New cabins, refurbishment options and products to make interiors ever more comfortable and capable are keeping the completions and refurbishment sector forward focused, regardless of lower demand for green exeliner completions at the top of the food chain. With the performance of coming business jets rising, cabins are keeping pace. From the top of the airstairs rearward to the back of the aft lav, here are developments, projects and trends shaping the interiors of business aircraft. Cabin connectivity, Wi-Fi and IFE are key parts of many cabin completion and refurbishment projects, and a subject in their own right. See next month’s Cabin Connectivity and Electronics special report for further coverage.
CABIN DEBUTS

Textron Aviation has gone large with the debut of the cabin mockup of the Hemisphere, Gulfstream unveiled the finalized G500 interior, and Bombardier overhauled the Global 5000/6000 with the introduction of Premier interiors. Today, “The key with customers is flexibility,” said Tray Crow, Gulfstream’s interior design director, talking about the G500, but that watchword is echoed by execs and expressed in the cabins of all new business jets: flexibility in the choice of interior outfittings and options, and in the interior itself, with seats fully berthable, or credenzas that transform into a couch. Technology is available at the touch of a finger but typically remains out of sight. Side ledges and extra-wide armrests hide storage compartments replete with charging ports. It’s an integral part of the globe-girdling performance of next-gen jets in which these interiors are cocooned.

Cessna Citation Hemisphere

The Citation Hemisphere, slated to enter service in 2020, will be Cessna’s first large-cabin jet, and the company unveiled the expansive, three-zone interior at the NBAA Convention last year in a full-scale cabin mockup. The design and outfitting benefit from the input of an advisory board of 20 large-cabin jet operators (95 percent non-Textron Aviation customers), bringing “a significant focus on what the passenger and customer experience needs to be,” said Kriya Shortt, former senior vice president, sales and marketing (now senior vice president, customer service).

Twenty large windows and skylights in the forward cabin and aft lavatory provide ample natural light.
lighting. The cabin is an inch shy of eight feet wide (the same as Gulfstream’s forthcoming G500), 6 feet 2 inches tall and 43 feet long, and its three zones are flanked by a forward galley, fore and aft lavatories, and in-flight accessible baggage compartment. Among the galley options are an oven and wine chiller, reflecting an expressed preference among 75 percent of prospects for having a cabin attendant aboard, said Christi Tannahill, senior v-p, turboprop aircraft and interior design at Textron Aviation, Cessna’s parent company.

Zone one in the mockup has four seats in club configuration and a stone-surfaced workstation. In zone two, a dining/worktable separates two pairs of facing seats across from a fold-up couch that converts into a long credenza, the latter illustrating the company’s recognition that “flexibility is a critical element,” said Shortt. The more relaxed zone three provides a three-seat couch opposite two large club seats. Contrasting light and dark motifs create subtle defined spaces for each zone.

The 30-inch-wide fully berthable seats embody thermo-electric technology for more precise heating and cooling comfort. Designed and made by Textron in house, they can fold out to create a 70-inch bed. The four-inch-wide armrests allow space for storage, and concealed USB ports and seat controls. A shower for the aft lavatory is optional. Seats, cabinetry and interior furnishings will be designed and made in house.

**Gulfstream G500**

Underscoring the accelerated pace of the development program, Gulfstream Aerospace showcased the redesigned cabin of the G500 at NBAA last year not in a cabin mockup, but installed aboard the fourth test aircraft to join the certification program. Gulfstream “will be making tweaks in the cabin based on interior flight-tests,” said Crow, helping to ensure smooth entry into service later this year. The redesign reflects feedback received on the proposed G600 cabin, introduced a year ago, along with continuing input from the customer advisory board.

At 7 feet 11 inches wide and 6 feet 4 inches high, the cabin of both models is designed to provide ample elbow and shoulder room for seated passengers and headroom as passengers move about the cabin. Fourteen large panoramic windows provide natural light. The full-size galley can be installed either fore or aft and outfitted with refrigerator, beverage maker and optional steam oven. De rigueur customizable F/List wood and stone flooring options are available for the entry, galley, and fore and aft lavatories.

The 27-inch-wide seats have an articulating footrest, with diamond quilted custom stitching and contrasting threads on the edges suggesting “a classic sports car,” said Crow, while the pinstriped wool divan is “classically inspired, also built for comfort.”

The design aims to “drive the discussion with customers to elicit their feedback on where they are aesthetically” as designers work with them on creating a cabin that perfectly reflects their tastes and needs. The demonstrator has lower sidewalls finished in a burled veneer, but could be finished in leather or painted for a more contemporary look.

Choices include handmade carpets of silk or cashmere, hand-stitched leather dyed to any color found in nature, and wood veneers sourced from around the world. Gulfstream design teams will assist throughout the new cabin design process. Gulfstream acousticians engineered the interior to be quiet enough for passengers to converse in normal tones in flight.

