

# completion AND 2008 refurbishment

SPECIAL REPORT

With orders at an all-time high, there's no bad news for completion centers

by Kirby J. Harrison



Refurb centers see plenty of potential in the bizliner market. Clockwise from top: a 747 interior by Edése Doret, a BBJ2 by RWVR Designs and a 787 cabin by L-3.

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By almost every market barometer available, the U.S. economy is in dire straits. Housing starts remain stagnant, the Department of Agriculture is predicting a 4.5-percent increase in food prices this year, the U.S. dollar has only recently begun to gain on the euro and the nationwide average for jet-A is about \$6 a gallon.

On the other hand, the business aviation industry and the cabin completion and refurbishment business, have never been stronger. What is going on?

The General Aviation Manufacturers Association (GAMA) earlier this year reported a new-aircraft backlog valued at a record \$58 billion. At the same time, manufacturers are selling airplanes into 2012, and well beyond in some cases. "A lot of it is driven by the international marketplace [which] suggests that our industry

will be able to power through any softness in the U.S. economy," said a GAMA source.

"There's no doubt that the backlog of new airplanes is driving sales of used airplanes, which is in turn keeping my shop pretty busy," said Randy Keeker, president of Indianapolis Jet Center, a medium-size independent completion and refurbishment facility. Keeker was being modest. In March he delivered nine Challengers that had been in for a combination of maintenance and refurbishment, and as of early May his shop was doing a Boeing 737 and a Canadair Regional Jet (CRJ200) major cabin reconfiguration, as well as two Challenger 604 refurbishments. And, he added, "I always have three or four Learjets in here."

NBAA sees little sign that the faltering economy has affected business aviation. According to numbers pro-

vided to the association by research data specialist Jet-net, the number of business aircraft operators grew from 17,178 in 2006 to 17,993 in 2007, and the worldwide corporate aircraft fleet topped out at 27,130 airplanes.

And if the forecasts released last year and early this year are accurate, it is only going to get better. Earlier this year major industry analysts, with a few exceptions, all seemed to be forecasting from the same remarkably bright globe.

Citing high corporate profits, business globalization, high commodity prices, growth of emerging markets and a weak dollar, the Teal Group's 18th annual business jet overview projects a 10-year demand for 14,289 business jets valued at \$218 billion. That is almost double the production of 6,958 business jets worth \$124 million in the previous 10-year period.

## CANADAIR REGIONAL JET CONVERSIONS BOOST COMPLETION BUSINESS

Some call converted Canadair Regional Jets (CRJ) the poor man's Gulfstream, but you won't hear that from the people who haul them out of retirement and convert them for executive use. And you won't hear it from the ready pool of buyers.

The 50-passenger CRJ200s consigned to retirement are now finding their way into refurbishment centers and thence into new roles as large-cabin private and corporate transportation—and for good reasons.

Perhaps the most important is cost. A relatively low-time CRJ200 can be had for about \$10 million. And even after adding another \$7 million for maintenance, an engine upgrade and an executive interior, the price tag is considerably less than that of a new Bombardier Challenger 850 at about \$29 million, or an Embraer Legacy 600 at approximately \$26 million.

At about 3,000 nm with auxiliary tanks, the range of an executive CRJ200 takes it out of the running against the 6,000-nm legs of a circa-\$50 million Global Express

XRS or Gulfstream G550. The \$30 million G350 could perhaps be regarded as a new but higher-priced alternative to an executive CRJ.

Also to be considered is the fact that an available delivery slot for a new Gulfstream, Challenger 850 or Legacy 600 might well be sometime in the next decade. From purchase to delivery of a refurbished executive CRJ200, the cycle is typically less than a year.

With demand growing for CRJ200 conversions, independent completion and refurbishment specialists are throwing elbows to claim the lion's share of the market. Indianapolis Jet Center is doing them. Alan Mann Group in Surrey, England, is doing them. So is Fokker Services in the Netherlands; Flying Colours in Calgary, Canada; and MJet of Montreal.

Redmond, Wash.-based Tailwind Capital, a leasing and remarketing firm, is having CRJ200s done at the PATS Aircraft Completions facility in Georgetown, Del., as

is Tailwind Capital and its partner Global Principal Finance. In the United Arab Emirates, Dubai-based Project Phoenix is using Skyservice at Toronto Pearson Airport in Canada to do the maintenance work on its first CRJ200 project before moving the airplane to Flying Colours and Action Aviation in the UK for cabin outfitting.

### Refurbishment Centers Cashing In

MJet of Montreal has completed work on its first CRJ200 conversion for charter operator Corpac Canada and was sched-

uled to deliver the airplane last month.

No less important than the MJet cabin STC is the Elisen Elite 500 auxiliary fuel system, which meets the latest FAA and EASA requirements, including the FAA's SFAR 88. The system adds 4,500 pounds of fuel and extends the airplane's max range to "in excess of 3,000 nautical miles." MJet is an Elisen Company subsidiary.

At the European Business Aviation Convention & Exhibition in May, Tailwind

*The first CRJ ExecLiner from Flying Colours was delivered to India's Club One Air last month.*





Rolls-Royce's 20-year prognostication forecasts 39,000 business jets (equating to 19,500 aircraft a decade). Honeywell has a slightly less bullish outlook, predicting a market for 13,000 business jets over the next 10 years.

While decidedly optimistic, Teal sees some "very preliminary" signs of a softening market and resulting dip after 2010. Rolls-Royce predicts a market dip starting around 2014, but suggests a return to 2014 delivery rates by 2016.

Bombardier offered an optimistic 10-year delivery forecast but a somewhat more subdued short-term outlook in terms of orders. Sustained by a healthy backlog, deliveries will double those of the past equivalent period, said the Canadian manufacturer. However, the company expects a "cyclic" decrease in orders over the next two years.

The helicopter industry came away from the Heli-Expo 2008 trade show on a market high that had nothing to do with the flow of champagne. Show organizers at the Helicopter Association International had expected some 14,000 visitors but logged a total of 17,356, well over the previous record of 16,628, logged in 2005. More remarkable were orders booked at the show totaling nearly \$2 billion.

West Star Aviation completed this refurbishment of a Falcon 50 for a customer this year.



At Heli-Expo 2008, both Honeywell and Rolls-Royce were predicting continued growth in all turbine helicopter market sectors through 2016, with demand intensifying over the next half-decade. Honeywell's five-year forecast, covering only civil turbine-powered helicopters, forecasts deliveries of 4,450 ships through 2012. Rolls-Royce's 10-year outlook predicts deliveries of 9,095 civil helicopters through 2017.

"The projections of deliveries for the next 10 years show an industry operating at levels approaching capacity," said Ken Roberts, acting president of Rolls-Royce's helicopter engines division.

For Europe alone, "The growth of business aviation...looks set to continue for the foreseeable future, with the number of jets rising from 1,900 today to around 4,000 by 2017," according to a recent Eurocontrol analysis released in May. The study also forecast that by 2017, the number of business flights in the European Union would be approximately 4,300 a day.

Planned activity in the charter and fractional ownership markets appears to reflect the forecasts, though perhaps with some crossed fingers. The past half-decade has seen major changes in the charter market with such innovations as card membership programs and online charter brokers, and at least a dozen variations on those strategies.

