziz says Gulfstream is also looking into automatic adjustment options for the future.

Flexibility was crucial with the lighting, in terms of providing plenty of options and then enabling customers to adjust light intensity and color temperature in flight. “For the upwash and downwash lights you could have

Garrett

Leather

*Outstanding selection Extremely helpful
Innovative Timely delivery High quality
Terrific Professional Wonderful customer service
Sincerely appreciate their business ethics
First choice Go-to source*



*top
notch
product*

Luxurious Leather. Exceptional Service.
Awe-inspiring Interiors.

*Superb
company,
valued
partner*

*Reliable
Courteous Friendly wonderful
Very pleased wide range of colors and textures
Prompt Flawless, consistent color
Best hides 100% of the time Good Yield*

Visit Garrett Leather at EBACE in Geneva, Switzerland May 24-26, space #X132

View inventory, check prices, and place orders online. Apply today.

garrettleather.com/applybj

800.342.7738

electric

ELECTRIC AIRCRAFT DEVELOPMENT IS GAINING PACE, BUT WILL THE TECHNOLOGY EVER BE APPLICABLE IN THE VIP AND BUSINESS JET MARKET?

Words by Michele Traverso. Illustration by Chris Madden





dreams

Currently, electric propulsion is limited to small and light aircraft. This is because batteries have a fraction of the energy density of fossil fuels. The number of batteries needed to power the average transport aircraft at an acceptable speed, and for long enough to provide a decent range, is prohibitive in terms of weight and volume, even allowing for new airframes.

“There is no indication that batteries will one day provide enough power for a business aircraft’s needs,” says Pierre Duval, Airbus Group’s spokesman for the E-Fan electric trainer program. “The only way to power a heavy aircraft would be through a mix of sources that could deliver high power for take-off and long-range energy for cruise.” This could mean using small turbines or fuel cells to generate electric power, which is then distributed to electric engines. Batteries would only be used for the more energy-intensive phases of flight – take-off and climb.

LESS THAN A DECADE AWAY?

Some in the industry believe hybrid electric propulsion could be implemented in an 8- to 10-seat aircraft by 2025. Aside from the environmental benefits, the main impetus, says Duval, is the potential for aerodynamic gains. “There



RIGHT: THE CONNECTED COCKPIT CONCEPT BEING EVALUATED FOR THE AIRBUS GROUP'S E-FAN 2.0 TWO-SEAT ELECTRIC AIRCRAFT

“The only way to power a heavy aircraft would be through a mix of sources”

GLIDERS AND TRAINER AIRCRAFT

It’s possible to buy and fly electric aircraft today, but given the constraints of today’s battery packs, range and applications are limited. Gliding is one such application – motor gliders only need to motor up to a few hundred meters, before folding their propeller blades away and soaring great distances. The battery packs retain some energy in reserve for safety, for example if pilots need to wait to land. Models include the Antares from German company Lange Aviation, and the Silent Elektro from Italian firm Alisport.

Pipistrel, a Slovenian company known for its propeller aircraft and motor gliders, has 14 orders for an electric trainer aircraft, the Alpha Elektro (pictured).

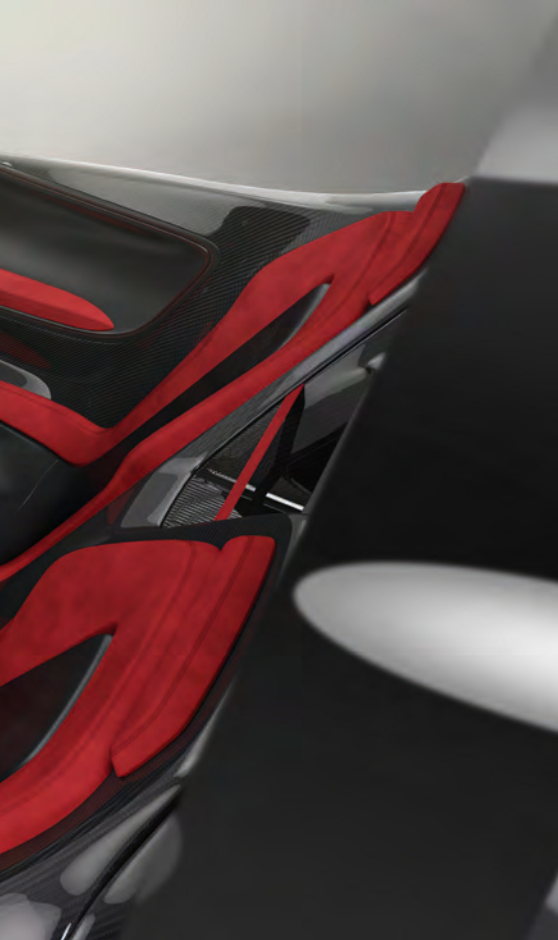


Pipistrel is currently in the flight testing stage, working to gain certification for the aircraft. The Alpha Elektro has a 60kW engine and 126kg of batteries, with a density of 200Wh/kg, which Pipistrel says should give about an hour of range plus 30 minutes’ reserves.

is no real reason to switch to electric propulsion on large aircraft if you do not benefit from the ability to distribute power in a way that generates an aerodynamic plus,” he says.

Rather than being powered by maybe two or three jet engines that need to be a certain size to be efficient, hybrid-electric aircraft could feature a larger number of smaller electric motors distributed across the wingspan. The efficiency of electric engines is not tied to their size.

“The industry is already on the path to hybrid airliners, supported by the More Electric Aircraft initiative,” says Simon Taylor, chief engineer for electrical systems at Fokker Technologies. “The most electric Part 25 aircraft is the B787. However, more electrification can lead to more heat dissipation – which, coupled with the scalability of current technology, is a challenge for implementation on smaller airframes. This is partly why there



BELOW LEFT: THE AIRBUS GROUP'S E-FAN DEMONSTRATOR FEATURES ELECTRIC MOTORS POWERED BY LITHIUM-ION 18650 BATTERIES ON THE WINGS

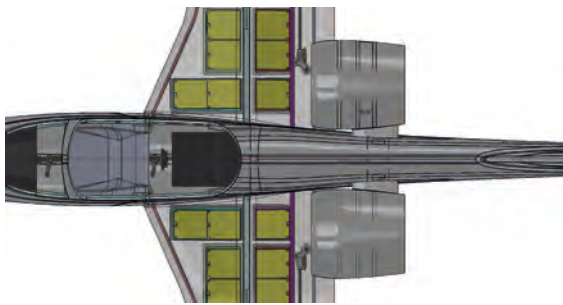
BELOW RIGHT: SOLAR FLIGHT'S SOLAR-ELECTRIC VERSION OF THE SIX-SEAT PARTENAVIA OBSERVER

its speed is likely to fall short of the VIP/business market's expectations, contends both Taylor and Joris Van Bogaert, whose Masters thesis at Delft University of Technology explored the benefits of hybrid-electric regional aircraft.

NEW APPLICATIONS

Duval thinks hybrid-electric aircraft could find a niche in short shuttle flights in areas where noise is a sensitive issue, for example within a city, between tranquil resorts or over mountainous terrain. "It could be interesting business-wise, if you take into account the limits on noise over cities," he says. He is not alone in this view. "The limitation on range and passengers could lead to innovations in the system, for example closer hubs and scheduling," says Taylor. "This could also enable smaller platforms in the 4-6-passenger segment."

Cabin changes could be dramatic. "The aircraft shape will certainly change, so too the



is a focus on increasing voltage and reducing power loss in electric and electronic equipment."

Taylor says that currently, a high level of electrification is not an attractive option for smaller aircraft because of the impact on performance for smaller gas turbine engines. "Hybrid platforms are more attractive because they can schedule non-propulsive and propulsive sources as well as the aircraft's electrical loads," he says.

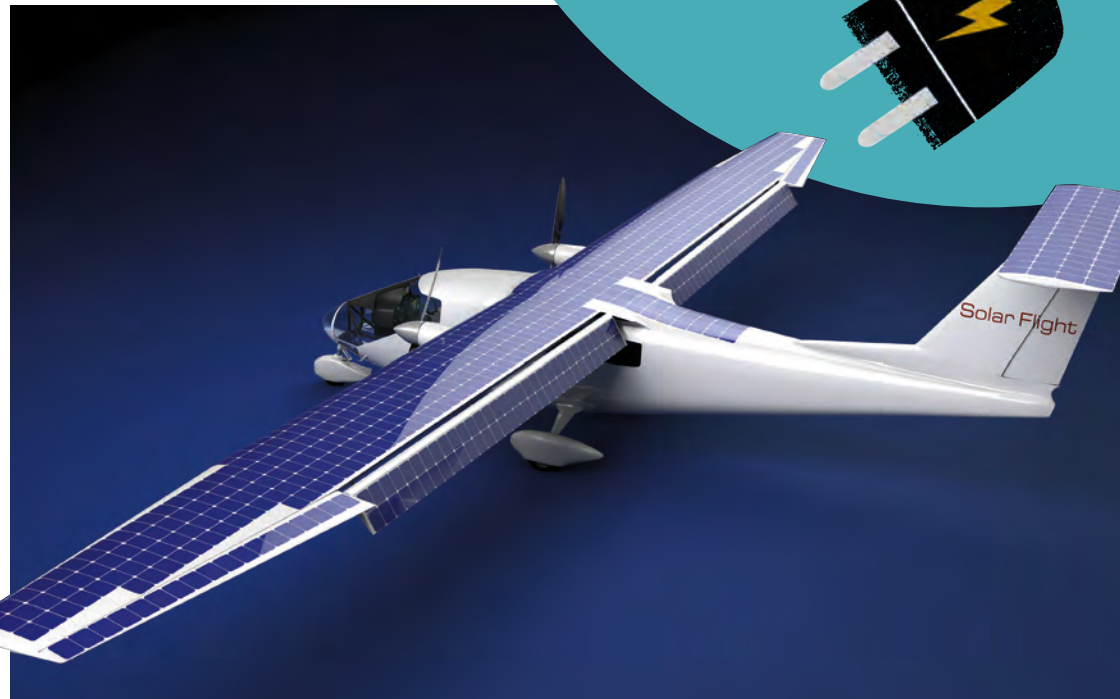
While a hybrid-electric large aircraft might become feasible technically,



A TRUE PIONEER

Eric Raymond (pictured above) of Solar Flight is a US engineer in his 50s, who enjoys a cult status among the solar and electric flying cognoscenti. In 1990 he built a solar electric motor glider and flew it across the USA. He's been involved in almost every high-profile electron-propelled aircraft, from NASA's Helios to Solar Impulse. Recently, he built a twin-seater that can cruise under solar power alone.

Raymond's dream is to make a solar-electric version of the six-seat Partenavia Observer. The full extent of the wing and tailplane would be covered in solar panels and the best lithium batteries, and a hybrid generator in the baggage compartment area would extend range.

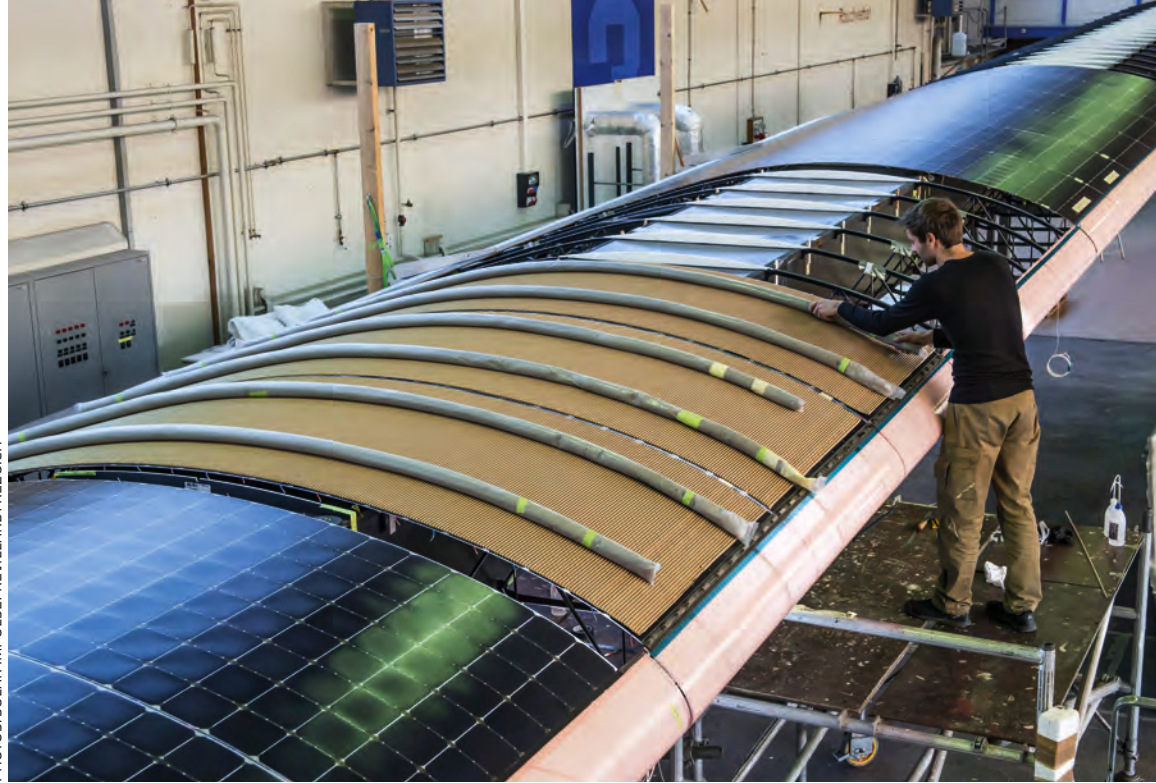


ELECTRIC AIRCRAFT

RIGHT AND BELOW: SOLAR IMPULSE'S WINGS ARE FITTED WITH 17,248 MONOCRYSTALLINE SILICON CELLS, WHICH CONVERT SOLAR ENERGY INTO ELECTRICITY. THIS IS SENT TO THE AIRCRAFT'S FOUR MOTORS, WITH THE SURPLUS STORED IN LITHIUM POLYMER BATTERIES



PHOTOS: SOLAR IMPULSE/REVILLARD/REZO.CH



positioning of windows, and there may even be no windows at all," says Duval. "In this case, the design of the cabin will have to take into account the fact that the outside view may only be provided through screens."