**Bombardier Global 5000/6000**

With anticipation growing for the Global 7000’s scheduled service entry next year, Bombardier Aerospace has kept the Global 5000 and 6000 in focus, introducing the Premier cabin for the
in-production jets. The “strong family resemblance between this aircraft and the Global 7000 is deliberate,” Tim Fagan, the OEM’s manager for aerospace industrial design, said at the cabin’s first showing, aboard the company’s Global 6000 demonstrator at EBACE in May. “We’ve developed our knowledge so much on the 7000,” he said, and “when we figure out something about comfort, we want it on all of our products.”

Bombardier also wants to emphasize “a common look and feel across the Globals,” Fagan said. The next-generation seats, developed and built in house, exemplify the improvements, with enhanced ergonomic features such as higher armrests, a sculpted backrest, and resculpted cushion upholstery that improve lumbar support, all combined with elements such as hand-stitched finishing and sleek side ledges. “In business aviation 20 or 30 years ago, people were deciding what aircraft to buy based on how far it flew, how fast it flew, how big the cabin was,” said Brad Nolen, v-p of marketing. “But we’re getting to the point where the customers are looking at the finer elements of the aircraft: smooth ride, noise levels and fit and finish. That’s how people are deciding today between buying aircraft A or aircraft B.”

The Premier Interiors furnishings, like the Global 7000’s, are functional, with touches like recessed cup holders and discreet cabin-comfort controls on the divan. “We want these pieces to look like a piece of furniture that was purchased and brought into the home,” Fagan said.

Non-slip hardwood or natural stone tile flooring are now options in the entrance, galley and lavatories. The galley has been streamlined and modernized, and cabinetry lines straightened, boosting storage volume slightly in the process.

Bell 525 Relentless

Bell Helicopter and Italian interiors specialist Mecaer Aviation Group have teamed on the Grandeur luxury interior for the super-medium...
Relentless. The interior shown in the full-scale cabin mockup unveiled at the Farnborough International Airshow last year had a forward-facing executive arrangement with large individual seats in creme upholstery. But multiple seating and configuration options like a wrap-around divan are “taking luxury helicopter transport to a new level,” said Patrick Moulay, Bell’s executive v-p of global sales and marketing.

Underneath the exquisite furnishings and finishings, the cabin incorporates advanced ergonomic design and noise mitigation in what Armando Sassoli, co-general manager of the Italian company, calls “the perfect blend of style and technology.”

An in-flight entertainment enhanced lounge (I-Feel) incorporates Wi-Fi, moving maps, ambient light controls and audio/video functions, all controllable via smart device. Large cabinets provide storage space and house retractable monitors. Electrochromic controls change cabin windows from clear to full tint, while a speech interference level enhanced noise system (Silens) with limousine-style privacy window quiets the cabin, allowing passengers to converse without using headsets.

Bell 505 Jet Ranger X
Mecaer also introduced an interior for the Bell 505 Jet Ranger X light single, incorporating leather-wrapped flight control boots; new interior panels, headliner and overhead passenger service unit; adjustable interior mood and reading lighting; and utilitarian touches such as coat hooks, cup holders, stowage pockets and smart device holders. Company or personal logos can be stitched into headrests or engraved into the door thresholds.

Mecaer hopes to have the interior certified by next year’s first quarter by the FAA, Transport Canada and EASA, along with approvals by Brazil and Russia. The interior will cost between $90,000 and $120,000 and can be installed in about a week, Sassoli said.

Embraer Lineage 1000E
Embraer Executive Jets’ flagship Lineage 1000E is typically delivered to customers green, but the Brazilian OEM can handle the completion in house for a turnkey delivery, as it demonstrated with the Lineage on static display at EBACE. Olive trees and branches, the universal sign of peace, create the subtle background motif, seen in the olive branches embossed in the pearlescent leather inserts in the entrance foyer, and woven into the silk and wool carpet.

“This is our peace machine,” said Jay Beever, Embraer’s v-p of interior design, the interior motif underscoring the cabin as a refuge “from the aggression of the world.” The last of the three zones is a master stateroom outfitted with a queen-size bed, and two-person shower in the lav (see “Lavatories Get More Attention”). Customers who work with company designers have “endless opportunities to customize” the interiors through choice of configurations and outfittings that the OEM designs and installs, Beever said.

Airbus ACJ330
Airbus Corporate Jets announced at EBACE in May that it will offer a private version of the A330neo. The ACJ330neo will fly 25 passengers 9,400 nm, sufficient range for nonstop flights between Europe and Australia. The widebody’s cabin “readily accommodates conference/dining areas, a private office, bedroom, bathroom and guest seating, and can be customized to suit customer needs,” Airbus said. No cabin concepts were offered; ACJ announced in April its exit from providing completions for the exeliners it sells.

Fleet refurbishments & refinements
Fleet refurbishment programs reflect the recognized value of legacy airframes, whether the upgrade is ordered by an operator, developed by
a third party or performed by an OEM (the Citation X Elite, for example).