According to one charter insider, if there has been anything impeding growth in the charter industry it's the FAA. "Whether it's simple bureaucratic lethargy or an intentional slowdown as a plan to force Congress to a much-needed budget increase, they're not acting as quickly as in the past on requests for aircraft Part 135 certification.

"To a large extent, the charter industry is dependent on the FAA's willingness to move ahead on charter certification requests, and the fact is, it's taking months to get an approval for an aircraft," he said.

Some assert that the granting of Part 135 approvals is linked directly to the new A008 Operational Control Specification. The new OpSpec, said Washington, D.C.-based aviation attorney Gary Garofalo, has posed "significant challenges" for the charter industry. At the



The demand for refurb is so strong that completion centers such as DeCrane barely roll one airplane out before rolling another one into the hangar.

same time, said an Air Charter Guide source, "It's certainly not because fewer people are trying to get into the business."

#### A SHIFTING GLOBAL MARKET PROVIDES INDUSTRY STABILITY

There is no doubt that new and used aircraft sales are the driving force behind completion and refurbishment work, respectively. And many in the industry point to rapidly expanding international demand for business jets and private jet transportation as a major factor in reducing the impact of a U.S. economic downturn.

- According to Bombardier, "At least half of our sales now are coming from outside the U.S."
- Last year, Dassault noted that for the first time more than 50 percent of its sales were coming from customers outside the U.S.
- Gulfstream said that this year, for the first time, international sales (accounting for 53 percent of the company's business) are exceeding domestic North American sales, "And that's in an environment in which our North American sales rose 30 percent," said a spokesman.

Those OEM representatives willing to speculate are now saying that this year, the number of sales to customers outside the U.S. will approach 70 percent.

"Let's just say that the current exchange rates make

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exhibited with DeCrane Aerospace and announced the first of five planned CRJ200 conversions. Dubbed the "Hemisphere 200XR," the first airplane will go to Dutch concern Solidair and will be outfitted with a 15-passenger cabin and FAA-approved fuel system that Tailwind says will give it a max range of 3,000 nm.

Stork Fokker Services in the Netherlands got into the game last year, converting a larger CRJ700 for a Middle East customer. But according to business development manager Peter van Oostrum, the company is not seeking CRJ200 conversion customers, preferring instead to focus on the Airbus ACJ series.

Ontario-based Flying Colours recently finished its first CRJ200 conversion, which it calls the "ExecLiner." The 16-passenger airplane was delivered to Indian fractional ownership operator Club One Air last month. Included in the cabin is a digital audio/video entertainment system and cabin management system from DeCrane's Audio International. Flying Colours director of sales Sean Gillespie said that with an

auxiliary fuel system by Flying Colours, the airplane expects a range of 3,000 nm.

One of the most active promoters of the CRJ200 executive conversion is Dubai-based Project Phoenix, with what it markets as the "CRJ Phoenix." The first executive conversion project will go to Macau-based operator Ritz Pacific and is currently at Skyservice in Toronto for a two-month maintenance upgrade. It will move from there to Flying Colours for the interior completion process, including installation of auxiliary fuel tanks that will give the airplane a range of 3,000 nm. While Flying Colours is doing the first CRJ Phoenix, Project Phoenix has also partnered with Action Aviation at London Luton Airport to do interior outfitting.

According to Project Phoenix manager Mike Cappuccitti, the company has been in discussions with some 30 potential customers and might produce as many as 10 CRJ Phoenix a year.

Project Phoenix announced the launch of the CRJ-Phoenix program at the Dubai Air Show last November, citing "rapidly

escalating prices and increasingly long lead times" for new aircraft as the motivating factors behind the project.

Bombardier Aerospace estimates that there are more than 1,000 CRJ200s in service. Aircraft brokers familiar with that market segment estimate that there might be about 15 CRJs immediately available for conversion to executive use, more if U.S. major airlines continue to cull regional jets from their partners' fleets.

If there is a marketing hurdle to overcome in selling the idea of converted CRJ200s, it is the perception that they are high-time airplanes. Most have typically logged between 15,000 and 20,000 hours. In the corporate aviation world, in which a Gulfstream IV with more than 6,000 hours is considered mature, 15,000 hours qualifies a business airplane as geriatric. On the other hand, explained Al Caruso, CEO of Marine Aviation, Bombardier calculates the lifespan of the CRJ200 to be about 80,000 hours. "It's a matter of educating the buyer that what he's getting is worth the price."

It's a reliable airplane made for ease of



A refurbished regional jet by Flying Colours gives owners a modern luxury interior without the wait.

maintenance. Operating costs (including debt) are about \$2,000 less than those of business jets of comparable cabin size. The bottom line, according to Caruso, is that the converted CRJ200 is a "win-win airplane" for an owner who wants a large cabin at a reasonable price and isn't so concerned about range. —K.J.H. and G.P.



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Suites are not just for widebodies anymore. Midcoast Aviation designed this "mini suite" for a G550.

it highly advantageous for the international purchaser to buy American," said an OEM representative.

Pointing to the total \$58 billion backlog currently enjoyed by business aircraft manufacturers, GAMA said the international activity is the primary driver for the current pace of business.

Much of this, say analysts, is due to a global shifting of individual and corporate wealth, and to the declining value of the U.S. dollar against other world currencies. The fact that aircraft are typically priced in dollars makes a business jet an attractive purchase these days, one that buyers are quick to recognize. One broker told AIN that the owner of an early Falcon 7X position recently sold it to a European buyer for \$67 million. (He originally paid a little less than \$40 million.)

"Looking at the market for narrow- and widebody executive aircraft sales, the main driver in the past has been the U.S.," said Walter Heerdt, senior v-p for sales and marketing at Lufthansa Technik in Hamburg, Germany. "But there has been a major shift in the global economy, and in personal and corporate wealth. This has created a shift in market dynamics, and a U.S. economic downturn will not have the global impact it has had in the past."

Based on the increasing percentage of sales to customers outside the U.S., this would appear to be true. At the same time, the weaker dollar is actually a negotiating advantage where U.S. completion and refurbishment bids are concerned.

Approximately 60 percent of completion and refurbishment customers at Midcoast Aviation are from outside the U.S., said president Kurt Sutterer.

"Most of my clients are from outside the U.S.," said Savannah Air Center CEO Jeff Zacharias. "Seventy percent

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Gore Design constructed this buffet for the dining/conference room of a Boeing 767.

## WHEN IT COMES TO CABIN ELECTRONICS, HIGH TECH RULES

by Kirby J. Harrison

Ask a completion and refurbishment center what buyers consider most important these days and the answer, almost without hesitation, is "connectivity." Whether the customer wants to stay connected through voice or data transmission to keep on top of things at the office or simply to be entertained, cabin electronics is a high priority.

"In terms of technology, the back end of the airplane is still a wild card, with individual customers demanding individualized solutions to suit individual desires," said Cessna v-p of interior design, engineering and development Cindy Halsey.

They don't ask for any LCD monitor and DVD player; they want a wide-screen, 42-inch, high-definition 1080p monitor, and the DVD player has to be the latest high-definition Blu-ray box.

Unless it's a narrow- or widebody bizliner, a surround-sound theater experience is a bit unrealistic. However, something approaching the surround-sound home-theater experience is well within the realm of possibility.

In fact, Savannah Air Center is currently installing a SkyTheater package with high-definition and surround-sound in a Bombardier Global scheduled for delivery later this summer. "It's way past good," said CEO Jeff Zacharias.