There would also be new safety issues. For example, high-voltage cables inside the aircraft would need to be integrated in such a way as to ensure the safety of both passengers and maintenance technicians. Electrical interference would also have to be considered. "The entire electrical propulsion system will have to be shielded to eliminate interference, especially when high voltage is used," says Van Bogaert. "This might indeed pose some major problems in the design, but it is achievable."

There are no alternative approaches, according to Van Bogaert. "You simply need electric cables carrying a lot of power; reducing the voltage would result in very heavy cables," he explains. Taylor says this is why some in the industry are pursuing superconductivity. "The cable

"The entire electrical propulsion system will have to be shielded to eliminate interference"

length can be minimized by careful placement of the battery, electric motor and other electrical components," says Van Bogaert. He adds that battery cooling air could be used to heat the cabin.

SUPPORT STRUCTURE

Another key issue is infrastructure. "Fuel is not only easy to put into an aircraft, but it is also very flexible on the ground, and the infrastructure is already here," says Duval. "Loading enough electric power or other materials (for example hydrogen for fuel cells) implies building a new delivery system, everywhere. That won't be an easy or cheap task."

But who can bring about such monumental changes? Taylor argues that non-incumbents may enter the market with a disruptive solution, but Duval says, "Only large corporations have the means to make it happen, by gathering experts and adding credibility to the game." However, he does admit that "new ideas won't come easily from large entities that are already fully involved in improving current technologies, at high cost." ☒

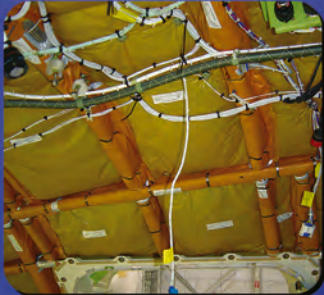
BUILT TO SCALE

One of the largest benefits of electric propulsion is scalability of engines – whether there are one or 20, there is very little difference in terms of weight or wiring. Unlike turbines, electric engines don't lose efficiency when reduced in size, giving engineers a freer rein in terms of how many engines to place on an airframe, and where.

This freedom is clearly exemplified in a promising NASA concept, SCEPTOR. Build on an Italian Tecnam P2006T,

normally propelled by a couple of Rotax 100hp engines, the SCEPTOR aircraft instead has 14 smaller engines attached to the leading edge of the wing. As not all of the engines will be needed for cruise, after take-off, the propeller blades of some of the engines will be folded back to minimize drag. The aircraft is designed so that air flows directly over the lift-producing part of the wing, all along its span, increasing the lift-to-drag ratio and ultimately efficiency.

AEROCON



CABIN INTERIOR NOISE REDUCTION

- AEROCON TAKES A COMPREHENSIVE APPROACH TO MAKING CABIN INTERIORS QUIET.
- THERMAL /ACOUSTIC INSULATION
- AIR SYSTEM NOISE REDUCTION
- INTERIOR TREATMENTS
- FLOOR TREATMENT
- COMPLETE INSTALLATION KIT
- TAILORED TO FIT CUSTOMER REQUIREMENT
- BEST PERFORMANCE FOR THE WEIGHT
- MINIMUM INSTALLATION TIME
- ON-SITE TECHNICAL SUPPORT
- AVAILABLE FOR ALL AIRCRAFT
- MEETS CFR 25.853 (a), 25.856 (a) and 25.856 (b)



WINDOW SHADE SYSTEM

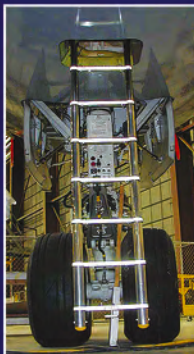
- ELECTRICAL AND MECHANICAL SYSTEMS AVAILABLE
- SINGLE AND DUAL SHADE OPTIONS
- EASE OF OPERATION AND DEPENDABILITY
- CUSTOM COLORS AND DESIGNS
- ELECTRICAL COMPONENTS MEET OR EXCEED RTCA DO160 REQUIREMENTS
- MULTIPLE SWITCHING OPTIONS, EASILY NETWORKED WITH CABIN MANAGEMENT SYSTEMS FOR INDIVIDUAL OR GROUP OPERATIONS
- FAA STC / PMA CERTIFICATION
- OPTIONS MEET OR EXCEED OSU 65 / 65 REQUIREMENTS
- 100% CUSTOMER SERVICE
- 99% BLACKOUT
- QUIET OPERATION



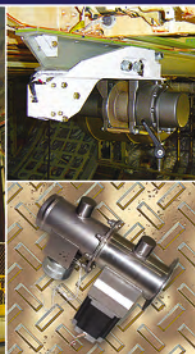
ON BOARD CARGO HOIST

ON BOARD AIR STAIRS

CREW REST COMPARTMENT



CREW LADDER



AIR - FLOW CONTROL



BOEING 737 AIRSTAIRS



AIRSTAIRS LIFT



B747-8 AIRSTAIRS / LIFT



SPECIAL PROJECTS



AEROCON

Aerospace Consultant Engineering – Aviation Technical Research Group

7716 Kester Avenue Van Nuys, CA 91405-1104 • p 818.785.2743 • f 818.785.2753 • sales@aeroconengineering.com • www.aeroconengineering.com

Design by

Mariat

SEVERAL INGENUOUS
SOLUTIONS WERE ENGINEERED
BY ACJC FOR AN ASIAN VIP'S
ACJ319 – INCLUDING FIVE PRIVATE
MINI-SUITES FOR HIS FAMILY AND
FRIENDS, JAMES BOND-STYLE
HIDDEN MINIBARS, AND A 'SWISS
ARMY KNIFE' DIVAN

Words by Izzy Kington

little

ENTRANCE

Passengers are welcomed onto the aircraft with illuminated Chinese ideograms and a back-lit wood and resin sign showcasing the 24-carat gold signature of Sylvain Mariat, head of ACJC's creative design studio. Mariat says his signature was included not because "all designers are maybe a little bit megalomaniac" but at the customer's request, after seeing 3D renderings of the proposed design. "At the end of the meeting he said, 'May I say something?'" recalls Mariat. "I thought maybe he wanted to change the carpet or something. He said, 'I want your name in my aircraft'. We were very happy because it was a show of confidence from the customer."

The area also features a crew rest on the left-hand side, and a two-seat cinema area on the right. The latter features a drop-down armrest so that the two seats can be converted into a 1.6 x 2m sleeping berth.

The smoked oak veneer used throughout was finished with 15 layers of varnish. "The number of coats was not easy to manage because we had to allow time to do it correctly," says Mariat.

wonders



MINI-SUITES

The customer wanted five mini-suites for his friends and family, enclosed with full-height partitions and sliding doors. Each has an electric seat, which is 85cm wide and 2m long at full recline; a 32in HD screen; personal storage; and particularly deep cupholders. The customer asked ACJC to design overhead luggage bins that would enable people to stand inside the suites. ACJC also designed similar solutions for the crew rest and cinema area, with the difference being that the bins there have foldable doors whereas the ones in the mini-suites are sliding.

The mini-suites are considered closed compartments, so ACJC worked closely with the certification authority to address emergency egress and compression requirements. "We needed to create venting areas so that in the event of rapid decompression, the delta in air pressure between the mini-suites and the rest of the cabin is equally balanced," says Sébastien Burnay, senior program manager at ACJC.

The suites' doors are monitored through the cabin system so that crew can ensure they are locked open during taxi, take-off and landing. Removable flaps on the doors serve a dual safety purpose. "We were required by the certification authorities to ensure that in the unlikely event of the door being stuck in an emergency, the passenger can push this flap and get out," says Burnay. "The flap will also open in the case of decompression, creating a venting area. We had to work a lot to create flaps that aren't visually obtrusive, as well as a mounting system that would release them with the force of decompression." Burnay also says the mini-suites were challenging because many devices had to be integrated in a limited space.

ACJ319 TIMELINE

NOVEMBER 2013:

First technical meeting;
aircraft arrives at ACJC's facility

MARCH 2014:

Critical design review

AUGUST 2015:

Aircraft delivered to the customer



ALCANTARA®

has landed in the USA!

*Offered globally and now exclusively
in the USA for aviation by Perrone Aerospace*



PERFORMANCE LEATHERS & TEXTILES

For more information contact us
by phone at 1-518-853-4300
or email at sales@perroneaero.com
www.perroneaero.com



EBACE

24-26 MAY 2016 | GENEVA

Join European business leaders, government officials, manufacturers, corporate aviation department personnel and all those involved in business aviation for the European Business Aviation Convention & Exhibition (EBACE2016). Visit the EBACE website to learn more and register today.

REGISTER TODAY:

www.ebace.aero/businessjetinteriors



LOUNGE

Between the suites and the lounge is a storage space and a lavatory. The front part of the lounge is given over to entertainment, featuring a three-place divan, four single seats and a 46in screen. Mirrors incorporated in the bulkheads slide down to reveal two minibars and a storage space. "The client wanted to have something like in a James Bond movie, to surprise his guests," says Mariat. Burnay says it was challenging to get the mechanism right: "It had to be silent, easy to use, and give a feeling of quality in operation," he says. Mariat adds that it was important to manage the weight of the installation.

The aft part of the lounge is intended to facilitate quiet discussion, and features a club two with a folding table (the rigidity of which the client was very particular about), plus a snug with two facing two-place divans. The latter is surrounded by a half-height rather than a full partition, so as not to interrupt the feeling of spaciousness in the lounge. Following this are another mini-suite and a similar space intended as a private office.



IFEC/CMS

The CMS can be controlled from touchscreens in the entrance area, lounge and bedroom. However, passengers will usually interact with the CMS via an iPad – there are 21 on board, one at each seat. Enabled by cabin wi-fi, these iPads can be used to control the IFE, lights, temperature, attendant call and seat motion and position. Burnay says the passengers will likely range from around 20-70 years old, and include speakers of various languages, so a universal design – using symbols rather than words – was needed for the user interface.

IFE content is stored on an onboard server. Passengers can enjoy this on integrated HD screens or stream it to their iPads. There are three Blu-ray players – one in a closet aft of the last mini-suite, to serve those suites; another in the main lounge's buffet monument, for the big screen; and one in the bedroom, to serve the screen there.

There are also three HD external cameras, HDMI and USB plugs next to every embedded screen, and a karaoke system with two wi-fi microphones, connected to the main speakers in the lounge.

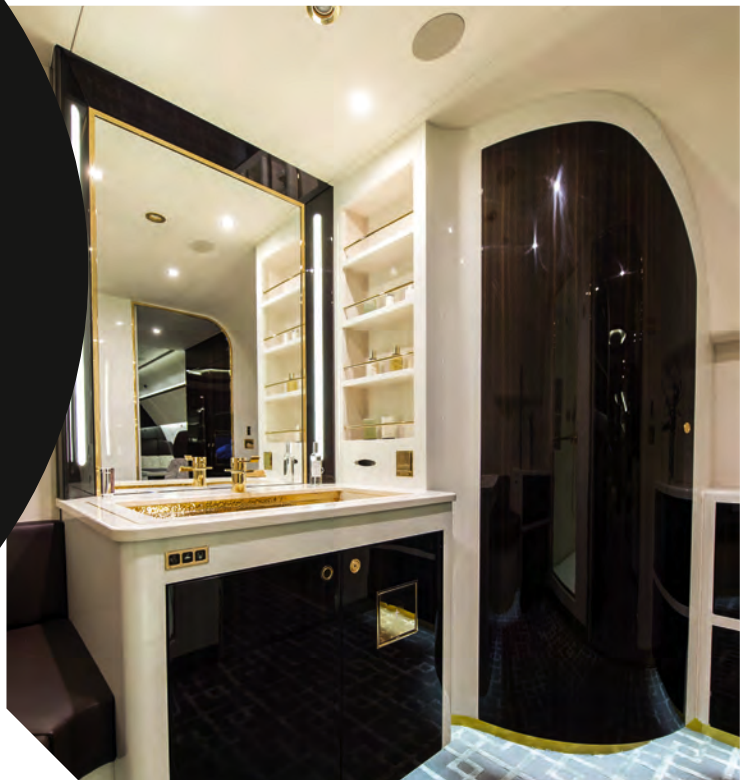




MASTER SUITE

The master suite features several versatile elements. The "Swiss Army knife divan", as Mariat calls it, was one of the biggest challenges on the project. It can be configured as a bed, a three-place divan, or a two-place divan with a hi-lo folding table in the middle. The middle section of the divan is designed to fit on top of the table when it is in its low position. There is also a folding table that can be converted to enable the customer to have breakfast in bed, a queen-size bed, a 46in screen and a storage closet.

The bathroom has a 1 x 1 x 2m shower. A special feature – used in both the VIP bathroom and the lavatory further forward in the cabin – is a handmade sink made from hammered gold by a craftsman based in Toulouse, France. The countertops are made from real stone, with gold inlays.



Business Jet Interiors International

FREE APP now available!



GO TO THE APP STORE **NOW** TO
DOWNLOAD THE APP FOR YOUR TABLET

RECEIVE THE
LATEST ISSUE
WEEKS BEFORE
THE HARD COPY
IS AVAILABLE

DOWNLOAD NOW!

READ
ANYWHERE,
WITHOUT
WI-FI!