Constant Aviation redesigned and refurbished the interiors of JetSuite’s 10 owned and operated Phenom 100s. The Cleveland MRO updated the cabins with recovered taupe and coal leather seats, refinshed cabin panels, leather cabin drink rails and “luxury options that will add to JetSuite customers’ experience,” said Stephen Maiden, Constant’s president and CEO. He noted that in general, “Customers now are retaining aircraft longer. That’s putting a greater focus on after-market upgrades.” JetSuite CEO Alex Wilcox expressed confidence that “clients will enjoy the new interiors.”

Flying Colours of Canada is refurbishing six Hawker 1000s for a niche fractional service, QJet Shares, from Mac Air Group. “You wouldn’t know if these [Hawkers] are 10 years old or 10 days old; they have all the amenities, including Wi-Fi,” said Pat Reed, of Maine-based Mac Air, which runs QJet Shares. The new program aims to provide owners with lower hourly costs than offered by major fractional programs, and an opportunity to share in charter revenue for the aircraft.

Able Aerospace Services has completed a two-year upgrade program for Air Evac Lifeteam’s 90 Bell 206s, outfitting the EMS helicopters with digital flight decks. With last year’s opening of the Able Maintenance Center at its headquarters in Mesa, Ariz., and the Air Evac project complete, Able (bought by Textron last year) is offering EMS completions and cabin and cockpit upgrades to other fleet operators.

Founded in 1982, Able has acquired complete MRO capabilities over the years, enabling it to control project timelines and budgets, said Heidi McNary, Able’s v-p for engineering. Reducing completions and retrofit costs is critical to EMS operators in this age of uncertainty about government reimbursement rates for EMS flights, she said.

Mecaer Aviation Group added FAA approval for two more EASA-validated AgustaWestland AW139 interiors STCs in response to “growing customer interest” from major fractional programs, according to the OEM. Mecaer said that it had also received FAA approval for additional STCs for 750XP, 850XP and 900XP helicopters.

LAVATORIES GET MORE ATTENTION

Embraer Executive Jets offers the option of a two-person shower in the flagship Lineage 1000E, with several notable features and advantages over showers in other executive aircraft, as Jay Beever, Embraer’s v-p of interior design, pointed out at EBACE aboard the first Lineage being shown with the new shower. The floor, made of stone veneer from F/List, is completely flat, not angled, providing a better sense of stability when showering aboard an aircraft in flight. The aircraft’s 6-foot 7-inch cabin height provides enough room to raise the floor, allowing water to flow over the sides to a drain below.

An exterior window in the shower also gives occupants a view of the horizon, adding to their positional awareness and sense of stability. It has both a rainwater showerhead and wand, and also contains a cabinet for holding towels, so bathers don’t need to step through the shower door to the adjoining lav to dry off. Embraer says the 30-gallon dedicated water tank provides enough water for 40 minutes of showering. In development for three years, the expanded shower does not intrude on cabin space, instead occupying some unused volume in the baggage hold.

Daher introduced the Elite Privacy quick-change lavatory compartment option with the 2017 TBM 900-series turboprop singles, integrating a lavatory in the aft fuselage. When not in use it provides a bench seat, and converts to a private toilet compartment at the push of a button, the multi-segment partition deployed by a pair of electric motors. The Elite Privacy compartment weighs 90 pounds and can be installed/removed by a mechanic in 30 minutes; two of the TBM’s standard six seats are sacrificed in the process. An onboard lav will be important to prospective charter operators in Europe, now that commercial use of single-engine turboprops has been approved there, said Nicolas Chabbert, senior vice president of Daher’s executive business.

The Pilatus PC-24 twinjet, set to enter service this year, boasts many midsize-jet features despite its light-jet cabin size, among them an enclosed and externally serviceable lavatory. The outside servicing provides a decided advantage over other jets in its price range. Though the airplane is designed to operate on unimproved surfaces, the executive interior, by BMW DesignWorks, features soft leathers and rare hardwood cabinetry.

MRO West Star Aviation and seating and interior components provider Aviation Fabricators are developing an STC for a belted lavatory for Hawkers (800A/B, 800XP, 750XP, 850XP, 900XP) not covered by previous lav modification approval, which covers “hundreds” of the jets, according to West Star. The installation allows the seat to be used during takeoff and landing, accommodating an additional, ninth passenger on board. Hawker program manager Kendall Kreiling said the mod can be performed during a scheduled inspection at West Star’s Grand Junction, Colo.; Chatta-nooga, Tenn.; or East Alton, Ill. headquarters facilities, and is expected to be available in the fourth quarter.
demand for more options in the U.S.” for private AW139s, said general manager Sassoli. Mecaer has customized nearly 200 AW139s with luxury interiors, though primarily in Europe, and expects the new FAA approvals “will assist in a more even distribution” of the installations, he said. The STCs cover eight different interchangeable layouts and configurations, ranging from four seats with multiple cabinets and consoles to eight-seat layouts, and can quickly be changed from one seating configuration to another. Mecaer’s Silens and I-Feel are available under both new STCs.