### Must-have Cabin Communications

It's difficult to tell where necessity ends and convenience begins, but certainly there is some overlap and broadband communication falls into both categories.

Late last year, analysts at Freesky Research in Arlington, Va., released a report saying that business jet passengers will be the biggest users of in-flight broadband data services over the next four years. "Private jets with maximum takeoff weights of more than 50,000 pounds will be one of the leading segments of the market," said the report's author, David Gross. "They have the will to carry most fuselage-mounted antennas and sell at prices that make broadband systems a small share of the overall cost of the airplane."

The debut of Inmarsat's SwiftBroadband satellite data service lends credence to the Freesky Research report. SwiftBroadband is an always-on service capable of transmitting data to aircraft at speeds of up to 432 kilobits per second.

While that's good news, Inmarsat's plans to launch its third and final I4 satellite to complete the broadband global area network (BGAN) suffered a setback when the Russian Proton Breeze M rocket set to carry the equipment was scrubbed earlier this year. A revised launch schedule is pending.

Nevertheless, there's little doubt that the latest and greatest in communication and entertainment technology has gone from the customer's "wish" list to the "must have" list. Manufacturers are doing their best to give them what they want, and for the most part the news is good.

✓ **Aircell** announced in April it is taking orders for broadband in the business aviation market and offering solutions over two networks—the Aircell Mobile Broadband Network in North America and Inmarsat SwiftBroadband globally through a deal with Danish satcom maker Thorne & Thorne.

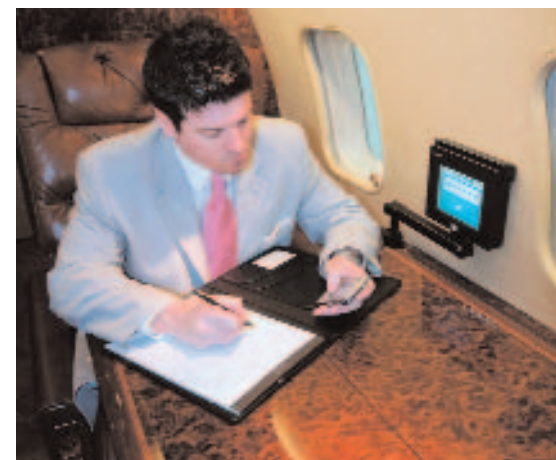
For heavy aircraft, Aircell's package will be available this fall and is touted as "the industry's first flat-fee unlimited service plan." It will allow an unlimited number of passengers access to all provided broadband services, with no restrictions on session time, number of log-ins or amount of data transferred.

Purchasers will get six months of unlimited service for the introductory price of \$1,495 a month.

Aircell has also announced the availability of a new cabin telecommunications router for the company's Axxess cabin communications system.

The first installation and certification was on a Dassault Falcon 20. The new CTR provides 802.11b/g Wi-Fi coverage in the cabin and meets the FAA's most recent guidelines.

✓ **EMS Satcom**, meanwhile, in a move aimed at winning back market share from Iridium, introduced two new SwiftBroadband satcom systems—known as System 6 and System 7—for midsize and large jets. They offer free per-minute voice calling.



Staying connected in the air through the use of a BlackBerry or other PDA has become a necessity—not a luxury—for customers.

SwiftBroadband data using the service costs about \$10 per megabyte, or about 11 cents per e-mail message sent from any Wi-Fi-capable laptop, BlackBerry or Apple iPhone. System 6 supplies data at rates between 200 and 300 kilobits per second through an eNfusion HSD-467, high-speed-data terminal and AMT-3800 high-gain antenna. System 7 is capable of data downloads between 100 and 200 kbps, using the SHD 467 terminal and a smaller AMT-3500 intermediate-gain antenna and CCU-200 communications convergence unit.

The AMT-3500 antenna can fit on a range of business jets down to the size of a Falcon 50, Learjet 45 and midsize Citations.

Built-in Wi-Fi capability of the EMS hardware will allow passengers to use their Wi-Fi BlackBerrys with no additional setup.

Both systems will be available later this summer.

✓ **Satcom 1** is off and running in the race for market share in a communication system that will allow the in-flight use of personal cellphones and personal digital assistants (PDAs), such as the BlackBerry. In fact, the Danish company considers itself among the front-runners and in May announced details of its system, based on Inmarsat's Swift64 and SwiftBroadband satcom and developed as part of Satcom 1's AvioIP portfolio of communication services.

The AvioIP has already been installed in a Boeing Business Jet and on executive versions of the Airbus A330 and A340. Satcom 1 is in discussions with Dassault Falcon Jet to make the system available on the French manufacturer's line of business jets and an agreement is expected by year-end. The company is also talking with a number of independent completion and refurbishment centers, including Swiss giant Jet Aviation.

✓ Operators of business aircraft can more easily account for their satellite communications usage in flight

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The Satcom1 system will let passengers use their cellphones in flight.



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or more of our completion and refurbishment work is for overseas customers, particularly green completion work." The center contracts with Bombardier to do the more personalized interiors for the Canadian OEM's green Global Express XRS and Global 5000 models.

Ken McAlpin, director of VIP and head-of-state aircraft completion for L-3 Integrated Systems in Waco, Texas, said most of the company's interior work now is from Europe, "and from some pretty wealthy individuals." He concedes that the weaker dollar is an attraction. "People are attracted by the favorable exchange rate [as of June 12, €1 = \$1.543], but I think everybody [in the narrow- and widebody business] at this point would be working pretty much at capacity anyhow."

Larry Price, v-p of sales and marketing at Capital Aviation, said his Oklahoma-based center has had inquiries from brokers who are in the process of arranging aircraft acquisitions on behalf of European clients who want to have the airplane outfitting done in the U.S. where it's less expensive. "And we've had some who were interested in flying a used airplane being purchased in Europe to the U.S. for completion work."



Standard Aero designed this lavatory for an Airbus ACJ.

One completion and refurbishment center executive said he is handling inquiries and doing some airplanes for customers from outside the U.S. who are snapping up new aircraft slots as bargains. "It's causing a ripple throughout the industry as slot holders discover that there are buyers willing to pay \$5 million to \$10 million more for a new airplane than they paid for it originally, just to get an earlier slot." He added that in the 60 days since March 1, "I've seen no fewer than 10 transactions as owners gave up a slot; sometimes even selling a partially completed airplane."

At EBACE a used BBJ on the static display line was for sale for an asking price of \$73 million. Based on the Serial Number (S/N 29233) the sale price new in 1998 was just over \$50 million.

The increase in customers from outside the U.S. is also giving U.S. completion and refurbishment centers a few headaches, not the least of which is ensuring that the interior meets EASA requirements. The days of simply getting an FAA STC in expectation of a rubber stamp approval from other countries are gone.

Jon Slieter, vice president of sales at Duncan Aviation, said international requirements are affecting U.S.

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by taking advantage of a new feature added to the **Arinc Direct** in-flight portfolio. It permits online access to current calling data, allowing aircraft operators to track their actual satellite communications charges in close to real-time.

The new capability is available immediately to all Arinc Direct customers and is accessible through the company's Web-based customer interface from any Internet connection.

✓ Earlier this year, **Avionics Innovations** showed off its helicopter-specific integrated cabin entertainment (ICE) package. According to sales manager Dave Cahill, the first installation went into a Bell 427 and included a passenger control unit with a commercial television-style remote and Sirius satellite radio receiver.

