



New. Business Turboprops 2017

by Mark Huber

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Financial drag appears to be slowing several new business turboprop programs, with the development/certification schedules sliding to the right year-over-year. While the demand for business jets has fluctuated over the past five years, demand for new business turboprops has been remarkably steady, according to data from the General Aviation Manufacturers Association (GAMA), with sales of new turboprop singles averaging 475 aircraft between 2012 and 2016 and sales of twins averaging 119. But when you break down those numbers, most of the sales are highly concentrated within a small group of OEMs, and that makes entry into the market by new players difficult.

Run the numbers and you'll see why. In any given year, aerial application aircraft built by Air Tractor and Thrush account for about one-third of turboprop single production. Take that away, and you're left with 250 to 300 new turboprop singles a year. Five OEMs traditionally account for virtually all of that market: Textron Cessna, Daher, Pilatus, Piper and Quest. Collectively, those OEMs accounted for 254 of the 490 turboprop singles (including aerial application aircraft) produced in 2012 and 299 of the 467 produced last year, according to GAMA. There is even a great deal of concentration within these numbers when you consider Cessna and Pilatus collectively accounted for 169 new turboprop singles in 2012 and 175 last year.

When it comes to twins, Textron's Beechcraft has a virtual monopoly, with the King Air line accounting for 89 of the 94 twin turboprops manufactured in 2012 and 106 of the 115 produced last year. This leaves scant room for new market entrants unless they are either niche players, as in the case of the Viking Air Twin Otter 400 or Quest Kodiak, or they can bring to market such a compelling product at such an attractive price that they manage to capture market share from other OEMs.

Finally, consider that there is still an ample supply of used turboprops and no shortage of cost-effective upgrades to give these aircraft like-new, and in some cases better-than-new, performance. Given these market dynamics, it comes as no surprise that new turboprop market entrants often have tough sledding; making a compelling business case and attracting sufficient capital to execute a new turboprop program can be an extremely difficult proposition. As we see again this year, many such programs are struggling to get airborne and are in search of more runway.

TWINS

VIKING TWIN OTTER 400S

Beginning this year, Viking is offering a \$5.995 million Twin Otter 400S on straight floats with Honeywell VFR avionics, less-powerful PT6A-27 engines (620 shp each) and a 17-place interior. The 400S will have special anti-corrosion features for maritime use such as coatings, drains, seals and platinum-coated CT propeller blades. Amphibious floats are available on the 400 and add \$500,000 to the base price. The base \$7 million Twin Otter

400 has more powerful 750-shp Pratt & Whitney Canada PT6A-34 engines and Honeywell Primus Apex glass-panel avionics.

Optional upgrades for the 400S: IFR avionics; 19-passenger configuration; and a 15-seat/cargo combi configuration. Amphibious composite floats are planned. Viking said that the 400S is designed for quick turn-arounds and can break even with eight passengers under typical conditions.



EVEKTOR EV-55 OUTBACK

Projected EASA certification for the Outback has been delayed again, this time to 2019. But that's assuming new investors come forth. In March the company issued a statement saying the project had been "put on hold" because of "uncertainties with our Malaysian investor."

The first conforming prototype flew in April last year. This \$2.1 million light twin from the Czech Republic has been in development for more than a decade and a non-conforming prototype first flew in 2011. The aircraft was originally slated for certification in 2013. However, the order book to date appears slim and the flight-test program appears to be adhering to a leisurely schedule, perhaps a reflection that it is a largely public-sector project. Evektor says it holds orders for two dozen copies of the military/utility/cargo/combi/passenger aircraft, which seats between nine and 14 people.

Underwritten thus far by the Czech ministry of industry and receiving technical assistance from

the Czech army, the project had been receiving funding from Malaysian company Aspirasi Peritiwi, which agreed to invest up to \$200 million. The aircraft is designed for high-altitude operations at unpaved airstrips. Evektor claims interest from several air forces and is marketing the aircraft to entities currently flying Cessna 402/404 piston twins and Antonov An-2 single-radial biplanes.

The Outback features a quick-change cabin that can be reconfigured in 20 minutes. Power comes from a pair of 536-shp P&WC PT6A-21s. Maximum speed at 10,000 feet is 220 knots and maximum payload is 4,021 pounds. Service ceiling is 29,000 feet. The volume of the combined cargo/passenger area is 447 cu ft and the maximum cargo payload is 3,021 pounds. Evektor claims the Outback can take off from, and land on, a 1,700-foot runway at 6,500 feet msl under standard conditions. Evektor has selected Esterline's CMC SmartDeck integrated digital avionics system as standard equipment.

DORNIER SEASTAR

The Seastar's schedule continues to slip, with deliveries pushed out two more years to 2020. Dornier Seawings, however, did roll out the first new production \$7.21 million Seastar amphibian twin in August at Oberpfaffenhofen, Germany.

The new-generation Seastar offers an all-digital cockpit with a Honeywell Primus Epic 2.0 avionics suite featuring four 10-inch LCD displays with advanced vision, communication, navigation, surveillance and air traffic management systems. The aircraft is certified for single-pilot IFR. Other new items: a stern hydro thruster for tighter water maneuvering; corrosion-resistant landing gear with nosewheel steering; a revised 12-passenger cabin layout with air conditioning; and new propellers. First flight is scheduled for the first half of 2019.