Duncan Aviation unveiled five interior refurbishment designs for owner-flown Citation CJ3s, complementing the Rockwell Collins Pro Line Fusion flight deck upgrade it created for the light jet. The interiors introduce light upper fuselages with darker lower sidewalls and carpeting, the contrasting tones helping “expand the feel of the cabin,” said Duncan’s Rachael Weverka, who designed the interiors. Employing maintenance-friendly materials, the cabin refurb and Fusion upgrade can be performed simultaneously, minimizing turn time. The interior refurbishment, with or without the Fusion upgrade, requires a couple of months, according to Duncan. The Michigan-based MRO is also developing six exclusive paint schemes for the CJ3.

Dassault Falcon Service introduced its “low cost” Paris Interiors refurbishment option, a contemporary design package inspired by the OEM’s most recent cabin interiors. “We change completely the experience inside the cabin,” said Martin Minvielle, DFS marketing manager. The
refreshment renews foam and fabric but maintains all structural elements, and thus costs about one-third of a conventional refurbishment. “Certification is a big cost when you remove or modify” cabin elements, Minvielle said. By performing a soft-goods refreshment with small additions, customers “can have the ‘Wow’ effect without certification cost.” Initially designed for the Falcon 900, it is also scalable to the 2000 and 7X. The first project, in conjunction with a C check, is scheduled to commence in September, with completion the following month, Minvielle said.

Piper introduced Expression, or EXP, a personalization program for the flagship M600 turbo-prop single, giving customers more involvement in their aircraft’s design details. “Many of our customers have asked us for a way to put their personal touch on the aircraft, beyond the interior packages currently available,” said Ron Gunnarson, Piper’s v-p of sales and marketing. Customers can come to the Piper factory in Vero Beach to collaborate, choosing seat stitching patterns, custom livery and other refinements.

**COMPLETION CENTERS**

**AMAC Aerospace** has made a name for itself with completions of Boeing and Airbus private airliners in the 10 years since it was founded. The Basel-based company performed the interior completion on the Boeing Business Jet (BBJ) demonstrator that the U.S. OEM debuted at EBACE this spring, and has also been selected to perform the first completion on an ACJ320neo by UK-based Acropolis Aviation, launch customer for the next-generation ACJ.

The BBJ demonstrator’s 13-passenger interior, designed by Germany’s Unique Design, emphasizes the expansive cabin space, incorporating both working environments and room to relax on long flights. Boeing will use the BBJ demonstrator to show off the type’s design possibilities, cabin comforts and styling to potential customers.
Boeing chose AMAC for the project after an extensive bidding and vetting process, said Bernd Schramm, AMAC’s Group COO. AMAC’s previous experience—successful completions on three BBJ777s and a BBJ747-8i on time and budget—was also a factor in the selection, Schramm said. The BBJ demonstrator project was completed on budget and on time in 12 months.

“It is all about comfort and feeling. You need to have a checklist, but at the end you cannot select by checklist; it’s your feeling. You work more than two years together, and you need to have a little fun as well in the time.”

The ACJ320neo, with an interior designed by Alberto Pinto, will be delivered green to AMAC’s Basel completion facility in next year’s fourth quarter, and is scheduled for redelivery to Acropolis in the fourth quarter of 2019. AMAC has performed completions on “quite a few ACJ319s and two ACJ320s” among the score of executive and head-of-state completions it has performed, Schramm noted, and had worked with Albert Pinto studios on AMAC’s 747-8i completion.

Acropolis CEO Jonathon Bousfield said, “We needed to select the right outfitter to bring Alberto Pinto’s amazing vision to life, and from our point of view AMAC demonstrated to us it had the skill and creativity to do this better than anyone else.”

While the BBJ and ACJ projects are major coups, Schramm said AMAC isn’t resting on its laurels. “We cannot focus on marketing what we achieved; we have to focus on improvements, how we can make the cabin lighter and streamline the completion process. We have to demonstrate at each maintenance visit, each A check and C check, each satcom installation, that we can fulfill the expectations of the customer, and the expectations of the customer are higher now.”

In a new slant on combi interiors, Associated Air Center (AAC) removed the custom executive cabin from a Boeing 737-200 and reinstalled it in a 737-500, finishing the interior with custom components designed for the larger airframe. “Our customer...
came to us with an unusual and challenging request to combine interior fittings from two different airplane models,” said Tony Brancato, president of the Dallas-headquartered completion center.

The project was planned around existing cabin interfaces to allow a cost-effective installation and minimize downtime. AAC designed and engineered the interfaces required to address the differences between the two models. The cabin installation also added a new lavatory, fabricated by AAC. The program’s success gives operators more options in outfitting custom aircraft cabins, Brancato said.