A major aspect of the package is a multi-mode DVD/CD/MP3 player that can be mounted vertically for installation flexibility in the limited space of a helicopter cabin. ICE video is displayed on a seven-inch, wide-screen, flat-panel display with foldaway capability and 360-degree swivel mounting. Avionics Innovations is developing a high-definition version of the DVD player and screen.

✓ At EBACE in May, **Thales** announced it is aiming to become a major supplier of avionics systems, challenging the likes of Honeywell and Rockwell Collins. "With the bizjet market doubling every ten years, we see it strategically as a good market, with increasing synergies with the regional and air transport markets," said Emmanuel Grave executive v-p and general manager of Thales Airborne Systems.

The French firm's market focus is medium and larger business aircraft, but Grave said, "That doesn't mean we won't target the smaller end of the market." Grave said Thales has already won "a position" with a particular business jet manufacturer for Wi-Fi and SwiftBroadband for a single aircraft type, with an option on its other models. He declined to name the manufacturer.

✓ The long-anticipated FAA supplemental type certificate for **Flight Display Systems'** Ellipse TV was granted in March and promises satellite-direct television at considerable savings.

The antenna and receiver system alone sells for \$99,650, a considerable saving over competing products in the \$400,000 range. An additional \$50,000 covers the cost of installation of antenna, receivers and cabin display monitors.

Ellipse TV also opens in-flight television access to midsize and smaller aircraft for which other antenna equipment was too large.

✓ **Honeywell** has announced that an in-flight messaging service for Wi-Fi-compatible BlackBerrys is now available as part of its OneLink cabin service. The service can configure Swift64 and SwiftBroadband satcom and router equipment to enable in-flight e-mail messaging. It can also be configured to allow general access for all passengers or secure access for designated passengers.

Although service is always active after takeoff, users pay only for the data they send and receive. Honeywell said it plans to announce hardware and service pricing in the third quarter.

✓ **Duncan Aviation** has installed the EMS Satcom eNfusion HSD-500 data terminal in a Challenger 601-3R. The Lincoln, Neb.-based aircraft maintenance, avionics and completion and refurbishment specialist claims it is "one of the first Challenger 601s to be upgraded with true Inmarsat SwiftBroadband capability."

It allows passengers to use Wi-Fi-capable PDAs,

including notebook computers, BlackBerrys, iPhones and other communication tools, in flight. According to Duncan, users will experience data transfer rates "up to five times faster than most other systems, giving them DSL-like speeds."

✓ In May, **Rockwell Collins** and **Arinc Direct** announced the successful installation of their high-speed Internet communications solution for business jets—eXchange with service by SkyLink—on a Citation X.

The aftermarket installation was completed at Arinc's Colorado Springs, Colo. facility, using an in-house STC developed under Arinc's recent organizational designation authorization.

The broadband terminal hardware and satellite network ground infrastructure is provided by ViaSat and uses ViaSat ArcLight advanced mobile broadband technology.

✓ **Flight Display Systems** recently unveiled its proprietary "Fly HD" package, which it claims is the world's first true in-flight high-definition (HD) video system.

The Alpharetta, Ga.-based firm said it has produced a system that will allow an off-the-shelf Blu-ray product to communicate with on-board high-definition monitors.

To display a true HD video signal, you need an HD source, such as a Blu-ray DVD player, and an HD monitor, said Flight Display president David Gray. "Although the industry has a few HD monitors approved for in-flight use, there has been no HD source equipment produced for private aviation applications."

✓ **Piaggio Aero**, the Italian manufacturer of the Avanti II high-speed turboprop twin, is offering two Aircell broadband options as optional equipment aboard the Avanti II.

The installation will give passengers the choice of U.S. or global in-flight connectivity for e-mail, Web surfing and corporate VPN (virtual private network) access.

It is the first broadband system selection by a major business aircraft manufacturer since Aircell began taking orders in April.

✓ **Cessna** has expanded its entertainment option on the new Citation CJ4 by adding **Rockwell Collins's** iPod docking solution to Rockwell Collins's Venue cabin management system.

Rockwell Collins is a member of Apple's Made for iPod program, designed to offer new iPod solutions with flexible designs so passengers can charge their iPods and distribute music, podcasts and video throughout the cabin over the audiovisual system. Venue's programmable switch panels permit passengers to access and control their iPods remotely from the seat.

The decision "opens up a whole new world of entertainment options for CJ4 passengers," said Mike Tiffany, director of business jet product lines for Rockwell Collins. ■



It wasn't long ago that one iPod dock was enough; now customers want a multiple-system docking solution, such as this one from Rockwell Collins.



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customers who believe that EASA approval will add to the resale value later, or at least increase the pool of potential buyers. "They want a clear documentation trail, so we're developing a lot more certification documentation in support of everything we do.

"We had a customer last month who was going through the pre-buy process for a Challenger and a lack of documentation on a side-facing divan killed the deal."

Despite suggestions that there seems to be a "softening" of the U.S. appetite for new business jets, it doesn't seem to be apparent to OEMs or to lenders.

According to Roger Whyte, senior v-p of sales and marketing at Cessna, the Wichita OEM has not encountered any sales in which customers had difficulty with financing, and for two good reasons. "The business airplane is an extremely valuable asset and holds its value well, even in times of economic uncertainty, and the people buying them are typically good credit risks."

The increased presence of lending institutions at the recent major aviation trade shows seems to confirm Whyte's analysis. At NBAA last fall, 10 firms were present, including Bank of America, Wachovia, Merrill Lynch Capital and Wells Fargo. More recently, at the EBACE show in May, Barclays, Credit Suisse and Key Business Aviation Financing were among the exhibitors.

On the other hand, faced with the ongoing global credit squeeze, representatives of those finance houses appear to be wearing a cautiously optimistic public face. At EBACE, Bank of America Leasing international sales director Toennies von Limberg, said, "The current economic situation has certainly improved the financing conditions for buyers."



Large airplanes give designers more leeway. This ACJ cabin was designed by Standard Aero.

Mary Schwartz, global head of aircraft financing and managing director at Citi Private Bank wealth management service, expressed a similar sentiment. "Based on what we know today, continued volatility in credit markets has significantly impacted the cost of capital across our industry." On the other hand, she added that she expects the business aviation industry will remain profitable and on that basis, "the market will adjust pricing to reflect wider market conditions."

While both may be right, there is another consideration, said a source at one OEM, alluding to the rise in corporate profits and individual wealth in recent years, particularly outside the U.S., "There are more than a few individuals and companies out there for whom financing isn't an issue."

Discussing the international market, Whyte and others refer to the economic resurgence in recent years of Brazil, Russia, India and China. The last two are still



The Russian customer for this Falcon 7X certainly doesn't mind drawing attention to his new airplane.

emerging, said a Bombardier spokeswoman. But Russia, she added, "is no longer emerging; it's there." Bombardier expects 70 percent of its sales this year will be to customers outside the U.S., and the bulk of those will be to Russian customers. Illustrating that point, a recent ramp occupant at an independent completion and refurbishment center in Florida was a Falcon 7X, dressed in a flashy metallic gold paint scheme (see photo above). It was destined for a customer in Moscow.

Whyte also notes a changing socio-political climate in the Middle East. A little over a decade ago, airplane ownership was restricted, usually to members of a royal family. Today, Middle East entrepreneurs can and do own airplanes. "Also, residents of the Middle East are finding more reasons to travel within the region [and] we're seeing more interest in midsize aircraft and a lot of start-up charter operators." Other Middle East companies are doing more business abroad, which is propelling market demand for large-cabin aircraft.