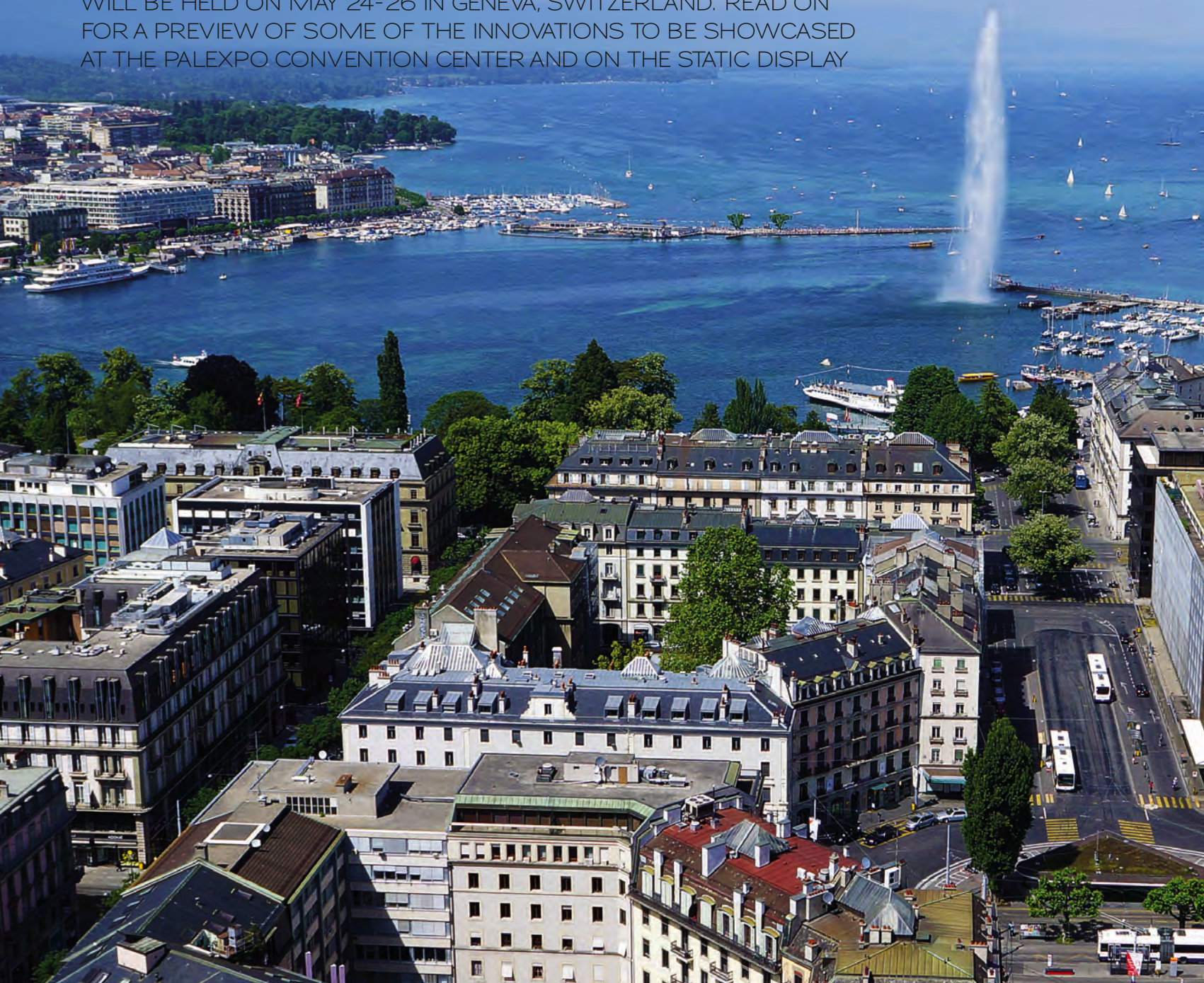
PLUS

THE LATEST NEWS &
FREE MAGAZINE ARCHIVE



EBACE 2016

THOUSANDS OF BUSINESS AVIATION INDUSTRY PROFESSIONALS ARE EXPECTED TO ATTEND THE 2016 EDITION OF EBACE. THE EVENT WILL BE HELD ON MAY 24-26 IN GENEVA, SWITZERLAND. READ ON FOR A PREVIEW OF SOME OF THE INNOVATIONS TO BE SHOWCASED AT THE PALEXPO CONVENTION CENTER AND ON THE STATIC DISPLAY



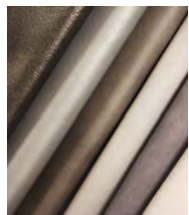
EBACE 2015
attracted
13,000
attendees

Light launch

B/E Aerospace will introduce its growing Viu lighting line, which is designed to give designers more freedom to incorporate light in tighter spaces with smaller profiles and increased flexibility. The company says its proprietary design gives designers greater scope to illuminate cabins unobtrusively. Possible design applications range from toe-kicks and textile integration, to seating and other bespoke design elements.

B/E Aerospace says the Viu line can achieve highly homogeneous illumination, even in intricate designs that incorporate multiple curves and edges. "B/E Aerospace's passion and drive to innovate truly shines through in our new product line additions," said Eric Johannessen, director of research and development at B/E Aerospace Lighting & Integrated Systems. "New designs offer side-emitting light, lighter weight, higher efficiency and fluid multi-axis flexibility."

BOOSTED STOCK



Several new products will be launched by Townsend Leather. Throughout 2015, the company reduced inventory of slow and non-moving programs, freeing up space and resources to increase the stock of more current and popular leathers. Townsend can now provide immediate shipment of more than 30 leathers.

These in-stock leather programs include the most popular colors in its Classic Cowhide, Taj Pearlized Cowhide, Regal Cowhide, Voyager Cowhide, Manchester Cowhide, and Pinnacle Cowhide collections.

NEW FACILITIES

In January 2016, 328 Support Services celebrated 10 years as type certificate holder of the Dornier 328 jet and turboprop series. The company recently moved into more modern facilities at Oberpfaffenhofen Airport, near Munich, Germany, to support growth. 328 Support Services provides engineering and material support for the 328 type certificate, as well as STC solutions on various VIP aircraft types. The company is also a major partner in the TRJet regional aircraft development program.



Q&A



Philip von Schroeter

CO-CEO, INAIRVATION

What will be on your display?

We will show a section of our retrofit sideedge, together with various rendered themes illustrating our retrofit offer. This option is pre-engineered, so we can assemble a new sideedge, with an integrated nice HD IFE system, during the downtime for an 8C check.

How far can your retrofit solutions be customized?

Our retrofit solutions are available now for the full Bombardier Global and Challenger family, with more platforms to come soon. Customization options include the monument veneer, the configuration of the nice HD IFE system, and the illuminated wood floor.

How are you creating a unique identity for the Aerion AS2?

With Aerion and Design Q, we have developed a concept that reflects the uniqueness of this supersonic jet while ensuring timelessness. It is vital that the cabin does not look outdated when it enters the market in the early 2020s.

What innovations has your integrated approach yielded?

Our integrated approach to designing and engineering cabins impacts ergonomics, aesthetics, functionality and manufacturing. We have also created features that would be impossible otherwise – including illuminated wood flooring, illuminated table edges and touch surfaces embedded in veneer.

Do you have any other plans?

This year is all about ramping up our retrofit campaign with our partners Flying Colours Corp, LBAS and Ruag, while working closely with Aerion on its cabin and pursuing further OEM opportunities.



Aeria Luxury Interiors

UPSCALE ABILITY.
ELEVATED ELEGANCE.

The Luxury of Experience

RAISE YOUR EXPECTATIONS OF WHAT AN AIRCRAFT INTERIOR CAN BE.

AERIA Luxury Interiors will surround you with sumptuous luxury, refined sophistication, and a style that's all your own. Specializing in VIP completions for Boeing and Airbus airframes, the AERIA team is known for exquisite craftsmanship, uncompromising quality, and expertise that has been proven on more than 50 aircraft. Experience our heightened sense of luxury for yourself.

9800 John Saunders Road, San Antonio, TX 78216, U.S.A., +1 210 293 3200, www.aeriainteriors.com

AERIA Luxury Interiors is the completions division of VT San Antonio Aerospace, which is an affiliate of ST Aerospace.



AERIA
LUXURY INTERIORS



Leather debuts

Two new leather ranges designed for the aviation market will be highlighted by Moore & Giles. Celine is a French semi-aniline calfskin that the company says is lightweight, soft, and has great color consistency and a uniform texture across hides. It was designed in partnership with a sixth-generation tannery that supplies leather to fashion houses. Its production is managed by the tannery. Hides are inspected at each stage of the tanning process to achieve the best possible selection and cutting yields. All hides are treated in the drum to pass FAR 25.853 (i) (ii). The other range, Orion, is made from large European hides and is described by Moore & Giles as having a rich, consistent color and an amazingly soft hand.

The exhibits are expected to fill 40,000m²

EXPANDED REFURB APPROVAL

As its EASA Part 21J approval was recently extended, OHS Aviation can now perform major changes and STC work for small and large aircraft. The Berlin-based company specializes in refurbishment and engineering, with expertise in modifications to components including seating, IFE systems, satcom, wireless routers, power supply and galleys.

OHS Aviation also prides itself on its hospitality. Visitors to its booth can sample Berlin draft beer and Prussian whisky. In addition, the stand will resonate to the samba rhythms of Be Igñacio from 4:00pm on day two of the show (May 25). The team on the booth will include the company's recently appointed chief commercial officer, Dennis Neumann.



LIGHTWEIGHT FOAMS



Each zone of Zotefoam's interactive booth will combine parts, technical specifications and case studies to illustrate aircraft interior applications for Zotek and Azote foams. These applications include soft-touch trim; carpet underlay; window seals; ECS system components including ducting, flexible hoses and plenums; composite panels; and insulation.

Zotek F materials offer a range of stiffness options, and are designed to deliver weight and cost benefits. The company says Zotek F's closed cell structure offers thermal and noise insulation and a barrier to moisture; has great fire smoke and toxicity properties; and is compatible with a wide range of processing methods. The company offers Zotek F as an alternative to silicone, polyurethane, composites and even some metal components.

CONNECTIVITY SOLUTIONS

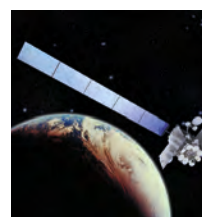


Satcom Direct will return to EBACE with a new identity, SD, which better represents its broadened

capabilities as a global connectivity solutions provider beyond just satellite communications. Visitors will have a chance to experience SD's GlobalVT, which enables individuals to use their own smartphone and number during all phases of flight, anywhere in the world, for texts and calls.

Since last year's show, SD has announced SDPro, which will be demonstrated on its booth. SDPro provides integrated information for the entire flight operation via a single interface, including aircraft tracking status, flight logs, performance data, scheduling, trip planning and operating history.

NETWORK GAINS



Inmarsat ended 2015 with the announcement that its Global Xpress (GX) network had entered commercial

service. The network will power Inmarsat's Jet ConneX global connectivity service for business jets. Jet ConneX uses Ka-band spectrum and satellite technology to provide speeds of up to 50Mbps. Customers can connect smartphones, tablets, laptops and any other wi-fi-enabled device to stream live video, surf the internet, conduct a video conference and download files.

"We are excited to announce that VistaJet and Bombardier have already begun installing Honeywell's JetWave hardware for the Jet ConneX service," said Kurt Weidemeyer, vice president of business aviation at Inmarsat. "We also have a few other aircraft manufacturers developing STCs, but I promised to let them make the announcements."

New leather

A new Italian leather collection, Flight, was introduced by Garrett Leather in March 2016 and will be displayed at EBACE. Flight is Garrett Leather's first collection to be treated during the tanning process to pass the 60-second vertical burn test. Hide sizes average 58ft². There are 20 Greenguard-certified colors in stock, available for immediate shipment. Flight is one of the company's LeatherShield products, made to withstand high-traffic areas. These leathers are treated during tanning to provide flame, water and stain resistance, plus UV and anti-bacterial protection.

In other news, the company recently welcomed Robert Stockton as aviation account executive for Texas, Oklahoma, and Kansas, USA. Eric Dirand is now handling aviation accounts in Western Europe. Dirand and Jennifer Coleman, director of aviation sales, will be at EBACE. The company will also highlight the relocation of its headquarters in Buffalo, New York, USA, to a larger facility, scheduled for May 2016. The company says the single-story floorplan and extra space will increase efficiency and enable continued future growth.

60 aircraft were on static display at EBACE 2015

CARPET AND FABRIC LAUNCHES



People looking for new soft furnishing options should head to Tisca Tiara's booth, as a carpet range and a collection of carefully harmonized upholstery, sidewall and curtain fabrics

and carpets will be introduced there. The new collection is designed to reflect the latest trends in terms of designs, textures, materials and color combinations. Tisca Tiara designs, develops and manufactures all sorts of fabrics and carpets under one roof.

It will also display steam-pleated, ready-to-install curtains, produced in-house. The company has more than 1,500 curtain fabrics in stock.

TABLES AND CCF INSERTS



MSB Design will demonstrate its hi-lo conference tables to OEMs, completion centers and design houses. The tables were recently approved as a line-fit option on G500 and

G600 aircraft. The company puts the range's success down to durability and innovations including slimmer pedestals, carpet-pinch beauty rings and a Bluetooth-operated electric mechanism.

MSB Design will also showcase its crystal, china and flatware (CCF) inserts, and its latest tailor-made composite parts, including iPhone charging stations and magazine racks, as well as promoting its capacity to produce one-off pieces.

Q&A



David Velupillai

MARKETING DIRECTOR,
AIRBUS CORPORATE JETS

Does Europe have a noticeable style when it comes to interiors?

Europe has a reputation for style and elegance – we tend to think of French fashion houses when it comes to clothing. Western European customers often reflect this refinement in their cabins. Central European clients tend to prefer slightly bolder features and colors.

Are customers' demands changing? For example, is weight becoming more important to customers?

Weight is always important in an aircraft, because of its direct effect on performance. In addition, more comfort, and features including more sophisticated IFE and communications, are now expected by customers. One Airbus innovation is the introduction of new and lighter materials, including carbon fiber, in cabin elements.

Most business jet flights last just a few hours – for example, from one European capital to another – with long-haul trips happening only occasionally. Range has a value, however, and this is a key benefit, in addition to improved efficiency, being introduced on the ACJneo family through new engines.