Comlux Aviation delivered the first EASA-certified interior in a Sukhoi Business Jet (SBJ), designed, engineered and installed by the Swiss company’s U.S. narrow-body completion center, Comlux America. The 19-passenger exceleliner features a contemporary corporate interior with a VIP area in the forward cabin anchored by club-four seating across from a side-facing sofa, and a section with 15 first-class seats behind. The SBJ, the private version of the Sukhoi Superjet 100 airliner, is owned by Kazakhmys Corp in Kazakhstan.

Jet Aviation is in the midst of a trio of green Boeing widebody completions, led by a head-of-state interior installation in the world’s first BBJ787-9 Dreamliner. Designed by London’s Andrew Winch for a Middle Eastern customer, the Swiss company said it is developing “new technologies and processes to support the completion of this new-generation aircraft.” Redelivery is scheduled for next year. Boeing has also commissioned the Swiss company to perform green completions on two BBJ777-300ERs on behalf of an Asian government, the company’s first BBJ777 head-of-state completions. The first of the -300ERs has been delivered to the Basel completions center.

Among Jet Aviation’s recent single-aisle completions is a BBJ3 with an interior design inspired by the golden age of travel, with vintage patterned carpets and wingback leather armchairs custom made in house, executed in a bold red-and-blue color scheme. The master suite has a full-height rain shower, and an interconnected cinema and dining room can be used as one large space or separated with electrochromic glass panels. Showing its practical side, the aft section has business and economy seating, complementing the more luxurious design elements.

After delivering three green BBJ completions last year Aloft AeroArchitects finds the market “a bit stretched, without a lot of brand-new completions,” and the Delaware-based MRO is focusing “on scheduled maintenance and interior refurbishments and refreshments,” said John Eichten, senior v-p of sales and marketing at the BBJ specialist. Aloft won’t limit these activities to its signature Boeing airframe work, having recently added the Global Express to its Part 145 approvals. Eichten noted “a lot of Globals are coming due for heavy maintenance.” Many owners will likely want to refresh their cabins and upgrade entertainment and communication systems at the same time, Aloft anticipates.

Greenpoint Technologies is nearing completion of a luxury interior on a Boeing 777-200LR for Crystal AirCruises. Reflecting the design motif aboard Crystal’s cruise ships, the interior provides a grand lounge with stand-up bar, sofas and tables, said Greenpoint Design director Annika Wicklund. The seats in the 84-passenger cabin can recline to lie-flat beds, each equipped with flat-screen TV, Wi-Fi and IFE system. Greenpoint worked with Crystal AirCruises’ design team on the interior, which is being installed at Greenpoint’s facility in Moses Lake, Wash. The Triple 7 will begin its travel excursions later this year.

Aeria Luxury Interiors of Texas showcased at the NBAA Convention new concept interiors for a Boeing 777 and a BBJ, the former featuring what Aeria calls “a deco-esque retro space-age look” swathed in gold, creams and blues, with soaring, vaulted ceilings. The BBJ interior, in contrast, exudes a relaxed but stylish contemporary look rendered in light tones, accented with elegant chandeliers and ceiling lights that appear to open the cabin to the sky.
**GDC Technics** is performing completions on two BBJ787s, with delivery of a third green aircraft slated for September. General partner Muhammed Alzeer believes “customers right now are being selective. They like to be at centers that are innovating, that are developing and investing in new technology—not just building a beautiful cabin, which was always a requirement before, but one that is technologically advanced and brings a lot of value.” GDC has responded in part by investing in developing STCs for Jet-Wave high-speed broadband installations, and just performed the first on a BBJ787.

Another example of this innovation is the holographic display the company showcased at EBACE, a derivative of a transportable holographic tool the company is developing for its cabin design work. “One of the biggest challenges is trying to get aircraft owners to fully immerse themselves into the cabin while it’s being designed,” said Alzeer. “With this, you don’t just see it, you’re physically inside the cabin.” GDC hopes to have the tool fully integrated into its design package “in the next few months.”

**Lufthansa Technik** (LHT) performed identical completions on two BBJs for Abu Dhabi-based charter operator Royal Jet (only the color palettes differ). The interior of the 34-passenger jets, designed by New York’s Edése Doret, has a bedroom, two full bathrooms, two lounge areas and a “starry sky” composed of some 15,000 points of fiber-optic light spanning the ceiling throughout the cabin. Carbon fiber is used extensively in the interior, one of the project’s “biggest achievements,” Edése Doret said. “You could use carbon fiber on other categories of aircraft, but it wasn’t possible to use carbon fiber for a Part 21 [airliner-size] charter aircraft until [seat manufacturer] Pac...
and JCB Aero [the composites division of AMAC Aerospace] came up with a way to meet smoke, toxicity and heat-release certification.”

The outfitting has carpeting from Tai Ping, leathers from Townsend, Ultraleather from Tapis and quartz and carbon-fiber flooring from F/List. The company performed the nine-month project at its Hamburg headquarters facility. LHT also builds all the interior and lining parts in house. Each completion required nine months, together involving some 280 technicians.