#### INTERIORS SHOPS WORKING AT CAPACITY

Those who do not subscribe to the trickle-down theory of economics are probably not engaged in the business of aircraft interior completion and refurbishment. It's difficult to find an independent completion and refurbishment center that isn't benefiting from the continued growth in new and used aircraft sales.

Capital Aviation in Bethany, Okla., has added a 10,000-sq-ft hangar, is planning new back shops for upholstery, cabinetry and finish work, has added a second work shift, and is taking interior project inquiries six months out. "People are still snapping up premium airplanes for premium dollars," said Price, "and they're bringing them here."

L-3's McAlpin said the company is near capacity and booking into 2010 on narrow- and widebody refurbishments and completions. "We've even been approached by a few people with aircraft booked elsewhere, asking if we can get it into our schedule any earlier. It's just crazy and it seems to be getting crazier," he added.

Price agrees. Earlier this year, a Gulfstream III in for a major refurbishment at Capital Aviation was sold with two months remaining on the project. "The buyer and seller did the deal right there on the floor."

"There are a lot of big, ambitious [refurbishment] projects looking for slots," said Brian Husa, completion sales representative at Duncan Aviation. The company has facilities at its headquarters in Lincoln, Neb. and in Battle Creek, Mich., where a major expansion was completed just last year. Duncan is "seriously" considering a West Coast location, "probably in the 2010/2011 time-frame," that will include a full range of services-avion-

ics, maintenance and completion and refurbishment.

Husa acknowledged that some customers have come in saying they want to keep costs down. "But for every one of those," he added, "we get someone else who wants the works."

At Midcoast Aviation, a relatively recent acquisition of Swiss aviation services giant Jet Aviation, the independent completion and refurbishment center is on "two heavy shifts and a medium third shift, working six full days a week and the occasional non-mandatory Sunday." And the work week at this point is averaging 50 to 55 hours, with overtime averaging 20 to 25 percent, said president Sutterer.

"We're not running three shifts," said Mike Menard, v-p and general manager of Standard Aero's refurbishment center in Springfield, Ill. "But we're close." Standard's Springfield facility has 225,000 sq ft spread through four hangars, and the workforce now totals more than 250.

#### WHO'S TAKING UP THE SLACK?

Every OEM is at the very least struggling to meet delivery dates for new aircraft. There is no single factor responsible, but certainly there are some that can be identified, among them vendors' inability to keep up with demand, unanticipated work-order changes and a failure to predict the complexity of owner expectations for the interior.

Dassault Falcon Jet has admitted that the extent to which buyers of its new Falcon 7X want to individualize the cabin of the new airplane was a major factor in delaying delivery dates by as much as six months for some aircraft. This despite considerable advance preparation, including building a new addition to the company's Little Rock completion center devoted exclusively to 7X outfitting.

To solve the problem and reach its goal of 40 Falcon 7X deliveries a year by 2010, the company signed an

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Designers are no longer constrained by hard lines with regard to their interiors, as demonstrated by the living room quality of this Boeing 747 by Edése Doret.



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agreement in May with Duncan Aviation to take on Falcon 7X outfitting and other airplanes that are being completed at Dassault's Bordeaux, France facilities. Jet Aviation in Basel, which has traditionally done a limited number of Falcon 2000s and 900s, is preparing to add the 7X to its cabin completions repertoire.

#### BUSINESS IS BOOMING FOR BIGGER AIRPLANES

If the completion and refurbishment market for aircraft up through large-cabin business jets such as Gulfstream's G550 is booming, the narrow- and widebody bizliner segment of the industry is through the roof. At least three centers are full and have aircraft either on a nearby ramp or in a hangar, ready to roll in when the next finished airplane rolls out.

Swiss independent completion and refurbishment center Jet Aviation officially opened its new 100,000-sq-ft hangar in Basel on May 16, with an Airbus A340-600 already in residence. With that much hangar space it will be able to accommodate an Airbus A380 and a Boeing 747 simultaneously.

According to Eugen Hartl, v-p of completion and modification, Jet Aviation in Basel is looking at a widebody aircraft backlog into 2015. "I've been with the company 12 years and I've never seen this kind of activity," he said. "Last year was a record year in terms of man-hours and net sales, and 2008 will be bigger."

In 2006, Jet Aviation acquired U.S.-based Midcoast Aviation and anticipates an increase in capacity there. Midcoast recently added a 145,000-sq-ft, twin-bay hangar capable of holding as many as six Airbus ACJs. Hartl said Jet Aviation plans to bring the Midcoast ACJ completion capabilities on line by the middle of next year to relieve some of the pressure on the Basel facilities.

Associated Air Center, now part of Standard Aero, which is in turn part of Dubai Aerospace Enterprise, is doubling its cabinetry capacity and is expanding its soft-goods shop for upholstery and panel covering. Meanwhile, the big Dallas Love Field-based center has been outsourcing for the last year, "more than we'd really like." That will change as the back-shop expansion project comes on line, said Associated senior v-p Michael Moore.



Ronkoma, N.Y.-based International Jet Interiors delivered this refurbished GIV-SP to HJ Heinz this year.

Lufthansa Technik, in Hamburg, Germany, has been expanding for the past several years and now has hangar space capable of accommodating an A380.

By mid-2010, "some restructuring and hangar modifications will allow the facility to accommodate the new Boeing 747-8. "We'll be ready when the airplane arrives," said Heerdt.

Like other narrow- and widebody bizliner facilities, Lufthansa is "pretty well at capacity." Currently in the works is a Boeing 747, to be accompanied soon by an Airbus A330 on a parallel line, "and later, nose-to-tail, a second A330." Also in the future are two A340s and two ACJs for the German government. And there are recent letters of commitment for a 787 and a 747-8. Putting it all together with projects still in negotiation, Heerdt said Lufthansa is looking at completion slots "into 2018 and beyond."

In the narrowbody segment, Lufthansa delivered its first A318 Elite a little over a year ago to European charter operator Comlux. It has since completed two more, has another two in the completion cycle, and is brandishing orders for a total of 11.

The narrowbody completion lines at Lufthansa, said Heerdt, "are already operating at a very high load until 2012 [and] we are optimistic that this situation will also continue beyond that date."

In fact, the pressure on narrowbody capacity has Lufthansa making plans to add a narrowbody completion and refurbishment line at its BizJet International facility in Tulsa, Okla.

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Capital Aviation provided this blue granite countertop for the lavatory of a Falcon 50. Granite and manmade granite Zodiaq is in high demand among customers.



The AW119Ke is available with a Versace-styled cabin.



Customers for Eurocopter's l'Hélicoptère par Hermès can choose from four different exterior color schemes.

## HAUTE COUTURE CABINS AIRBORNE

It's haute couture indeed, but this runway is paved and smells more like jet-A than Chanel.

At EBACE in May, haute couture aircraft cabins were featured prominently, illustrating a growing partnership between private aviation and major fashion houses.

TAG Aircraft Interiors (TAG-AI) announced an agreement with seating specialist B/E Aerospace to offer a line of designer seats as part of a partnership between TAG-AI and Gianni Versace of Milan. The partnership assigns responsibility for content, design and style to Versace, while TAG-AI manages the logistics and technical aspects of the interior design contracts.