Can you provide an update on your current aircraft development programs?

Airbus is focused on the ACJ320neo and the ACJ319neo, which it will begin delivering in the fourth quarter of 2018 and the second quarter of 2019, respectively. The ACJ319neo will fly eight passengers up to 6,750 nautical miles, or around 15 hours, while the ACJ320neo will fly 25 passengers up to 6,000 nautical miles, or about 13 hours.

Come and meet us at
EBACE in Geneva!
May 24th – 26th
Booth S066



VIP completion by



French luxury has a new brand... VIP completion by Sabena technics

Whether you want a new aircraft or to upgrade, modify, refurbish, replace your jet's cabin, call us and benefit from our experience. We will advise you on the latest available features to enhance your in-flight experience.

Narrow & wide body capabilities:

Airbus
ATR
Boeing
Bombardier
Embraer
Fokker

Backed by:

Dedicated facilities
In-house design office
Cabin interior workshops
Electrical kits and
structural fitting backshops

www.sabenatechnics.com



VIU™


The utmost freedom to
illuminate bespoke designs.

Responsive Support. Novel Concepts. Superior Solutions.
beaerospace.com/LIS

Lighting &
Integrated Systems



« Our **Soundproofing** Expertise »



SMACSONIC®
SMACWRAP®
SMACBARRIER®
SMACMOUNT®
SMACFOAM®



S M A C
GROUPE
MontBlanc Technologies

INNOVATIVE ACOUSTIC COMFORT

- Skin Damping
- Structural Damping
- Composite Damping
- Thermoplastic Damping
- Acoustic Barrier
- Isolators
- Foam Combination
- Tuned Dampers



www.smac-sas.com



sales@smac-sas.com

Q&A

**Duncan van de Velde**

DIRECTOR OF SERVICE SALES,
EMEA, TEXTRON AVIATION

What aftermarket interior upgrade programs do you offer?

Our new quick-turn interiors program makes modifications quick, easy and smooth, while also providing owners and operators with plenty of in-stock color and material choices. Owners can upgrade any or all of the soft goods – seat coverings, headliners, sidewall panels, carpets and other items. Trim and fixtures can be polished and wood fixtures and trim reconditioned. Our experts can advise as to which interior choices are likely to look best, wear best and deliver the highest return at resale.

What trends have you noticed?

Many of our interior modification customers are electing to install the very latest in connectivity – including wireless and high-speed internet systems. Passengers want to communicate in the air in the same way they do in their office or at home. Depending on the aircraft model, our company-owned service centers can install a number of packages from leading providers of inflight connectivity for business aviation.

How are you streamlining the refurbishment process?

To minimize aircraft downtime, most customers will schedule a complete interior refurbishment to coincide with a major scheduled maintenance event, such as a phase or document inspection. They spec out their new interior and exterior. We procure all of the material in advance so that we are ready for them the minute they get here. While the maintenance and avionics items are accomplished first, the interior items are worked on in the backshops.

CMS and IFE

Technological highlights on Rockwell Collins' display will include its Venue HD CMS/IFE system, its new Stage content service solution and smart cabin eRouter offering.

Stage, introduced in late 2015, is an airworthy subscription-based media streaming solution for corporate and private aircraft. The solution provides up to 70 passengers with a selection of entertainment and information on their tablets and smartphones. Content is selected by flight departments from a frequently updated cloud-based media catalog. The selected content can be loaded onto the aircraft server in a variety of ways, both physical and wireless.

Rockwell Collins says Venue continues to gain traction in the business aviation market. At EBACE 2015, Dassault announced it will equip its new Falcon 5X and 8X aircraft with a Venue-based CMS/IFE solution, continuing its long relationship with the company.

In addition to its system offerings, Rockwell Collins offers the ARINCDirect flight support services portfolio, which includes cabin connectivity solutions such as Inmarsat's new JetConnex Ka-band service.



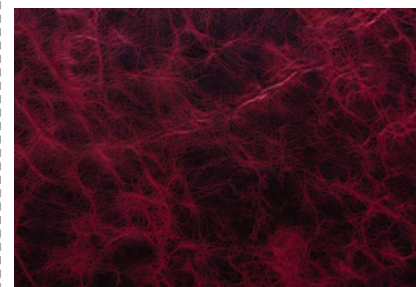
Attendees at
EBACE 2015
hailed from more
than 100
countries

2016 INTERIORS

The static display will feature the 2016 Pilatus PC-12 NG. Pilatus says its best-selling single turboprop PC-12 NG offers great speed, take-off and climb performance, cabin comfort, range and a quiet cabin. PC-12 NG customers can now choose from six executive interiors designed by BMW Designworks. Alternatively, buyers can make use of Pilatus's full customization services. In addition, a full-scale mock-up of the upcoming PC-24 (pictured below) will be on display at the Pilatus booth.

**LOTS OF LEATHER**

A wide range of non-flammable bovine, crocodile and sole leathers will be presented by Foglizzo Leather. The company says all these ranges are treated to comply with international fireproof standards including UNI 8456/FAR a and FAR b; Jar 25853; UNI VF 9175; IMO 653; DIN 5510; and BS 6853 according to SOLAS regulation. This year, the company is bringing three new product families – Star, Orta and Prince. It will also introduce its new US aviation sales manager, Chris McGough.



20% weight reduction

A lightweight fiber-reinforced construction technology will be introduced by Hilitech, the joint venture of F/List and the Hintsteiner Group. "Hilitech is developing future-oriented lightweight construction components that give a weight reduction of yet another 20%, compared with conventional structures," says Werner Kartner, vice president of aircraft interiors at F/List.

F/List is also working to expand its flooring solutions. In early 2016 the company converted to a new lacquer system that it says boosts durability. The company recently celebrated shipping out its 1,000th shipset by hosting a business talk at its facility in Thomasberg, Austria, with guests including three-time Formula 1 world champion and long-standing F/List client Niki Lauda; Andrew Muirhead, head of Lufthansa Technik's Original Equipment Innovation division; and the Austrian aeronautics expert Kurt Hofmann.

IMAGE: F/LIST

There were
500 exhibitors at
EBACE 2015

CONTENT AND SCREENS



New offerings including wireless streaming media, LCD displays and fully integrated CMS will be the focus on FDS's

stand. The company has a new wireless streaming platform, do, which features movies, music, a moving map and more. Content can be streamed to tablets, smartphones and laptops without internet access. Operators can upgrade to an immersive 3D map called do3D.

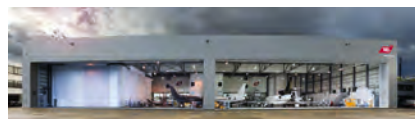
FDS will also showcase do360, a licensed, DRM-compliant entertainment subscription service. Movies, TV shows, music, books and games are delivered on a solid-state drive, ready for streaming.

Other products on display will include the Edge series of HD and 4K LCD displays and the Smart Cabin CMS.

REFURBISHMENT AND MAINTENANCE

With two heavy maintenance centers and a network of approved MRO line stations in Europe, Asia and Africa, TAG Aviation says it can offer a one-stop shop for aircraft maintenance.

The company has an in-house team that can assess a customer's aircraft, recommend appropriate upgrades or modifications, and proceed with Part 21 certification as required. The company can also make minor repairs, both on-site and out of base. Thanks to a new wood varnishing process and complementary products, TAG Aviation says it can now revarnish a full cabin during a major inspection without the need to increase aircraft downtime.



Q & A

Scott Ritter

PRESIDENT AND CEO,
DAHLGREN DUCK & ASSOCIATES

What do you plan to highlight at EBACE this year?

Dahlgren Duck supplies bespoke crafted china, crystal, flatware and linens, as well as *objets d'art*, for prestigious clients seeking exclusive styling for their aircraft. We will explain what makes our company unique – our truly customized service.

How do you meet your customers' requirements?

We work closely with each client, their aviation management team and their cabin crew to create their vision. Our extensive network of suppliers, artists and craftspeople, coupled with our experienced designers and commercial team, ensure that each seemingly impossible requirement is met. Heritage, knowledge and – above all – a focus on detail and quality ensure our customers return time and again, and recommend us to their friends and colleagues.

Do you have plans to expand your offerings?

We continually explore new partnerships, considering the latest styles and spotting trends before they arrive, to ensure our clients are ahead of the curve. We are also working on a new technology platform that we believe will revolutionize the specification, selection and ordering process for our clients.

What are you looking forward to at the show?

We look forward to meeting our customers' representatives and finding out how they are enjoying our products. We will also explore new styles in the European market, as this can inform our suggestions to clients. EBACE is always a great opportunity to meet partners.



Quality Products for Transportation Interiors

+001 (512) 472-4711 phone

+001 (512) 707-9595 fax

www.saintlouisdesigns.com



TL1170 Latch Assy
Latch/PusherMount Plate/Catch
5 or 10 lbs force



2007SLP
Magnetic push latch

6 lbs compression force
3/4" bolt extension
Black or Clear Anodize

High Load Latch Assy
TL1150SMP

u.s.pat. 6,669,250



425+ lbs ultimate load
0.06" travel to unlock
ideal for curved surfaces

Touch Latch/Pusher
TL1166-P

u.s.pat. 6,669,250

6 lbs pressure inhibits release
Reduces vibration noise
.06" travel for curved surfaces
225 lbs static load



TL1000RMP
Mini Touch Latch Assy
70 lbs ultimate load

u.s.pat. 6,669,250



SH105-EX-A-Open

Limited travel, Adjustable hinge,
Compression springs for added force



SH105-A-Open

Limited travel hinge
Adjustable, Springs Open



SH105-A-Close

Limited travel hinge
Adjustable, Springs Close



Imagine VVIP Humidification on your next flight



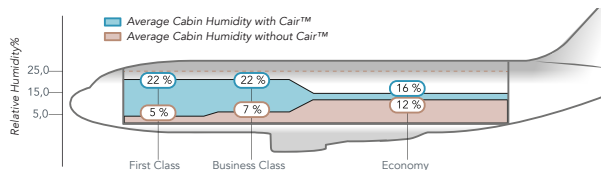
For years, our Cair™ humidification has been considered as the de-facto standard in prestigious VVIP aircraft; bringing an essential wellbeing to important passengers that is recognized by the leading completion houses as they race to constantly improve these prestigious cabins.

Lately, several airlines have upgraded their premium cabins with adapted VVIP aircraft innovations to significantly improve passenger comfort, flexibility and privacy.

Cair™ – the Differentiator for wellbeing

- ▶ Cair™ humidifies the extremely dry air in (Super) First / (Super) Business Class without causing any moisture problems in the aircraft.
- ▶ Cair™ generates a pleasant relative humidity of around 20%, compared to 3-5%, thereby reducing dry air related problems*.
- ▶ Cair™ humidification catalyzes passengers to relax, sleep and feel more at ease!

Feel at ease after long-haul flights - Cair™ empowers passenger wellbeing



CTT Systems is the leading provider of products for humidity control in aircraft; including anti-condensation systems and humidifiers. Customers include both aircraft manufacturers and airlines. Also visit: www.ctt.se



* e.g. fatigue, jet-lag, red eyes, dry skin, dried out membranes lowering the protecting hurdles of the immune system.

swatch and learn

Take your pick from the latest aviation-compliant leathers, fabrics, carpets and other floor coverings

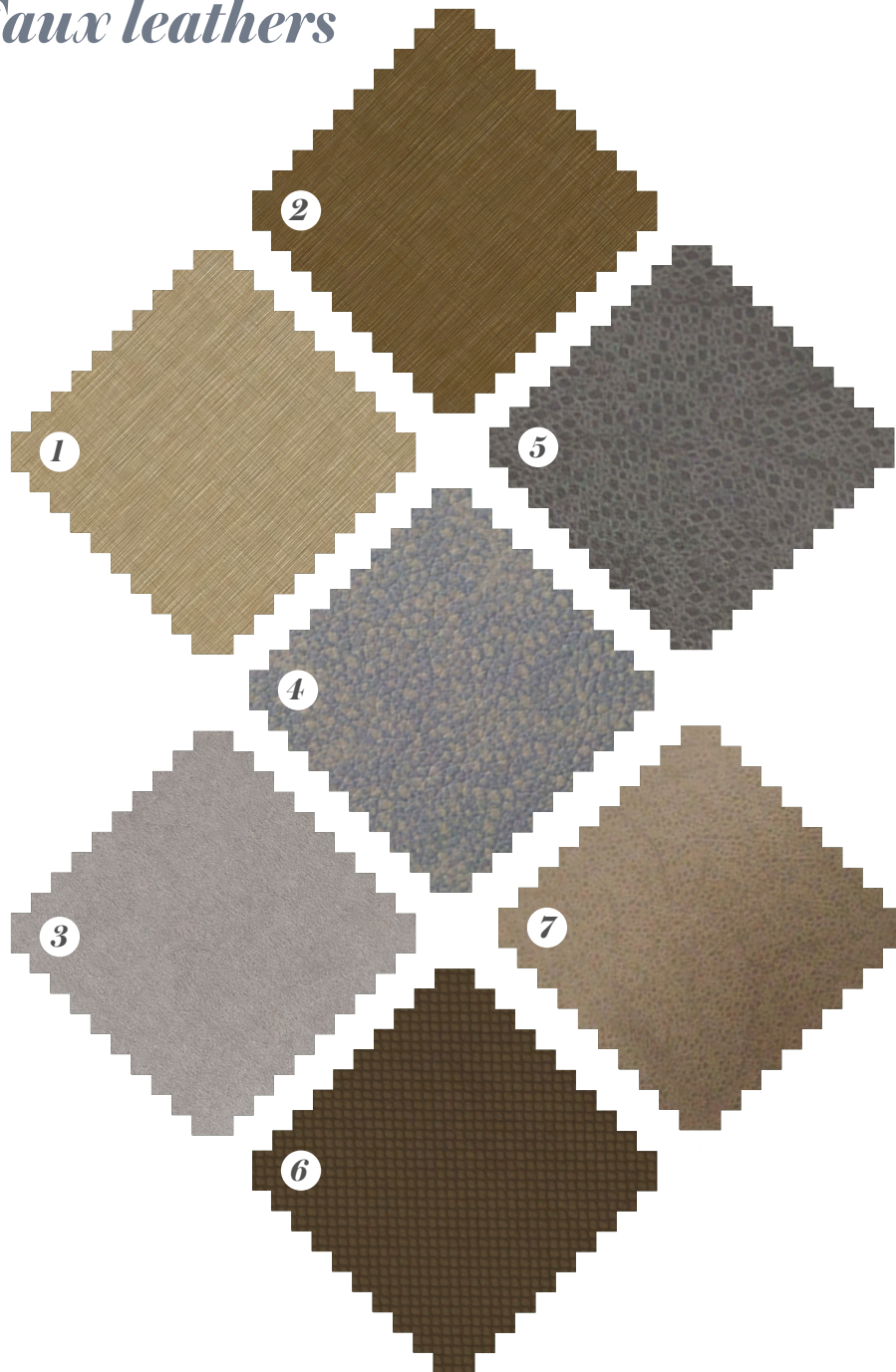
Leathers



1. Fireproof in Prince, by Foglizzo
2. Nappa soft-touch wall covering in Black, by Boxmark
3. Royal Emotions Torbay in White with gloss varnish, by Boxmark
4. Celine in Mist, by Moore & Giles
5. Pegasus in Grape, by Yarwood Leather
6. Stacy Garcia Concentric Cowhide in Denim, by Townsend Leather
7. Stacy Garcia Trifecta Cowhide in Storm, by Townsend Leather
8. Flight in Merlin, by Garrett Leather