LHT also installed the interior in a new Airbus ACJ319 in cooperation with Parisian design house Hermès, for an undisclosed customer from the “Greater China region.” The cabin has a spacious dining and lounge area, master bedroom/office and master bathroom with a large shower. The 19-passenger jet’s club seats and divans were designed and upholstered by Hermès craftsmen, and the aft cabin bulkhead and curtains are made of Hermès fabric.

**AT THE MROS**

**Sabena Technics** will refurbish an A310 for Saudi Arabia’s Al Atheer Aviation. The aircraft’s bedroom, bathroom, private office and lounge will undergo extensive soft furnishing replacement, including seat and divan upholstery, with a contemporary design incorporating Arabian motifs. The IFE system will be upgraded with an HD screen. Heavy maintenance C-checks will be performed simultaneously in what is expected to be a three-month project.

Al Atheer CEO Daif Alsolamy said, “The reduced downtime of the project is extremely important to meet with our specific operations,” adding that the Paris-based MRO has “the right combination of maintenance and VIP cabin refurbishment skills.” Sabena’s vice president of VIP programs, Pascal Jallier, cited his company’s “turnkey program with a single interface for design, materials and systems, as well as associated EASA STCs” for its ability to maintain quality while meeting the tight schedule.

**Duncan Aviation** recently refurbished a G550 with a new interior, CMS upgrade and exterior paint, all performed during scheduled maintenance on the 12-year-old jet, which Duncan had helped the owner purchase when new. “This serial number was a top performer in our client’s fleet, so we gave it a facelift and kept it flying,” said completions/modifications sales manager Nate Klenke. Duncan Aviation lead designer Rachael Weverka incorporated stylized design elements using the existing panels and structure to help meet the client’s “conservative” budget. A client representative was on-site at Duncan’s facility in Lincoln, Neb. throughout the three-month project, attending daily team meetings and having access to every Duncan Aviation team member who touched the aircraft. “We like to partner with our clients on these complex projects and be transparent throughout the entire process,” said Klenke.

**Ruag** reconfigured and refurbished a new Indian-registered Global 5000 in consultation with Bombardier after the customer opted to restyle a variety of interior furnishings, such as replacing single seats with a divan, after consulting Ruag’s cabin design showroom team. Additional changes include modifications to the existing window shades for improved cabin darkening, and upgraded IFE and connectivity systems, said Robin Freigang, director of the Swiss company’s cabin interior services and design. Work was done at the company’s Bombardier authorized service center in Munich under Ruag’s EASA Part 21J design organization authorization (DOA).

**West Star Aviation** completed an extensive refurbishment of a Global Express, which included the MRO’s first installation of a Rockwell Collins Venue CMS in this type. The refreshment installed a reconfigured floor plan, upgraded LED cabin lighting, belted divan usable for takeoff and landing, soft goods
replacement, more wood accents and touchscreen control display units (CDUs) for the cabin. The Venue installation, supporting business, entertainment and conference calling in flight, underscores West Star’s commitment “to strengthen our support of Globals,” said Marty Rhine, director of sales for the East Alton, Ill.-based company.

Overall, customers are leaning toward darker woods like ebony paired with overall gray interiors, said Veta Traxler, paint and interior designer, adding that custom seat designs with quilted inserts “are hot this year.” One such design was delivered in a Challenger and two more projects (a Legacy and Hawker) are under way, “with many more customers interested in incorporating the look into their design.”

Other recent refurbs: “a G200 with a dark, bold veneer and purple-accented carpet” and “a Gulfstream with cream seats and navy welting, accompanied by a plaid over tuft khaki carpet,” said Emilie Harbour, paint and interior design lead, describing the latter as “my Ralph Lauren-inspired airplane.”

On a Global Express, Flying Colours performed the first cabin overhaul incorporating Inairvation’s pre-engineered components. In addition to textured materials, designer fabrics, carbon-fiber veneers and handmade carpet, the interior features Inairvation’s pre-engineered side ledges, which also house Lufthansa Technik’s nice HD cabin management and inflight entertainment system. The project required five months. Pre-engineered retrofit components provide “a significant number of benefits to an aircraft owner,” said Inairvation CEO Dr. Philipi von Schroeter, “as they minimize non-recurring engineering costs and reduce downtime.”

EXECLINER INTERIOR CONCEPTS

Airbus Corporate Jets (ACJ) has unveiled two cabin concepts for the forthcoming

Duncan Aviation G550
next-generation Neos. Together with Italian hypercar atelier Pagani Automobili, ACJ created Infinito for the ACJ319neo. Unveiled at EBACE this spring, Infinito features a sky ceiling that displays a facsimile of the sky above the aircraft or other images, creating an expanded feeling of airiness and space. Décor is reminiscent of Pagani hypercars, with natural soft-leather carpets and a wooden floor contrasting with carbon fiber furniture and wall-frames, meant to evoke the combination of art and science espoused by Leonardo da Vinci. Curves inspired by nature form a pathway through the cabin, which features shell-shaped valances and walls between zones, which can change from opaque to transparent at the touch of a button.