"Ultimate comfort technology" from B/E will be a key element in the cabin design, with seats combining intuitive ergonomic controls—including a 360-degree swivel capability—with the luxury and craftsmanship of Versace's artists and craftsmen.

Helicopter manufacturer AgustaWestland also has a Versace connection, announced at the Heli-Expo show in 2007, where a Versace interior was shown in an AW109 Grand. This year, the Anglo-Italian company

expanded the line to include the AW139. Renzo Lunardi, senior vice president of AgustaWestland commercial business, said "five or six" Versace helicopters have been sold to date.

At EBACE this year, AgustaWestland announced it had received its first order—from a private Russian customer—for an AW119Ke with a Versace interior. Configured for six passengers, it will be flown in executive and corporate operations.

Eurocopter has announced its first order for an EC 135 l'hélicoptère par Hermès. The light twin is expected to be delivered to Abu Dhabi-based operator Falcon Aviation Services by year-end.

The cabin layout will reflect the artistic canvas of the French fashion house on surfaces throughout the interior. A sliding glass partition will separate the passenger compartment from the cockpit. Four paint schemes are offered for the helicopter exterior, and the cabin will come in five colors.

Eurocopter expects to sell at least six Hermes variants this year at about \$9 million each. —K.J.H.

## CABINS IN BRIEF

### Aero Toy Store Making Waves, Literally

Aero Toy Store, well known for buying, upgrading and refurbishing private jets for resale, is going to sea with plans to buy, refurbish and resell luxury yachts. According to company founder and CEO Morris Shirazi, the Fort Lauderdale, Fla.-based aviation services provider "plans to do for water travel what it has done for luxury aviation." To back up the pronouncement, Aero Toy Store has purchased and begun refurbishing a new luxury yacht inventory—a 147-foot Sterling yacht is undergoing a complete refitting, and a 90-foot Pershing vessel has already had a complete upgrade. Both craft will be berthed in Monte Carlo from early this month through September as the company's European sales center for private aircraft and yachts.

### Greenpoint Keeps BBJ Line Moving

Greenpoint Technologies delivered its 14th Boeing Business Jet in May and is staying busy. The independent completion and refurbishment center recently signed a contract to deliver another executive-outfitted airplane next year and has a letter of intent for another to be delivered in 2011. According to executive v-p Sloan Benson, "We have a significant BBJ backlog [and] demand for completions has never been greater."

### Gore Design Completions Lands a Biggie

Gore Design Completions, a growing force in the narrow- and widebody completion and refurbishment industry, has taken on what might be its biggest challenge to date—the outfitting of a head-of-state Boeing 777-200. The San Antonio-based firm had previously done a 767 interior for the same central Asian customer and is working on the client's Boeing 737-300 cabin completion. The 777 is scheduled to arrive at Gore in late 2010 and the company expects the project to require about 12 months. Since January, the center has delivered three green BBJs and its first Airbus A320 Prestige. Currently in the hangar is an A340 in for redesign and partial refurbishment.

### Texas Aviation Expands Latin American Presence

Texas Aviation Services, which recently teamed with Brazilian aviation consultant Sierra Aeronautical of São Paulo, continues to extend its market presence

in Latin America. In April, the Fort Worth-based completion, modification and maintenance specialist delivered a second green Bell 206B-3 to the governor of the Mexican state of Sinaloa, completing a two-ship contract originally awarded in May last year. Both are outfitted for multi-role use, including personnel transport and

medical emergency service. Also in April, Texas Aviation delivered its third helicopter cabin completion project, a Bell 407, to a Dominican Republic customer. According to company president Tim Woodard, the helicopter is outfitted for personal use "in true limousine style." Since January, the center has delivered three green

BBJs and its first Airbus A320 Prestige. Currently in the hangar is an A340 in for redesign and partial refurbishment.

### Delta Design Adds the Italian Touch

Delta Interior Design made its presence known at the European Business Aviation Convention & Exhibition (EBACE) in May, pro-

moting highly customized and personalized cabin refurbishment designs. The company's artisans are particularly skilled in customizing leathers, fabrics, carpeting and veneers, and the staff includes three faux-finish artists who work with shadow and light to create intricate 3-D

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As for doing an A380, Lufthansa Technik can accommodate the airplane in terms of size. The question is one of timing, and whether there will be an available slot. Asked if Lufthansa would consider bidding on an A380 contract, Heerdt made it clear that the company would not do so at the expense of delivering existing customers' airplanes on time.

Looking farther into the future, Lufthansa Technik has begun construction of a \$15.6 million research and development center for its Cabin Innovation division. The 70,000-sq-ft, five-story building is expected to be ready for occupancy by December.



The 787 affords designers plenty of room for creativity in terms of design. In an L-3 design, a hallway separates the lounge area from the bedroom.

If there are any doubts as to the long-term demand for widebody completions, one need only look at the \$1.5 billion order for six A350s that Airbus announced in May. Saudi-based MAZ Aviation will take delivery of one A350-800 and five A350-900s between 2015 and 2019. All six airplanes will have executive interiors and are already spoken for by individual owners. "They will be personalized, just like a yacht," said MAZ Aviation founder and chairman Mohammed Al-Zeer. The A350 orders from MAZ are in addition to two A350 XWB orders placed last year by other customers.

If that doesn't make the future look bright enough for the completion centers, Boeing's order book for widebody executive aircraft is no less fat. At EBACE in May, Boeing Business Jets reported orders in the last year for 33 airplanes valued at \$4.2 billion, bringing the total number of BBJ orders taken to date to nearly 170. The value of the current backlog stands at more than \$7.6 billion. "How long this can continue is anybody's guess," said Boeing Business Jets president Steven Hill.

Hill might be right. But with firm orders already on the books for sixteen 787s and seven 747-8s, and more to come, completion centers are likely to be busy with executive widebody work well into the next decade.

Meanwhile, Boeing is looking to clear slots on the 737 production line for 80 BBJs in 2010 and still more in 2011 and 2012. The Seattle-based company also has orders for seven BBJ3s.

Competitor Airbus is seeing similar demand for its narrowbody Airbus Corporate Jetliner series—the A318 Elite, the A319 ACJ and the A320 Prestige. The

## PIAGGIO UPDATES AVANTI II CABIN

Piaggio has consolidated its interior completions at a sole source for North America and is introducing a refreshed cabin. Jet Works of Denton, Texas, will now handle all Avanti II completions. Jet Works is in the process of installing the first new-style Avanti cabin. The new interior has a smoother appearance and more room for storage. All the pieces go together faster, so completion time was halved and now takes one month. Once the airplane has been properly prepared, an entire new interior can be installed in just three to four days, instead of 10 with the old-style interior, according to Jet Works.

The refreshed interior also includes updated cabin lighting. All upwash, downwash and aisle lighting has been modernized with LED. The PSUs are integrated for a cleaner look. A new acoustic insulation package was added to reduce cabin noise. The lavatory cabinets and lavatory pocket door were redesigned to provide more storage and better clearances. In-flight entertainment options have been updated, and now include the Rosen combination CD, DVD, moving map, and mp3 unit.

Custom cabins will still remain available.

The Avanti's standard cabin has remained largely static for more than two decades. Incremental changes that were made, such as the addition of mid-cabin cabinets, were fashioned together in a manner that added weight, increased installation times, and diminished the

relatively clean lines of the original design.