9. Crossroads Tipped Cowhide in Million Dollar Highway, by Townsend Leather
10. Stacy Garcia Luster Cowhide in Sapphire, by Townsend Leather
11. Whole Grain in Farro, by Edelman
12. Whole Grain in Fog, by Edelman

Faux leathers



1. Ultraleather Linen in Nude, by Tapis
2. Ultraleather Linen in Toffee, by Tapis
3. Ultrasuede in Taupe, by Tapis
4. Izit Leather Luxe in Celestine, by Willow Tex
5. Izit Leather Luxe in Grey Stone, by Willow Tex
6. Ultraleather Dwell in Nutmeg, by Tapis
7. Izit Leather Luxe in River Rock, by Willow Tex



Q&A

LAURI CHURCH,
CHIEF DESIGNER,
COMLUX AMERICA, USA

What colors, textures, patterns and materials will be popular in 2016?

I think 2016 will yield patterns and textures with a lot of contrast. There has also been a rise in the desire for pops of color that contrast with the other materials. Very clean, simple textures are quite the rage now as well.

Have you noticed any other trends?

We've had many clients looking for slimmer, clean and crisp designs in all aspects. Demand for large, bulky designs is declining.

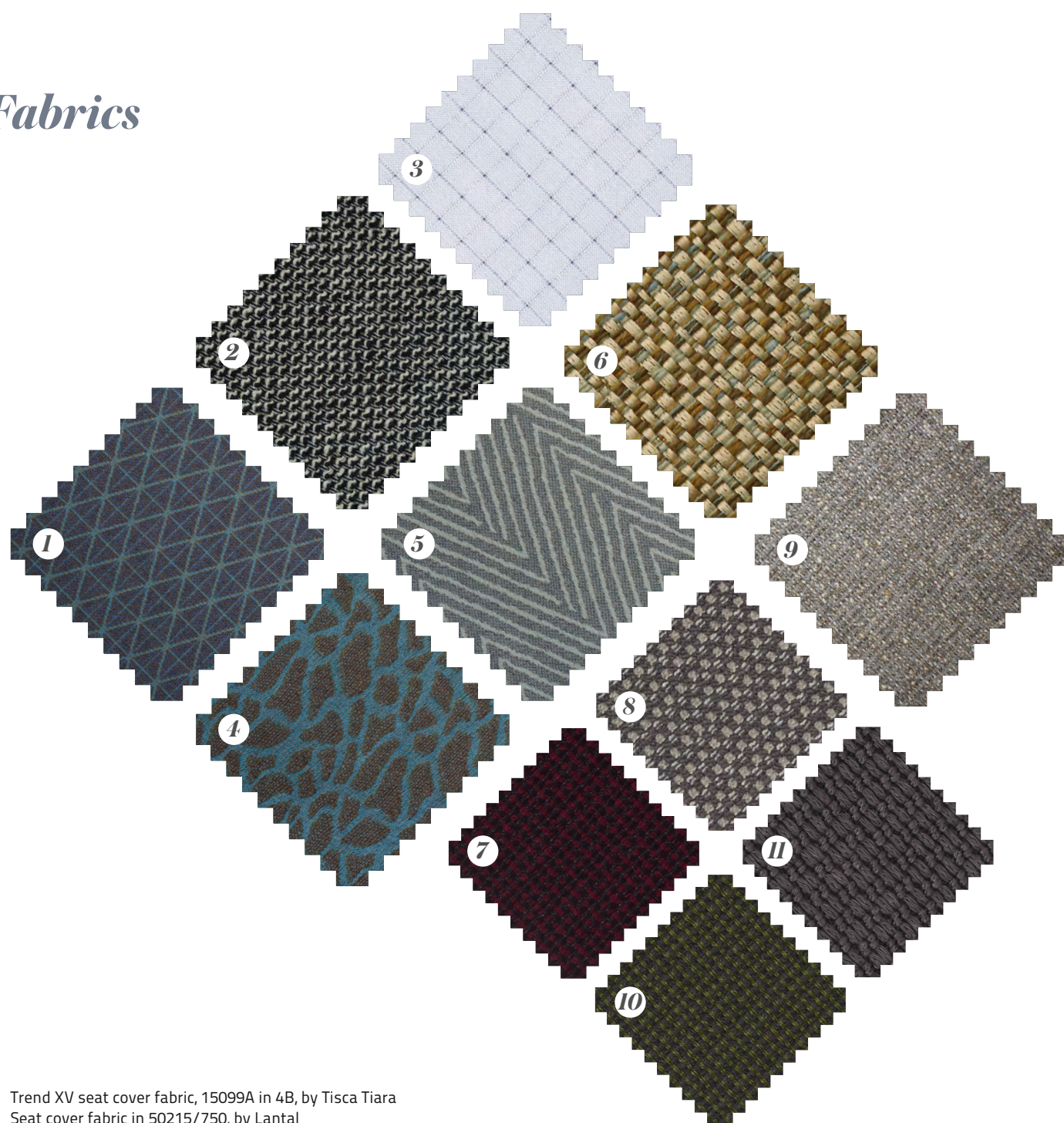
Are there any new products or application ideas that have caught your eye recently?

We've been shown some really great new leather textures, patterns and colors from several manufacturers.

What innovations would you like suppliers to work on?

There aren't many companies that make non-textile flooring (NTF) products that are appropriate for aviation but look like real wood or stone. There are many rolled goods, but they don't quite look natural. NTF options are always far more limited than other materials.

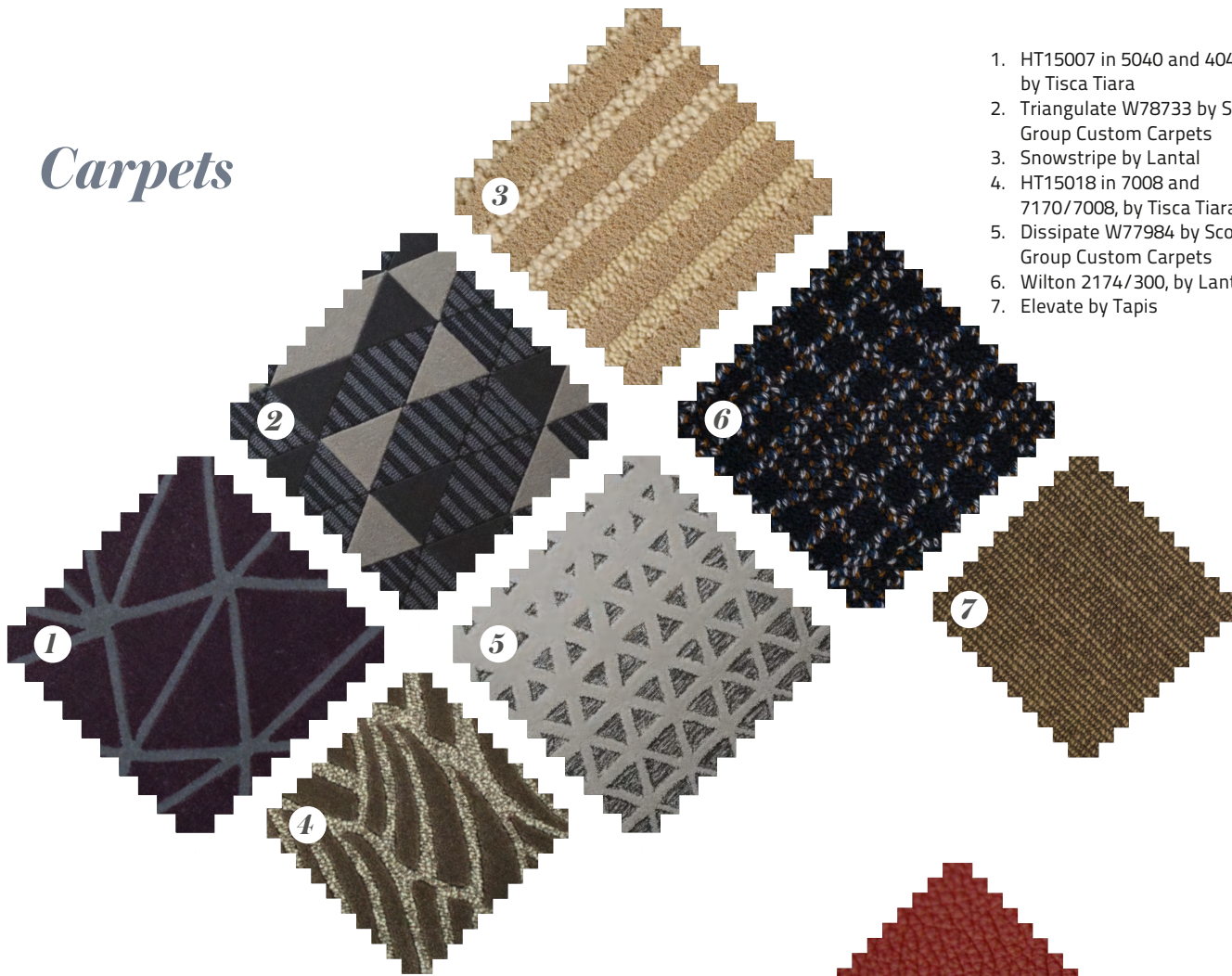
Fabrics



1. Trend XV seat cover fabric, 15099A in 4B, by Tisca Tiara
2. Seat cover fabric in 50215/750, by Lantal
3. Ajouré curtain fabric by Lantal
4. Trend XV seat cover fabric, 15101A in 4B, by Tisca Tiara
5. Trend XV seat cover fabric, 15097B in 3C, by Tisca Tiara
6. Florence Woven in Turquoise, by Tapis
7. Mira X Sabbia 8710 in 20, by Tisca Tiara
8. Mira X Sonora 8703 in 62, by Tisca Tiara
9. Lecce Woven in Gray, by Tapis
10. Mira X Sabbia 8710 in 10, by Tisca Tiara
11. Mira X Talus 8708 in 42, by Tisca Tiara

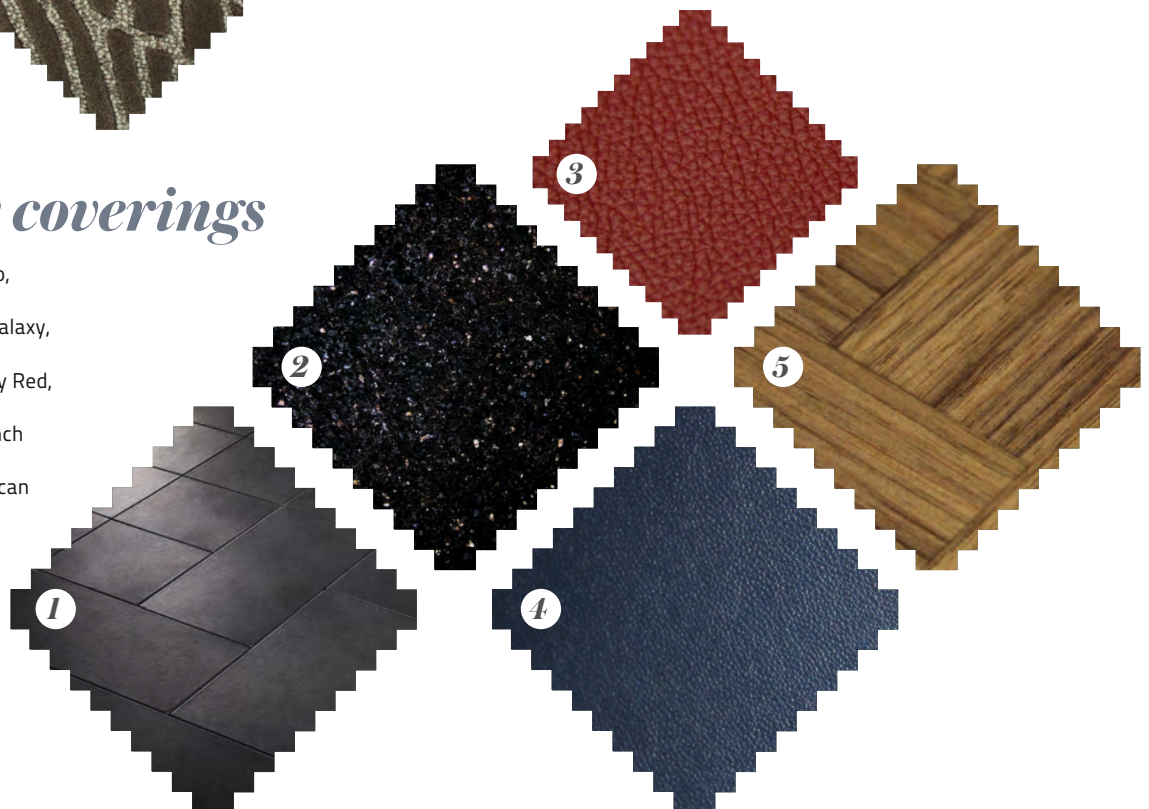
Carpets

1. HT15007 in 5040 and 4044, by Tisca Tiara
2. Triangulate W78733 by Scott Group Custom Carpets
3. Snowstripe by Lantal
4. HT15018 in 7008 and 7170/7008, by Tisca Tiara
5. Dissipate W77984 by Scott Group Custom Carpets
6. Wilton 2174/300, by Lantal
7. Elevate by Tapis

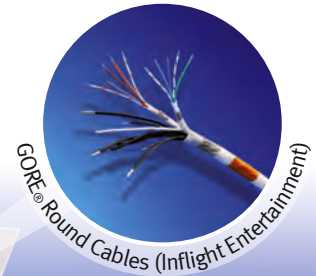


Other floor coverings

1. Real Leather Flooring in Fogo, by F/List and Boxmark
2. Real Stone Flooring in Star Galaxy, by F/List
3. Real Leather Flooring in Ruby Red, by F/List and Boxmark
4. Real Leather Flooring in French Blue, by F/List and Boxmark
5. Real Wood Flooring in American Walnut, by F/List



Engineered to perform



GORE® Aerospace Cables and Materials

...provide electrical and mechanical integrity in the most demanding environments

gore.com/aerospace



The PPA Group specialises in the delivery of high quality MRO services to the commercial, executive and military sectors of the aviation industry. We operate as an effective supply chain partner that optimises project delivery and realises genuine and lasting value.