Pagani’s design team created the look and feel of the Infinito design and Airbus Corporate Jets’ designers contributed their experience in aircraft design and compatibility. “Art and science can walk together hand in hand: this is the Pagani philosophy,” said Horacio Pagani, founder and chief designer of Pagani Automobili. “Applying our Renaissance touch into the wider spaces of Airbus corporate jet cabins is the beginning of an exciting new venture for us.” Airbus Corporate Jets managing director Benoit Defforge calls it “a fresh approach to cabin design.”

At the NBAA Convention last year, ACJ introduced Melody for the ACJ320neo series. Done in white and light tones, the cabin concept features flowing lines and interior elements devoid of edges, providing a “soft,” cosseted experience for passengers, according to ACJ. In keeping with the concept’s name, the cabin has been acoustically tuned with the help of French audio engineering company Focal, incorporating rectangular-panel speakers blended into the ceiling, to provide striking sound from the entertainment system. The cabin has three curved, retractable 65-inch monitor screens, larger than any screen in an ACJ today.
Bizliner completion specialist Haeco Private Jet Solutions (HPJS) of Xiamen, China, debuted at MEBAA the Zen cabin concept, designed for the A320neo and showcased in a one-twentieth-scale mockup. Incorporating the colors, motifs and themes of four seasons, Zen is “minimalist, modern and stylish, a retreat from the busy hustle and bustle for a billionaire,” said Henry Chan, the company’s vice president commercial. “Central to our design is bringing the philosophy of Asian heritage and culture into what is otherwise a cold and mundane cabin.” The four-seasons motif is carried throughout the interior, starting with the galley in front, with lotus patterns on the wall and carpet symbolizing summer. Cabin dividers incorporate large circular openings, giving the interior an expansive, open feel. The forward lounge area, done in light green tones with decorative cherry blossom patterns, symbolizes spring, while the dining area in mid cabin uses chrysanthemums, for autumn. The Tatami Room, aft of the dining area, is centered by a high-low table that can be lowered completely into the floor, “a refuge where the principal can really get away from it all.”

Chan pointed out that most certification efforts today focus on meeting FAA and EASA regulations, but China’s GAAC certification requirements are a growing factor in completions work, and “our group is the only one that can deliver all three.” Said Chan, “We’re in it for the long term, and we will continue to innovate, and showcase stylish and individualistic design.”

**Interior**

**Components & Tools**

Ramm Aerospace won EASA approval for Bell 206/407 frameless seat cushions, designed to improve comfort, add lumbar support and reduce maintenance costs. Cushion covers are available in Naugahyde or Ultraleather.

Lufthansa Technik introduced a laser-based “augmented reality” completions and refurbishment installation tool that provides more precise measurements and positioning than conventional alignment methods.

Dassault Falcon Service has introduced a 3D scan tool for repairs, a “revolution for the refurbishment process,” which maps damage during a maintenance check so a repair or part can be created specifically for the fix, minimizing repair time.

Lufthansa Technik selected Inairvation, its joint venture with F/List, to coordinate production and sales of its “chair” line of modular seats.

Pac Seating Systems recently certified, delivered and installed 13 new seats on private airliners: eight fully motorized custom lie-flat sleep seats on a Boeing 747-8, a BBJ and an Airbus ACJ319, and five more for a BBJ777 and 787. The seats provide single, double and
triple configurations and incorporate more comfortable foam densities than the harder cushions used in airline sleeper seats, according to the Florida company.

**Greenpoint Aerospace will distribute and install Aviation Clean Air’s (ACA’s) air and surface purification systems** under a new partnership. ACA’s system eliminates pathogens, allergens and odors, and purifies surfaces throughout the cabin. It can be installed on most business aircraft, with little downtime, says the company.

**MSI Coatings’ new Blusky Armor 1027 clear coat**, created for interior cabinets and trim, cures tack-free within 120 seconds under exposure to UV light to form a thermoset, crosslinked coating that’s harder, more abrasion resistant and weathers better than thermoplastic polyurethane and polyester finishes, MSI said.

**F/List’s new leather flooring**, developed with Boxmark Leather, is available with a customized tiling concept in many colors and structures. The Austrian company made its NBAA Convention debut in November, displaying the newly developed soft-touch surface material for cabin linings. The company claims it is the only soft-touch material currently available without memory effect, and impression bumps left in the material by touch or contact with objects vanish within seconds. Aircraft window shading manufacturer **Aerospace Technology Group is developing an electromechanical and electronic dimmable window**, Panacea, that controls natural light entering the cabin, from complete blackout to light control that adjusts automatically to changing outside light or manually to a light level selected by a passenger.