To rectify the problem, Piaggio turned to two key members of its original interior design team, Benn Isaacman and Kip Harkness, now with Infusion Design,



The goal of redesigning the Avanti interior was to give the cabin a smoother and sleeker look.

to conceive a new cabin look that did not affect aircraft certification. It also recruited a single supplier, Nordam, to manufacture sleeker and more monolithic cabin structures such as headliners, sidewalls and dados. The refreshed cabin is designed to accommodate evolutionary change over the next 20 years, according to Sean Elsner, Infusion Design's president. —M.H.

re-opened Airbus Corporate Jet Center delivered its first airplane, an A320 Elite, in April and is already at work on a second Elite and an ACJ.

Currently the sole choice of Embraer to do its Lineage 1000 outfitting, PATS Aircraft Completions is applauding orders for the executive version of the Brazilian manufacturer's E190 airliner. PATS expects to deliver the first Lineage later this summer to Prestige Jet of Abu Dhabi, which will operate it for owner Aamer Abdul Jalil Al Fahim. Meanwhile, Al Jaber Aviation, also of Abu Dhabi, has an order for five Lineage 1000s, with options for another two.

### BUYERS LOOKING FOR THE BEST

Completion and refurbishment centers are reporting that customers—from the U.S. and abroad—are more enlightened, and therefore more demanding.

In some ways, the general retail market drives customer expectations. If they see it on display at popular retail stores, they have every expectation that it should be available in the airplane for which they've just paid \$20 million or \$40 million.

"In the past, customers, and the industry as well, pretty much accepted certain limitations as part of an aircraft cabin environment," said Cindy Halsey, v-p of interiors, design engineering and development at Cessna. "Today, customers feel free to express higher expectations, and the industry has raised the bar higher than I've ever seen it in my career. [They] are more aware of what's possible, and they want it," she added.

Halsey also described a greater desire than ever for a

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Edése Doret developed this suite for the Boeing 747.





## completion AND 2008 refurbishment

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highly individualized cabin. She said Cessna's new large-body Columbus in particular is an example of an airplane with a well defined portfolio of interior possibilities. "But that's just a starting point," she explained, "and we're expecting customers with a healthy appetite for the unique."

"One of our recent customers," said Menard of Standard Aero in Springfield, "wanted black leather seats modeled after those in his BMW."

Demand for the unique is especially evident in the larger business jets, in particular Globals and Gulfstreams. Completion and refurbishment centers are reporting orders for ultraviolet circulating water



Midcoast Aviation designed this interior for a Bombardier Challenger 850.

purification systems and humidification packages. LED lighting, considered cutting edge a few years ago, is common now; it comes standard in new aircraft and is expected by refurbishment customers.

As more and more owners expect a dining experience equivalent to that in a fine restaurant, they are employing flight attendants who are also chefs, or who at least have the skills to cook on board the airplane. As a result, galleys are becoming better equipped, with multiple electrical outlets for such items as an electric skillet and convection oven in addition to the usual microwave, wine chiller, espresso maker and refrigerator.

It stands to reason that such customers for a business jet would also want the latest cabin technology.

They want a cabin management system that doesn't require a Ph.D. in engineering to operate. They don't merely want a 42-inch LCD monitor; it has to be high-definition-capable, and the DVD has to be Blu-ray so that the latest DVD offerings will be in high-definition.



Customers want the best for their new airplanes, including OLED lighting panels not even commercially available yet.

One completion center reported a customer who wanted an OLED (organic light-emitting diode) monitor. "It isn't even commercially available yet, but he was adamant that OLED is the future and it's what he wants."

On the other hand, said Duncan Aviation completion designer Nate Klenke, "We've had some

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## CABINS IN BRIEF

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images. Using a 3-D "theater," Delta Interior Design offers customers a virtual preview of the finished cabin.

### Comlux Rebranding Creates Partnership with Airbus

Comlux Aviation has restructured its aviation activities under a new title—Comlux, The Aviation Group. Among four new divisions is Comlux Completion, a joint venture with MAZ Consultancy of Bahrain. Comlux Completion is also an Airbus partner through the Airbus-owned Corporate Jet Center in Toulouse, France. Comlux Completion is tailored to advise Corporate Jet Center customers regarding executive design and completion work on an Airbus platform.

### For Piaggio's Avanti II, '.it' Is a Winner

Piaggio Aero has redefined its Avanti II interior with a cabin upgrade the Italian manufacturer calls the "Avanti II.it lounge in the sky." The ".it" tag on the Avanti II model name may have its origins in the Internet world, but at Piaggio Aero it stands for Italian Technology. Featured in the Avanti II.it are a number of options, including broadband connection, a new cabin entertainment system, LED lighting throughout and electrochromic windows. The broadband connection will provide passengers access to e-mail as well as the ability to surf the "net" and tap into an office network, all at DSL speed. Passengers and crew alike will be able to use their own 802.11b/g-equipped W-Fi data devices such as laptops and BlackBerrys. The heart of the cabin entertainment system is Rosen Aviation's new single-unit, RosenView VX combo with a worldwide moving map; multi-region DVD player; XM radio receiver (North American coverage); and audio/video switching. Upwash and downwash LED includes adjustable mood lighting. Electrochromic windows let passengers control the amount of light admitted by use of a dimmer switch.

### Arinc Direct Goes Into the Interiors Business

Arinc Direct is now offering custom interior refurbishment work at its Scottsdale, Ariz. aircraft hangar facility. The center opened unofficially last fall and has so far delivered a major cabin refurbishment project for an Avanti owner. According to Arinc Direct manager Jorge Gonzalez at the Scottsdale



Air Center, the facility has on-site designers and engineers, and shops provide cabinetry repairs as well as new cabinetry fabrication and seat upholstery.

#### **Sherwin-Williams Develops Chrome- and Lead-free Paint**

The new CM0481968 primer/surfacer from Sherwin-Williams Aerospace Coatings fills two paint niches—providing faster priming and surfacing on all types of aircraft, at the same time eliminating chrome and lead hazardous products. The new, low-VOC (volatile organic compounds), two-component, corrosion-inhibitive epoxy primer/surface reduces permissible exposure limits for hexavalent chromium, thereby meeting the Occupational Safety & Health Administration's latest standard for exposure to this chemical. Because it is a corrosion-resistant primer and surfacer, the product allows aircraft painters to eliminate costly steps in the paint process, as well as reduce the time needed to complete a project, said director of sales Marc Taylor. And, he noted, it often eliminates the need to sand and apply a surface coat between primer and topcoat.

#### **BAe and Avro Business Jet Launch the ABJ**

Some might call it a baby BBJ, but BAe Systems Regional Aircraft and its new partners call it simply the ABJ, or Avro Business Jet. BAe has joined with Stansted Airport-based Inflight Engineering Services and Design Q of London to provide a one-stop shop for customers looking for a low-cost executive aircraft in the niche market between the Gulfstream V and Boeing Business Jet. Their solution is a reconfigured and refurbished version of the BAe 146 and Avro RJ airliners, which were originally designed to carry approximately 128 passengers.