- Aircraft Interiors
- Transparencies
- Composite Parts & Repair
- Non-metallic Machining
- Vacuum Forming

Quality approvals: EASA Part 145 | AS9100 Rev C

Get in touch

Tel: +44 (0)1244 280838 | Email: info@ppagroup.net | Web: www.ppa-group.com

DOUBLE ACT

Two new VVIP products are available from Astronics PGA Avionics – the UHD Media Center and the Keyboard Touch Screen-4

Aircraft owners wishing to view IFE in 4K Ultra HD, a resolution two times higher than full HD resolution, can now specify a new product from Astronics PGA Avionics – the UHD Media Center. This all-in-one media center also offers the advantage of replacing four products – Blu-ray, SD card, USB and Ethernet AVOD players.

In addition to Blu-ray discs, the UHD Media Center supports all other common media formats, including DVDs, audio CDs and MP3 files. The unit is equipped with a USB and SD slot in the front panel, so users can access H.264 video content from personal USB keys and SD cards at up to 3840p resolution. "The product can also play media from two different sources simultaneously, without a reduction in video or audio quality," says Nicolas Duchéron, IFEC/CMS product manager at Astronics PGA Avionics.

The company also recently launched a new version of its Keyboard Touch Screen (KTS). Duchéron says the major upgrades

The UHD Media Center can play Blu-ray, DVD, CD, MP3 and 4K content

RIGHT: THE KEYBOARD TOUCH SCREEN 4



offered by the KTS-4 include a new flush and wide HD touchscreen and a viewing angle that is perfectly homogeneous in portrait or landscape mode. "Designed for both bulkhead and seat armrest integration, the optimized depth of the KTS-4 facilitates easy installation," says Duchéron.

The KTS-4 can be used to control all IFEC and CMS functions within corporate and VVIP cabins, including media sources, seat positions, lighting, attendant call and temperature regulation. The interface can

be customized in line with the customer's requirements. There are several plating options for the removable front panel, three buttons can be customized with any function, and it can be integrated with single or double audio jacks.

The introduction of these two new products follows the recent launch of the ECU Gen VII. "This seat motion control unit has an unprecedented number of features, and is housed in a highly compact unit," says Duchéron. "With three major product launches in just the first month of 2016, Astronics PGA Avionics is demonstrating its ability and commitment to offer the most innovative, highest quality in-seat motion, lighting and IFE systems for corporate and VVIP aircraft."

Astronics PGA Avionics is a subsidiary of Astronics Corporation, a supplier of products to the global aerospace, defense, consumer electronics and semiconductor industries. Astronics's offerings include electrical power generation and distribution systems, lighting and safety systems, avionics products, aircraft structures, engineering design and systems certification, and automated test systems. ☒



ABOVE: THE UHD MEDIA CENTER

FREE READER INQUIRY SERVICE

To request more details from Astronics PGA Avionics, visit www.ukipme.com/info/aimbj

GOOD AS NEW

A 5-star cabin without a 5-star price tag – that is the promise of repair specialist SPS Aircraft Services

Damage does not have to mean the end of the road for leather, plastic and woodgrain-effect parts. SPS Aircraft Services specializes in repairing and refurbishing materials such as these for general aviation and commercial operators. The company says the main benefits are time and cost savings – it estimates that it saves its biggest clients US\$30m every year.

The business was established in 2007 as a regional distributor for Unimers, an Italian producer of specialized cleaning and protection products. SPS started to work with airlines in the Middle East, initially advising them on how to look after first- and business-class leather seats so as to improve appearance and longevity. "As the competition is intense for premium passengers, leather seat covers are changed on a regular basis if they display the slightest stains or damage," says Darren Brackett, CEO at SPS.

The company introduced the Leather Master Cleaner and Protector range, designed to enhance and protect leather covers, promoting longevity. In addition, Gulf carriers asked for a cosmetic touch-up case



ABOVE AND BELOW: PLASTIC COMPONENTS BEFORE AND AFTER REPAIRS BY SPS

for the leathers, so SPS responded with the Total Cabin Touch Up Case, which is customized to protect all the colors, finishes and materials in a particular cabin. "This concept was quickly taken up by all the major carriers in the Gulf region, and one major UAE airline credited it with saving the airline more than €30,000 [US\$33,000] per day in replacement parts," says Brackett.

The next step taken by the company to provide operators in the Gulf with cost-

SPS has repair stations in the UAE, France, China, Singapore and Mexico

effective repairs was to open a repair station in 2010. "At that time, it was not widely known that it is possible to repair leather," says Brackett. "Not being from an aviation background, this was a steep learning curve for the core team, but by building a knowledgeable aviation team within the organization, SPS was able to achieve UAE General Civil Aviation Authority and EASA approval as a Part 145 approved maintenance organization. This gave us the opportunity to repair leather, plastic and woodgrain parts, which is 70% cheaper than replacing parts in the commercial market, and offer an even bigger saving to general aviation operators."

The company now has five repair stations around the world – having established facilities in France, China, Singapore and Mexico. "From zero customers in 2007, we now deal with more than 80 of the world's airlines, providing high-quality but low-cost repairs," says Brackett. SPS has also participated in many VIP interior refurbishment projects. ☒



FREE READER INQUIRY SERVICE

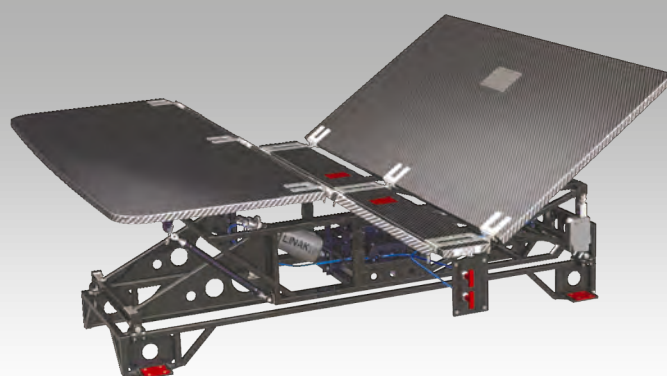
To request more details from SPS Aircraft Services, visit www.ukipme.com/info/aimbj

WE DESIGN,
ENGINEER AND
MANUFACTURE
THE **ULTIMATE**
AEROSPACE
READING LIGHTS.



Tel: +44 1993 868866
Web: www.beadlight.com
Email: sales@beadlight.com
Located: Oxfordshire, Great Britain

Beadlight[®]
A E R O S P A C E



aersolution
interior

Aviation Interior in Motion

Meet us at EBACE 2016

Roger Bünther : +41 79 262 1447

Marc Geiger : +41 79 833 8732



Aersolution Interior AG

☎ +41 41 874 0890

🌐 www.aersolution.com

Skylounge

Cabin Sleep System

About Us:

The Skylounge™ is lightweight and can be rolled up into a customised equipment bag and stored in a fraction of the space of a conventional sleeping unit. The underside is custom contoured to match the top surface of the users preferred seat configuration which ensures a flat top surface for sleeping. We design and manufacture for single, double and divan units.

Skylounge operates easily. By opening the valves, the mattress will self-inflate in minutes. By closing the valves, the air is trapped inside the foam maintaining structural integrity. An electric pump can be provided as an accessory to assist with inflation and deflation.

Skylounge Benefits:

- Compatibility - Customised design to fit any aircraft model.
- Flexibility - Mattress can be armrest height.
- Security - Seatbelt compatible.
- Stow ability - Minimal volume when deflated.
- Lightweight - Approx weight (single = 8.0lbs - double = 13.0lbs).
- Easy to use - User friendly set up and packaging.
- Comfort - Self regulated comfort.
- Stability - Minimal rocking during flight.
- Longevity - Decompression valve fitted.
- Reliability - 2 year warranty.
- Value - The most competitive price on the market.
- Trust - Over 15 years product history.

In 1997 Cascade Designs pioneered the development of the world's first customised self inflating aircraft cabin mattress to fit all aircraft models under the brand Skylounge™. To date there are in excess of 25,000 units in service.



Mattress in Equipment Bag



1. Set seat configuration.



2. Open valves on mattress & fit.



3. Finished dressed beds.

Come see Cascade Designs at

Espace, Geneva, Switzerland Stand No.V050

Cascade Designs, Dwyer Road, Midleton, Co.Cork, Ireland.
Tel: +353 21 4621400 · www.skylounge.com



www.skylounge.com



getabackbone

AVDS Streaming

DRM protected streaming; replace personal monitors; add-on to nearly any system, PED IFE bliss. inquiries to sales@in-advantage.com

1080P, 4K, Audio and Gigabit Ethernet over fiber



500+ AVDS Aircraft and Counting

www.in-advantage.com

COOL AND CALM

A new window shade system is the latest addition to Aerocon's varied range of VIP cabin comfort products, which also includes noise-reduction systems, folding airstairs, crew rests, and ladders and cargo hoist systems

The latest product launch from Aerocon Engineering is a window shade system for BBJ 737, BBJ 757, BBJ 777, BBJ 747 and ACJ320-series aircraft. Customers can choose from electrical and mechanical versions, with single or dual shades. The system is designed to block 99% of light, and to be dependable, quiet and easy to use. "Multiple switching options are available, and the system can be networked with CMS for individual or group operation," says Benny Younesi, president at Aerocon. "The system meets or exceeds RTCA DO160 and OSU 65/65 standards, which are part of the FAA STC/PMA certification requirements."

The window shade system is one of many products offered by Aerocon to increase comfort in VIP cabins. Another specialty is noise reduction. "We offer comprehensive interior noise reduction programs, with FAA and EASA STCs for BBJ 737, BBJ 747, BBJ 757, BBJ 767, BBJ 777, BBJ 787, ACJ318, ACJ319, ACJ320, ACJ330, ACJ340, ACJ350 and other aircraft models," says Younesi. "Aerocon's extensive knowledge spans all aircraft categories."

Aerocon tackles interior-related noises by advising on the interior design, layout, isolation and material selections. It also addresses systems and equipment, including the environmental control system (ECS), and aerodynamic and structural noise.

The company also supplies folding airstairs for aircraft including the DC-8, all BBJ models, and ACJ models including the ACJ320, ACJ330 and ACJ340. The airstairs are designed to last for the lifetime of the aircraft, with a minimal amount of routine maintenance; Aerocon has been supplying this line for more than 30 years with no complaints. All the components can be serviced, repaired or replaced in the field, with the exception of the pump motor. Aerocon holds STCs and PMA for this product on a variety of aircraft, and can

The window shades can be customized in terms of color and design



ABOVE: THE 10-BUNK CREW REST
LEFT: THE WINDOW SHADE SYSTEM
RIGHT: A NOISE-ATTENUATION PROJECT BY AEROCON

amend these STCs to enable specific installations and storage locations if requested by the customer.

Another offering is a telescoping crew ladder, which can be installed on any aircraft. The aluminum crew entry ladder has a manual telescopic mechanism that extends during deployment to enable entry into the aircraft through the electronics equipment (EE) bay hatch. It collapses telescopically for stowage inside the aircraft against the EE racks. It could also be possible to install this product in the forward and aft cargo bays.

Aerocon also caters for crew with its BBJ 777 crew rest compartment. This features 10 VIP bunks and can be installed in the three aft-most pallet positions in the



forward cargo area. It is built in three sections around three standard 96 x 125in cargo pallets, similar to those typically used in the aircraft, and is secured in a similar manner as an LD-6 cargo container.

The company also offers a cargo hoist system, which can be used to load and unload bulk cargo, heavy items and specially designed lower-profile cargo containers, but not standard cargo containers.

In addition, Aerocon provides engineering services, installation kits and certification services (including STC issuance). ☒

FREE READER INQUIRY SERVICE

To request more details from Aerocon Engineering, visit www.ukipme.com/info/aimbj

WINNING COMBINATION

Interior work can be combined with award-winning maintenance services at Aero-Dienst

In November 2015, Aero-Dienst was awarded Bombardier's authorized service facility Excellence Award in the Europe and Overall categories. "This award recognizes the outstanding performance of our team in satisfying the needs of our highly valued maintenance customers," says Viktor Peters, head of maintenance at Aero-Dienst. "Striving for excellence in customer service and workmanship, we were motivated to strengthen our cabin interior capabilities."