**AMAC has developed a cocoon seat** in collaboration with Pac Seating Systems, AMAC and the Alberto Pinto studio, certified on the 747-8i and “easily certified for other jet types,” according to AMAC.

**Aircraft Lighting International** introduced new LED lights: a King Air exterior wing light and square lamp; and a PMA plug-and-play lamp for 5800 LED series cabin lighting originally made for the Gulfstream IV, GV and G200. A PMA for the L1309 reading light is pending.

**NC Carpet Binding & Equipment**, long-time supplier of sewing and upholstery machines to the aviation industry, **set up shops for Embraer Executive Jets’ Melbourne, Fla. factory, and Airworthy Aerospace**, a Wisconsin-based airline interiors provider. For companies that make their upholstery in-house, “the cost of the finished product will be exponentially less,” said Mal Maher, CEO of the New Jersey-based company.

**Moore & Giles launched a water-resistant leather**, Tidal, the latest addition to the company’s satin suede collection. To create Tidal, polymers are added in a drum, and adhere to the Moccasin point pattern on the leather, making it resistant to water damage. Tidal is available in four colors: stormy, super white, smoke and blue moon.

**Vision Systems Aerospace and PPG are developing new applications** for Vision Systems’ electronically dimmable window shading. Both companies supply electronically dimmable window shading, and the anticipated
To meet the interiors needs and preferences of tomorrow’s customers, Comlux America recently teamed with four key industry designers—Alberto Pinto Design, DesignQ, Unique Aircraft and Winch Design—to develop multiple interior decor and floorplan concepts for the next-generation single-aisle interiors, specifically the ACJneo and the BBJ Max-8. The goal, Comlux said, is to gather perspectives and concepts that capture the different cultures, styles and tastes of potential customers, and create “concept books” to help customers when planning completions.

BBJ completion specialist Greenpoint Technologies and Spike Aerospace, developer of the Spike S-512 supersonic business jet, signed an MOU for Greenpoint to provide interior design, engineering and technology services for the jet, projected to be airborne in the 2020s. The interior “will reflect modern comforts for the next generation to conduct business faster than the speed of sound,” said Spike Aerospace president and CEO Vik Kachoria. Under the MOU, the companies will conduct an interior study, including engineering and design, to define the interior’s possibilities, to develop photo-realistic renderings of the possible interiors.

Embraer has stood the concept of panoramic windows on its end, proposing in the Kyoto Airship, a custom interior for the Lineage 1000E, standard-width windows standing some three feet tall, providing an expansive exterior view. (The same size as Type III emergency exits: 20 x 36 inches.) Moreover, one or more standard-size windows can be placed at the same station, above or flanking the big window. The proposal was created for a Japanese client who wanted a sushi table so he could dine as he does at home, sitting on the floor, but still look out the window. Instead of lowering the window line, Jay Beever, Embraer’s v-p of interior design, worked with engineers, who determined the window height could be extended without making major structural changes to the airframe. Embraer has since developed other interior concepts taking advantage of the drama of the larger window, like the Manhattan and Hollywood Airship, some created in tandem with noted designers like senior Disney Imagineer Edward Sotto, and yacht interior designer Patrick Knowles.

Ruag’s Egg received lots of attention at EBACE in Geneva this spring. The egg-shaped vessel is a demonstrator for Ruag’s SkyLife experience, an interior design concept for both large-cabin business jets and heavy-lift helicopters, aimed at super-wealthy people. It’s about family, with the standard max 19-passenger cabins for both applications reduced to seating for six and five respectively, said Fabian Kölliker, manager of product management & innovation at Ruag. The interior is outfitted with little more than sparse seating and a ceiling contoured to illustrate the cabin heights of the respective aircraft types. Guests don virtual reality goggles to experience SkyLife in 360 degrees, and explore the cabin concepts for each. Hand motions activate various systems and allow the wearer to explore the cabins. Meanwhile, the theme of life, love and legacy weaves together the elements of the travel experience, including the cabin connectivity and active noise cancellation system for helicopters. Because these interiors require no structural modifications, the cost of the cabins would be on par with an OEM’s completion, said Kölliker. Ruag is also using SkyLife to highlight the plight of the highly endangered Swiss Golden Eagle.

When Andrew Winch Design downsizes its offering to appeal to what it calls the “VLJ market,” it’s not referring to Very Light, but rather Very Large Jets. The firm, which designs bespoke interiors for clients’ estates, yachts and private airliners, has launched a “VLJ concept aimed at a personalized market,” said Jim Dixon, the firm’s head of aviation. “Many of our clients operate multiple aircraft from several bases and for different flight plans. They want to have a consistency of design quality and elegance throughout their fleet, in their helicopter and business jet as well as their 787 for long haul.” Two initial schemes developed in conjunction with the Hublot and Omega watch brands aim to appeal to “a younger client who uses the jet for business and leisure travel, but who doesn’t want a typically ‘vanilla’ jet interior,” Dixon said.