Design Q will provide interior reconfiguration designs. Inflight Engineering will do the customized interior completion work and any necessary aircraft maintenance and modification. The most recent project by Design Q and Inflight Engineering is the executive conversion of an RJ70 for use by Bulgaria's Hemus Air. The aircraft, scheduled for delivery late this year, will feature a three-element cabin with double-club seating, side-facing divan and 12-seat business-class section. The cost of a relatively low-time Avro RJ is roughly \$3 million to \$4 million, and the cost of a maintenance upgrade

and interior reconfiguration and refurbishment ranges from \$5 million to \$6 million. According to BAe, the range of the reconfigured aircraft, with auxiliary fuel tanks, would be approximately 1,500 nm. According to BAe sales executive Andy Whelan, "Sales of the aircraft have taken off in the past twelve months." To

date, 23 BAe 146s and Avro RJs have been, or are in the course of being, converted for use in a variety of private aviation roles.

#### **AgustaWestland Unveils AW101 Luxury Cabin**

AgustaWestland unveiled an executive cabin mockup of its new

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*AgustaWestland is promoting an executive cabin for its new AW101.*

KIRBY J. HARRISON



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customers come in and say, 'We bring all our own entertainment; all we want are some outlets.'"

That's probably taking it to the extreme, but the fact is that despite wanting the latest in cabin entertainment technology, passengers are indeed carrying aboard their own entertainment devices—from the ubiquitous iPod to the latest computer games.

Completion and refurbishment centers that were installing a single iPod dock in airplanes two years ago are now getting orders for iPod docks at every seat. "And not just iPod docks," said one designer. "They want to be able to watch videos stored on their iPods on the cabin entertainment system."

It almost goes without saying that high-speed Internet connectivity is now a necessity, rather than a luxury. At EBACE in May, broadband options were abundant as communications providers offered the latest, promoting everything from an expansion of global connections to Wi-Fi to near-DSL data speeds. Ironically, the long-awaited rollout of end-user broadband service has indeed begun, but it would appear that the rollout will continue for some time to come as companies such as Rockwell Collins, EMS Satcom, Thales and Thrane & Thrane continue to refine and do battle for market share.

While technology is in the driver's seat, so to speak, completion and refurbishment centers—and their customers—are more aware than ever of the cabin as a whole package. "It's a total environment; a total experience," said Halsey.

For many years, the impression of the business jet cabin has been one of a "white-bread" look that differed little from one airplane to another. Leather seats came in two basic color

variants—tan and gray. Or as one designer put it, "multiple tones of boring."

Customers today are still careful to consider what effect a major departure from "boring" will have on the airplane's resale value, or the desirability of the airplane as a charter aircraft. But Duncan's Klenke said he is seeing more individuals with "a more bold vision" that is evident in seats with contrasting trim and panels or more striking colors. Sometimes it takes the form of patterned panel coverings or sculpted leather accessories.

In the narrow- and widebody bizliners, with which designers have much more room to work—more than 6,000 sq ft in the case of the Airbus A380—there is a move away from credenzas and divans and other furniture and cabinetry mounted against sidewalls and bulkheads toward furniture that is more appropriate for a living area, said Klenke.

"Brokers and dealers still opt for the 'vanilla' interior," said Capital Aviation's Price. "But the new designs have more curved edges, and if there are splashes of individuality, they're in places where they're easily and inexpensively changed."

Price also noted that as more and more owners and operators travel abroad to places where "cash is king," they're asking to have safes installed in the aircraft cabin. An on-board safe is also not a bad place to store sensitive documents and other data.

It would appear from interviews with those in the business aviation industry, particularly those engaged in aircraft completion and refurbishment, that business is good and getting better. And while there is some "softening" of the market in the U.S., expanding markets and newfound wealth elsewhere are more than making up for it.

There are those buying small and midsize business jets who are being careful how they spend their money, whether it's for a used or new airplane. As for the narrow- and widebody executive transports, the sky is the limit.

Last year, Prince Alwaleed bin Talal bin Abdulaziz Al Saud, chairman of Saudi Arabia's Kingdom Holding, bought an Airbus A380 that will be configured for executive use. While it isn't likely to be delivered before 2010, the airplane is a striking look at what the completion and refurbishment industry can expect in the coming decade. Furnishing an A380, by one completion center executives' most conservative estimates, is likely to require 24 months and cost about \$150 million.

Times are good, and getting better. The only cautionary note might be found in a speech by President John F. Kennedy, who is credited with saying, "A rising tide lifts all boats." Assuming this is true, it might be wise to take a careful look at the economic environment with which business aviation is currently dealing and remember that the same tide might well swamp a few of the unwary. After all, it's a cyclical industry, and what goes up eventually comes back down. □



The desire for a luxurious interior extends to helicopter operators, who expect the same comfortable cabin they have in their bizjets. Air Concepts International outfitted this AgustaWestland AW139.



AW101 at EBACE in May. The 10-passenger interior was "just one of the possible layouts in such a roomy cabin," said an AgustaWestland spokesman. The mockup also featured an entry foyer, as well as four executive swivel seats and a central table to form a conference area. Other possibilities include a lavatory and cabin attendant station. AgustaWestland claims that with more than six feet of stand-up headroom, the AW101 will offer 30-percent more cabin volume than its closest competitor.

**Cirrus Orders 328JET Executive Conversion**

328 Support Services has obtained a conversion contract from Cirrus Group of Germany for an executive 328JET. The contract is valued at about \$4.73 million and work will be done at the 328 Support facilities in Oberpfaffenhofen, Germany. The new interior accommodates 12 passengers and will feature executive seats from DeCrane Aerospace, individual seat video monitors and a galley. 328 Support is at work on another 328JET conversion, a 12-seat executive job for a European customer. Included in the conversion are auxiliary fuel tanks giving the twin-jet a range of 2,000 nm. It will bring to seven the total number of 328JET executive conversions by 328 Support.

**Polymer Technologies In Search of the Quiet Airplane**

Newark, Del.-based Polymer Technologies has introduced Polyform molded products, a collection of four formulas. According to the company, the product can be customized to provide noise absorption and vibration damping and isolation in one economical, 3-D package tailored to meet specific geometry and design requirements. One Polyform product, said a company representative, can replace multiple components, resulting in lower installation costs.

**L-3 Installs Self-Protection System in Head-of-State BBJ2**

L-3 Integrated Systems of Waco, Texas, recently delivered a modified BBJ2 equipped with L-3's Widebody Integrated Platform Protection System (Wipps). The system is designed to protect the airplane from the threat of shoulder-launched, heat-seeking missiles. L-3 also has a contract to modify and install Wipps on two Boeing 747-400s belonging to the same customer, with deliveries scheduled for the second

half of this year. The Wipps installation was performed during downtime as part of an interior refurbishment.

**Innotech Paint Facility Plans July Opening**

The walls are now going up and Innotech Aviation's new 41,000-sq-ft paint preparation

and application facility is scheduled to open for business this month. The new shop adds to the company's maintenance, avionics, engineering and completion and refurbishment capabilities at Montreal's Pierre Elliott Trudeau International Airport. The shop can accommodate aircraft as large as the Global Express XRS.

Among the features is variable-speed airflow, eliminating the need to pressurize the paint bay and allowing for electrostatic paint application.

**BaySys Picks CTT Cabin Humidification Package**

BaySys Technologies has ordered the Cair cabin humidifica-

tion system from CTT Systems for installation on an executive Airbus A340 being outfitted by the Accomac, Va.-based independent completion and refurbishment center. The Cair system is designed to provide a relative cabin humidity level of 20 to 25 percent. Cabin humidity without a humidifier is typically 3 to 5 percent. ■