Over the past five years, Aero-Dienst has observed increasing demand from its long-term customer base for interior refurbishment services. The company has invested in training, extra hangar capacity and partnerships with carefully selected vendors to meet this demand.

Aero-Dienst now offers a wide range of interior refurbishment and



modification services for almost all categories of business jets. Its services include touch-up and polishing of wooden surfaces, leather upholstery for seats and divans, on-site engineering support, and complete cabin renovations including medevac installations. The company has completed many interior projects, usually in conjunction with scheduled maintenance inspections.

"Interior work remains one of the most challenging of our services," says Peters. "Every project is different and is

extremely important to the customer. We take the challenge very seriously and always aim to achieve the best outcome."

Aero-Dienst is headquartered at Nuremberg Airport in Germany. It is certified as an EASA Part 145 organization, and is approved by several other national aviation authorities and as an EASA Part 21J Design Organization, enabling it to develop STCs in-house. With a 58-year track record in the maintenance, operation, management and sale of business aircraft from almost all the major manufacturers, Aero-Dienst is one of the most experienced providers of business aviation services in Europe. ✖

FREE READER INQUIRY SERVICE

To request more details from Aero-Dienst, visit www.ukipme.com/info/aimbj

SILENT PARTNER

The new range of skin-damping materials from Smac is designed to provide the same performance as its previous offering, but at a reduced weight

Specializing in cabin acoustic improvements, as well as the reduction of shocks and vibrations, Smac's expertise is called upon by leading aerospace manufacturers. The latest result of the company's research and development efforts is a new range of skin-damping materials. The range includes Smacsonic ST2 for ambient-temperature applications and Smacsonic EX2 for low-temperatures applications. The products were designed to replicate the efficiency of current Smacsonic products at a lower weight.

Smacsonic damping products are used on lightweight structures including fuselages, fairings, cabinets, crew rest

compartments and monuments. Smac reveals that Smacsonic materials are used by most aircraft OEMs.

As a complementary material to Smacsonic, Smac offers Smac Barrier, a dense and thin acoustic barrier designed for flexibility, even at low temperatures. Smac Barrier can be integrated in thermal blankets or on its own behind trim panels.

For composite manufacturers the company offers the Smacwrap range,



which includes Smacwrap Veil. This is a very thin damping material that is embedded in a composite lay-up during manufacturing, the aim being to save weight, space and energy while ensuring high performance.

Smac is based in France. The company designs and produces custom parts in small quantities as well as in series of tens of thousands of parts, for major stakeholders in the aviation, space, defense and car racing sectors. ✖

FREE READER INQUIRY SERVICE

To request more details from Smac, visit www.ukipme.com/info/aimbj

NEW DIRECT-REPLACEMENT 115 VAC LED LAMP

PMA APPROVED LED LAMPS FOR THE AIRCRAFT BELOW:



New Hawker 850XP

Bombardier CL600

1125 Westwind

New Learjet 36

Learjet 55

Falcon 50

Bombardier CL601

New Gulfstream GV

Hawker 600

Cessna 560XL

New Learjet 35

Falcon 2000

SAAB 340

Learjet 31

G IV

Cessna 750

New Hawker 900XP

Hawker 800XP

Cessna 550

New Global Express

Bombardier CL604

Falcon 900

Astra SPX

Hawker 700

EMB 120

Pilatus PC-12

New Learjet 45

Gulfstream 100

Gulfstream 200

Sabreliner 265

Cessna 552

New Cessna 525A

Boeing 727

New Cessna 560

Hawker 1000

Beechcraft 400A

Cessna 551

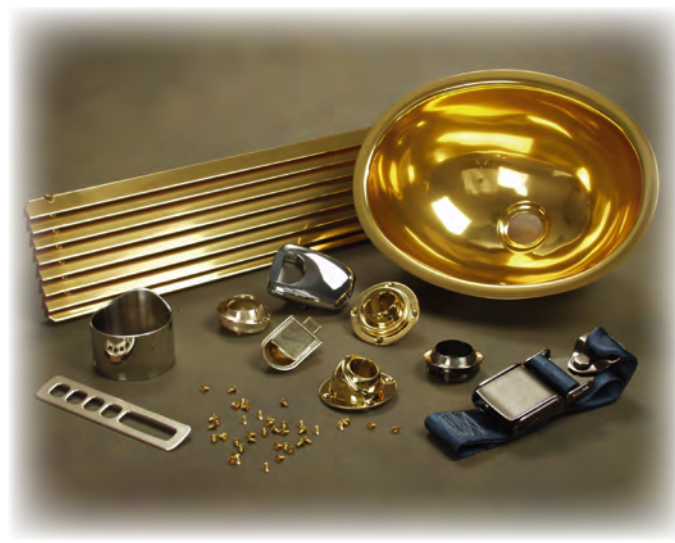
New Hawker 800XP

WWW.AIRCRAFTLIGHTING.COM

**COME SEE IT AT EBACE GENEVA
STAND X134- MAY 24-26**

Decorative Plating

Uncompromising Quality / Breathtaking Beauty



HighTech Finishing is the industry leader for truly exquisite aircraft interior decorative plating. Backed by our stringent ISO9001/AS9100 quality system, HighTech delivers unmatched beauty and lasting durability to any interior project. With 25 years of experience and a wide array of gorgeous finishes, operators across the globe select HighTech for truly superb decorative plating results.

Why risk your decorative plating needs to anyone else? Trust HighTech Finishing and you'll see why the world's aircraft manufacturers, completion centers and interior designers choose HighTech Finishing as their "go to" source for aviation's premier decorative plating.

- Fastest turn times in the industry
- Over 135 finishes to choose from
- Exceptional beauty and unmatched durability

HTF HIGHTECH FINISHING
AVIATION'S INTERIOR PLATING SPECIALISTS

HighTech Finishing | 6201 Royalton | Houston, TX 77081
(713) 666-0550 | (713) 666-3340 fax | (800) 949-0124
Email: sales@htf.net | FAA RS #Q9HR088B

www.htf.net

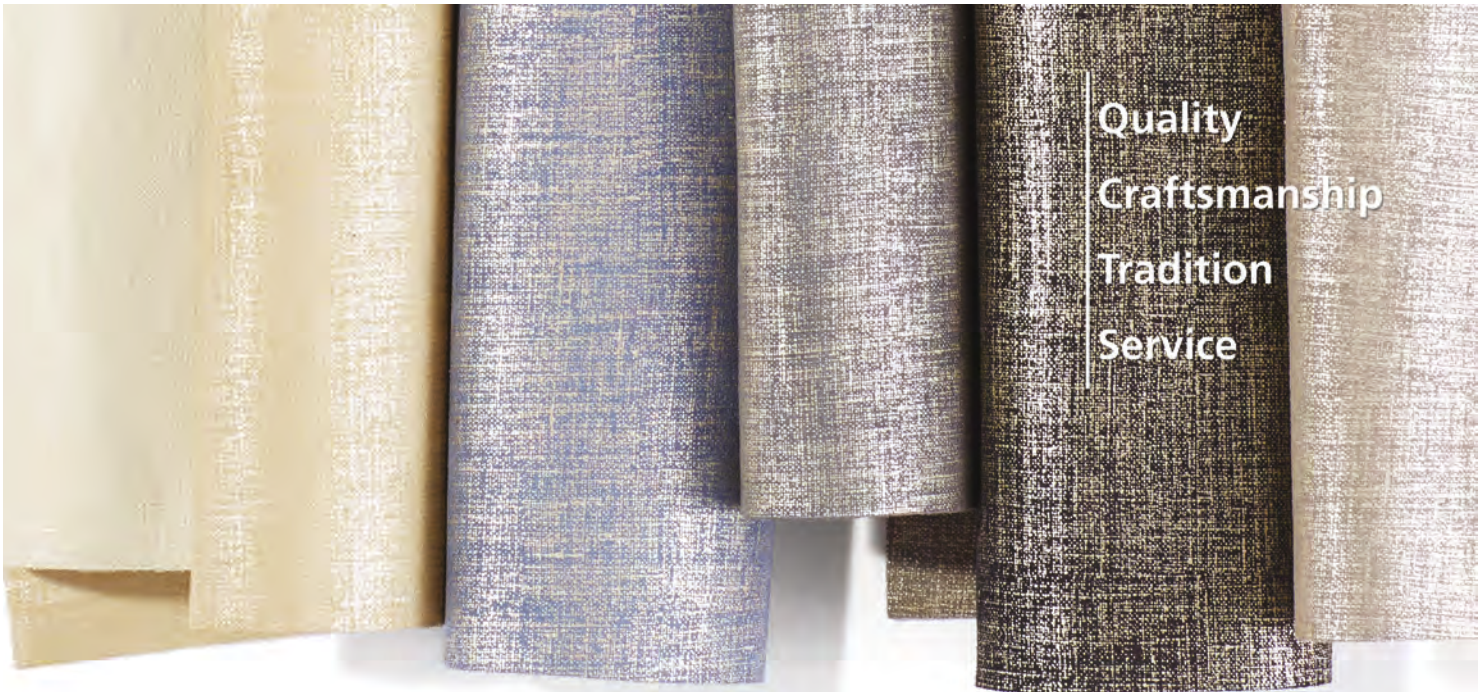


**GROUPE
AERTEC**

VACUUM TRASH COMPACTOR
by **AERTEC**

**All-in solution
for waste management**
Flying on platforms: A320, 737, 747, 767, 777, F7X

sales@groupe-aertec.com
www.groupe-aertec.com



Quality
Craftsmanship
Tradition
Service

green hides®
LEATHER STUDIO

greenhides.com

LIGHT RELIEF

Big iron operators wanting to swap fluorescent lights for LEDs can now opt for a 115V AC direct replacement wash lighting system from ALI

Direct replacement lighting solutions for business and corporate jets have been the specialty of Aircraft Lighting International (ALI) for nearly 20 years. In April 2016, the company is expanding its product offering to larger business jets and the commercial aviation market with the unveiling of its 115V AC direct replacement wash lighting system.

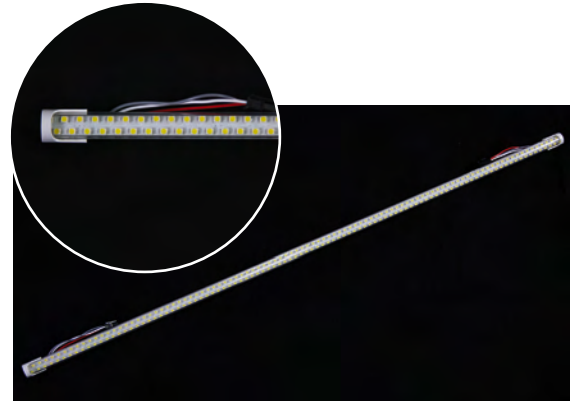
"BBJ and ACJ owners now can enjoy an affordable and effective LED lighting system that is a direct replacement to existing fluorescent systems," says Shervin Rezaie, general manager at ALI.

Much like ALI's existing 28V DC L-series lamps (pictured right), the 115V AC system is designed to simply connect

to an aircraft's existing lighting and control system, to minimize downtime.

"The system draws a fraction of the energy that its fluorescent counterparts require and unlike the fluorescent tubes, which are made out of glass, ALI's lamps are made out of plastic and accordingly are far more durable and resilient," says Rezaie. "ALI's 115V AC system not only saves power, it also provides superior quality, durability and increased life. We are so confident in the product that we provide a three-year warranty with it."

The 115V AC lamps are customizable and can be implemented with curves – even like a sine wave – to fit specific galleys, lavatories and other amenities. ✕



FREE READER INQUIRY SERVICE

To request more details from Aircraft Lighting International, visit www.ukipme.com/info/aimbj

MIX IT UP

The latest addition to Innovative Advantage's AVDS backbone results in scalable Ethernet switching

When a passenger changes the IFE 'channel', they might be switching to a live camera feed, a computer, a DVD or the AVOD system. "Some of these channels are compressed and some are uncompressed," says Richard Morris, president at Innovative Advantage. "This complicates how content is distributed to passengers. Uncompressed content typically favors a system of audio/video switches, while compressed content favors Ethernet switches."

Architects of both types of system add hardware to distribute content not fundamentally supported. "With Ethernet-based systems, you typically add encoders to compress live content," says Morris. "With switch-based systems you add decoders for the compressed content, or Ethernet switches and decoders at or in the monitors."



Innovative Advantage's AVDS network has been used as a backbone for the distribution of uncompressed audio and video. Fiber-optic connections between nodes enable the system to switch uncompressed audio and video in a network. The AVDS can simultaneously support SD, HD and 4K UltraHD video.

This backbone now has increased Ethernet connectivity, supporting self-healing capabilities in the event of wiring or hardware failure by automatically rerouting traffic. Heavy audio and video

traffic is isolated from secure internet and control data. VLAN support allows the separation of multiple networks using the same physical fiber backbone.

"An additional gigabit port on every AVDS node allows for easier integration of very high-speed connectivity equipment including AVOD servers, IP-based IFE components, and even 802.11n/ac WAPs," says Morris.

For additional local connections, a new four-port Ethernet card can be dropped into the existing AVDS node architecture. Each AVDS node is now a scalable Ethernet switch and can support up to 35 Ethernet ports. ✕

FREE READER INQUIRY SERVICE

To request more details from Innovative Advantage, visit www.ukipme.com/info/aimbj



Beauty, Elegance, Harmony

Visit us
at EBACE
Booth
1105

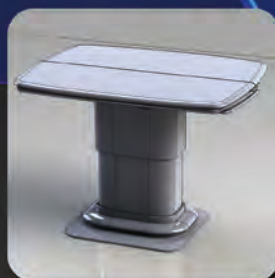
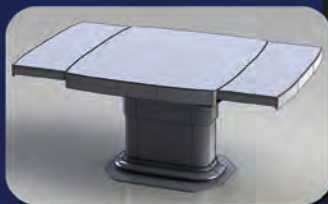
SIGNATURE PLATING

We're honest, dependable and dedicated. We'll give you the best product available. And we'll impress you with our customer service. But most importantly, your job will be done right – on time and on budget – every time. These qualities set us apart in the plating industry.

- Aviation's Most Celebrated Decorative Plating
- Beautiful Quality
- Industry leading turn time
- Unmatched customer service
- 24 hour AOG service



1135 Guadalupe Drive, Cibolo, Texas 78108 U.S.A | t +1.210.658.5599 f +1.210.658.9977 | www.signatureplating.com



AIR CABIN ENGINEERING, INC.

Specializing in Custom Aircraft Interiors Since 1981.

231 W. Bluebridge Ave. Orange, California 92865

(714) 637-4111 Fax: (714) 637-4188

info@aircabin.com

FAA Repair Station Certificate QTVR227Y

ACE Product Line

Powered Hi Lo Tables

Manual Hi Lo Tables

Flat Pocket Doors

Curved Pocket Doors

Bulkhead/Partition Systems

Removable Deco Panels

Refrigerator/Freezer Units

Turn Key Custom Galleys

Plug In Sideedge Tables

Sideedge Pullout Tables

www.aircabin.com

SLEEPING BEAUTY

Engineering innovations have led to more comfortable and flexible bed designs

In the past, bed designs were rather simple, consisting of a flat box with a mattress on top, according to Roger Bünter, CEO at Aersolution Interior. However, customer demand has driven a move to more complex bed systems, incorporating features translated from the domestic market. The challenge is to enable this complexity without incurring too much extra weight and bulk.

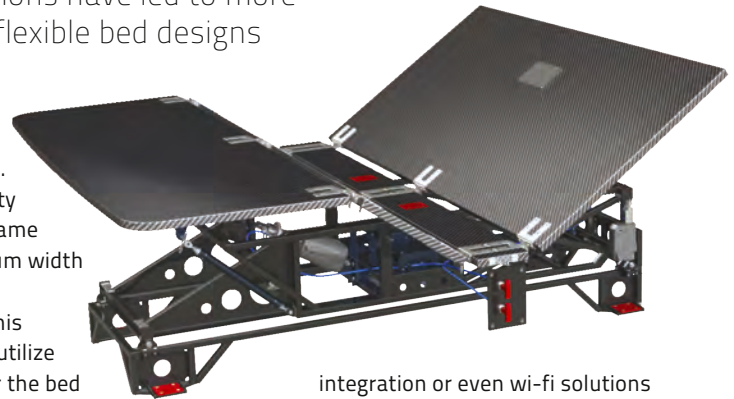
Aersolution's engineers tackled this problem in creating a new kinematic bed, aiming to minimize the size of the base frame. The main feature of the design is a customized 1in-thick carbon-fiber bed panel, which is designed to carry high loads with almost no deflection. This enabled Aersolution to reduce the bed's supporting substructure to a minimum.

Beds built on this platform can range from having a simply actuated backrest

to also featuring actuated leg rests and inflight pitch compensation. Depending on the complexity of the bed, the structural frame can be reduced to a minimum width of 12in and length of 40in, carrying a 63 x 83in bed. "This opens up the possibility to utilize almost 35ft³ of space under the bed panels for stowage drawers and other installations," says Bünter.

The choice of actuators was another important aspect. "The beds are equipped with top-of-the-line actuators that operate with almost no noise, but still enable users to set the speed with which the bed moves," says Bünter.

Various mattresses are available. Control device options include a simple rocker switch, a wired handset, CMS



integration or even wi-fi solutions including a smartphone app. "All components are tested for emergency and flight loads and qualified to RTCA DO160F sections 4, 7, 8, 16, 17 and 21 to support the individual certification process," says Bünter. ☒

FREE READER INQUIRY SERVICE

To request more details from Aersolution Interior, visit www.ukipme.com/info/aimbj

BETTER THAN EVER

MRO providers can go beyond refurbishing components, and use technology to extend product lifespan or improve performance, says PPA Group

Pete Gunson, managing director of PPA Group, a UK-based MRO provider, says that while MRO service providers are recognized for their ability to overhaul components and furnishings cost-effectively, they can go even further. "Technology has advanced so considerably that MRO specialists can now improve component performance and greatly increase its lifetime value," he explains. "Retaining a component's integrity is usually an operator's priority when choosing between sourcing new parts or refurbishing existing stock. However, it is important that operators consider the varied skills of MRO

specialists to determine whether, through high-value engineering, they can offer advanced solutions and large cost advantages."

Gunson also says operators can benefit from selecting an MRO partner that offers full in-house capabilities. "Being able to refurbish a range of components for the same jet under one roof – from transparencies and lighting to furniture and galley equipment – provides a much more cost- and time-efficient



solution," he says. "New stock issues and having to outsource certain refurbishment work can all impact on the deadline, if not properly considered. Having all services in one place makes commercial sense in the long term. At PPA Group, we continually invest in our production facilities to ensure we can fully satisfy our customers' needs, while complying with stringent industry regulations." ☒

FREE READER INQUIRY SERVICE

To request more details from PPA Group, visit www.ukipme.com/info/aimbj

TEAM SPIRIT

A recent Bombardier Challenger 604 reconfiguration benefited from the coordinated approach of those involved

"They say good things come in threes," says Christian Schusser, chief of the office of airworthiness at QCM design. "Working with a network consisting of a maintenance organization, a specialized finishing service and a design organization that have experience working together brings flexibility, coherence and fluidity to our projects."

One such project, completed in July 2015, involved the complete interior refurbishment of a Bombardier Challenger 604. "The test for this project, which ended up being separated into a major change and a minor change, was finding a balance to ensure that both approvals could be achieved by the same date," says Schusser. "Our partners in this endeavor – Aero-Dienst, Martin Kemp Design and Complete Aircraft Services – were crucial to the success of obtaining this STC."

The STC focused on a change to the aircraft's LOPA – the divan and the installed entertainment cabinet swapped locations. The cabinet was originally located aft of the divan against the right-



hand mid-cabin bulkhead, but the client required the divan to be more in line with the double seats and conference table, allowing for passengers to interact more closely. "The result, designed by Martin Kemp, is aesthetically pleasing, and the cabin seems to have more of a deliberate sense of space," says Schusser.

QCM design's ambition is to fulfill its clientele's expectations in regard to creative and technical potential, as well as to the highest safety and quality

standards. The company offers a flexible, tailor-made solution for any desired design concept, whether it is related to planning a major change, installing new avionics or electrical systems, cabin interiors, galleys or various other equipment installations. ☒

FREE READER INQUIRY SERVICE

To request more details from QCM design, visit www.ukipme.com/info/aimbj

INDEX TO ADVERTISERS

Advent Aerospace	9
AERIA Luxury Interiors.....	78
Aerocon Engineering Company	67
Aero-Dienst GmbH & Co KG.....	103
Aerolux	22, 25, 27
Aersolution Interior AG	93
Aertec Group.....	98
Air Cabin Engineering Inc.....	100
Aircraft Lighting International	97
AMAC Aerospace Switzerland AG.....	15
B/E Aerospace Lighting & Integrated Systems.....	82
Beadlight Ltd	93
Boeing Business Jets	6
Business Jet Interiors International Online Reader Inquiry Service	53

Cascade Designs Ltd.....	94
Comlux the Aviation Group	45
CTT Systems AB	85
Dahlgren Duck & Associates.....	58
EBACE.....	72
F.LIST GMBH	Inside Front Cover
Garrett Leather.....	61
Green Hides Leather Studio	98
High Tech Finishing.....	97
IDAIR GmbH.....	5
Inairvation GmbH.....	21
Innovative Advantage	94
Jet Aviation Management AG	Inside Back Cover
MSB Design Inc.....	34
Perrone Aerospace.....	71
PGA Electronic	Outside Back Cover

PPA Ltd.....	90
Q.C.M. design GmbH	103
Rockwell Collins.....	33
Sabena Technics.....	81
Saint Louis Designs Inc.....	85
Signature Plating.....	100
SMAC	82
SPS Aircraft Services.....	50
Textron Aviation- Service	2
TrueNorth Avionics Inc	37
W L Gore & Associates GmbH.....	90
www.businessjetinteriorsinternational.com ..	42

You can request more details about advertisers in this issue, including the companies and products listed in the Products & Services section, by visiting: www.ukipme.com/info/aimbj

A NEW INSPIRATION INSIDE

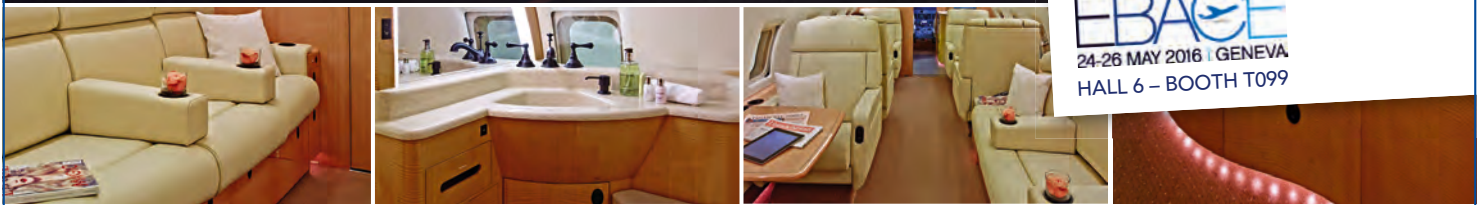
of Germany's excellent maintenance facility



Aero-Dienst Interior Solutions

Together with our carefully-selected partners we provide the full range of **interior refurbishment** and **modification services** to your **Learjet, Hawker, Challenger, Global or Falcon Jet**.

Jochen Roessler
Modifications Management
+49 911 9356 578
jochen.roessler@aero-dienst.de



EBACE
24-26 MAY 2016 | GENEVA
HALL 6 - BOOTH T099

Aero-Dienst GmbH & Co. KG | Flughafenstr. 100 | 90411 Nuremberg | Germany | www.aero-dienst.de



QCM design – Your Design Organisation

Why do you need a Design Organisation?

QCM design is entitled to classify and approve minor changes, as well as developing major changes (STC), which gives us the utmost flexibility to find solutions to your requests.

QCM design means recognition, it means confidence, it means independence; feel confident leaving your design certification in our capable hands.

Our flexibility is your benefit!

No matter your desired design concept, we will offer a tailor-made solution for you. Our wide spread Part-21J capabilities are related, but not limited, to:

- Avionics
- Installation of avionics
- Structure
- Electrical systems
- Cabin interiors
- Galleys or other interior equipment

"Design is not just what it looks like and feels like.

Design is how it works."

- Steve Jobs



QCM design gmbh

EASA.21J.509

Eichholzweg 20-24
3123 Belp, Switzerland

+41 31 960 40 99

design@part-21.ch

www.qcm.ch

stately splendor

THE NEWLY RENOVATED LANESBOROUGH HOTEL TAKES ITS CUES FROM 18TH CENTURY OPULENCE

The Lanesborough Hotel in London, UK, reopened in August 2015 after a full refurbishment. Cabinet Alberto Pinto was originally commissioned to renovate the Lanesborough suite in 2012, and was later asked to work on the whole hotel.

There are 93 guest rooms, for which the agency created four design schemes, each with three colorways. "We spent months developing fabrics and carpets with suppliers to get the perfect colors," says Linda Pinto, CEO of Cabinet Alberto Pinto. "In addition, nearly all the furniture was made to measure."

Care was taken to preserve the spirit of the hotel. "We kept a lot of the original wood paneling, only renovating it to make it brighter and improving it in places with stencils and wallpaper," says Pinto. "We used a lot of marble, for all the bathrooms and in some public areas. In the corridors and in the Westminster room, the walls are all covered with wallpaper. Formerly flat ceilings now have plaster moldings."

Pinto's favorite space is the Belgravia reception room, where the ceiling has been finished in the 18th century Adam style. "It has delicate moldings highlighted with gold leaf, and is partly painted with pale pink and blue, surrounded by ivory cornices," says Pinto. "Hunt scenes, animals and pieces of sky were painted on canvas and fixed to the ceiling. It really contributes to the grandeur of the room." ❖



OTHER EYE-CATCHING DESIGNS FROM VARIOUS INDUSTRIES...



1 Bentley's Mulliner division teamed up with audio specialist Monster to create this limited-production Continental GT V8 S. The car has 16 Monster speakers, tuned by 'head monster' Noel Lee, and is finished in Monster's signature red and black. It also includes the GT Design Seat by Mulliner.



2 Conversion specialist Lexani Motorcars has applied its skills to the Escalade. As well as an LED-studded headliner, the Viceroy Escalade comes with a 48in Samsung 4K curved smart TV, an iPad Air II, six-way power chairs, a touchscreen management system, airline-style tables, TracVision satellite, security cameras, a Mac Mini and video conferencing.



3 A new resort is being developed in Napa Valley by Four Seasons, Alcion Ventures and Bald Mountain Development. It will have 85 guest rooms and 20 private villas, as well as its own working winery and vineyard. Each villa will include multiple master suites, a wine cellar, and indoor and outdoor dining and entertainment spaces.



DREAM JET

Welcoming the World's First 787-9 Completion

Passion. Preparation. Innovation. All are necessary to achieve something that has never been done before. At Jet Aviation Basel, we are literally writing a new rulebook as we begin outfitting the world's first private 787-9 Dreamliner interior. An aircraft this sophisticated requires a whole new mindset and willingness to fuse timeless technique with innovative technology. It means rolling up our sleeves and developing new groundbreaking processes to transform our client's vision to reality. No matter how big, we'll help you live the dream.



Jet Aviation Basel - Completions Center
CH-4030 Basel-EuroAirport
Switzerland
+41 58 158 4111
jbsl@jetaviation.ch
www.jetaviation.com/basel/completions



DRM Approved AVOD System



CMS

HD Inflight
Entertainment
Connectivity



FULL IP
Get access to Early Window Content



ASTRONICS
PGA AVIONICS