The Seastar first flew in 1984 and was initially certified in 1991; however, the effort to put the aircraft into serial production subsequently fell victim to a chronic lack of money. In 2014 Dornier partnered with two state-owned Chinese companies (Wuxi Industrial Development Group and Wuxi Communications Industry Group) to bring the aircraft to market, announcing plans to assemble it in Germany and China. Last year Dornier Seawings China began construction of a purpose-built aircraft assembly plant in Yixing. Early last year Dornier Seawings announced an agreement under which Canada's Diamond Aircraft Industries would build Seastar airframes under contract.

The Seastar is powered by two Pratt & Whitney Canada PT6A-135s mounted push-pull above the wing on the centerline, has a maximum cruise speed of 180 knots, a 900-nm range, a service ceiling of 15,000 feet and a maximum demonstrated sea state of two feet. The Seastar was designed in the 1980s and was FAA certified under Part 23 in the early 1990s at a cost of almost \$150 million. A decade ago, the company said it held letters of intent for 25 Seastars.

TURBINE MALLARD G-73T

Type certificate holder Frakes Aviation has formed Mallard Aircraft in Cleburne, Texas, with the goal of building new-production aircraft with new Pratt & Whitney Canada PT6As and Rockwell Collins avionics. Fred Frakes converted eight piston-powered Grumman Mallards to PT6 power between 1970 and 1984 and later purchased the Mallard's TC.

Mallard plans to offer several interior configurations, among them an executive floorplan with six single seats and a three-place divan, eight single seats in a utility configuration and a 17-seat high-density layout. Predicted numbers for the new Mallard: mtow (land or water) 14,000 pounds, 4,462 pounds of fuel, a useful load of 5,470 pounds, maximum payload of 2,350 pounds, typical cruise speed of 190 knots and a service ceiling of 24,500 feet.

MAHINDRA AIRVAN 18

Mahindra Aerospace has delayed plans to begin working on an updated version of the Government Aircraft Factories N24 Nomad twin, rebadged the Airvan 18. A Mahindra executive said the company is focused on bringing the Airvan 10 turbo-prop single to market. Plans for the Airvan 18 had included a modern glass cockpit and an 18-passenger layout with quick-change options for passenger, cargo and combi ops.

The Airvan 18 was slated to be powered by a pair of upgraded 450-shp Rolls-Royce 250 engines and new propellers that would preserve its STOL capabilities, easily using runways shorter than 2,000 feet. Performance estimates: maximum cruise speed of 173 knots and 1,080 nm range with 2,190 pounds of payload. Maximum useful load was projected at 4,405 pounds, with an mtow of 9,400 pounds.

NAL SARAS

Indian Prime Minister Narendra Modi's "Make In India" initiative apparently has breathed new life into the development program of the NAL Saras. After 30 years of development and half a billion

dollars, India's National Aerospace Laboratory (NAL) has struggled to develop the Saras twin-turboprop pusher for business aviation. A third prototype was spotted taxiing in 2014. While formal funding for the Saras was cut off in late 2013, NAL managed to keep it alive with "lab" funds after that. However, by last year the program had been disbanded.

But at this year's Aero India show Harsh Vardhan, India's minister for science and technology, announced plans for NAL to devote

another \$60 million to two prototypes and resume limited flight-testing. Even though that flight-testing had yet to resume, he proclaimed Saras was "at an advanced stage of production." The Saras program has struggled since 2009, when the second prototype crashed. The latest iteration of the aircraft makes wider use of composite components to cut weight, and has uprated engines and more modern avionics. NAL says it corrects myriad design problems with the original prototype.

REMANUFACTURED TWINS

NEXTANT G90XT

Nextant Aerospace is remanufacturing Beechcraft King Air C90s. The Nextant G90XT received FAA certification in November 2015 but the company is delaying customer deliveries until it receives subsequent FAA approval of the single-level power control unit—now anticipated for this fall. The single-lever Unison power control manages engine power and prop speed and has in-flight torque- and temperature-limit

protection, auto-start and trend-monitoring capabilities and full exceedance protection.

Powered by GE H75-100s, the G90XT has Garmin G1000 glass panel avionics, a new digital pressurization system, new air conditioning with twin evaporators that delivers 300 percent more cooling capacity, new seats and new interior. TBO for the H75 will be 4,000 hours, with no requirement for a midlife hot-section inspection.



Several different standard cabin configurations are available, among them special mission/air ambulance, a high-density five-passenger layout and an executive three-seat

configuration. The price for converting a customer-supplied aircraft is \$1.99 million, or \$2.75 million for turnkey delivery of a Nextant-supplied aircraft.

NEW SINGLES

MAHINDRA AIRVAN 10

In June the Mahindra/Gipps- Aero Airvan 10 turboprop single received type certification from both the Australian Civil Aviation Safety Authority (CASA) and the FAA. The \$1.7 million, 10-seat airplane was developed from the boxy metal piston-powered Airvan 8. This unpressurized turboprop single is powered by a Rolls-Royce 250-B17 turning a Hartzell three-blade propeller. It features a 50-inch-wide sliding aft cargo door. It has a full-fuel payload of 1,400 pounds (useful load 2,250 pounds, standard fuel capacity 153 U.S. gallons), a maximum range of 550 nm with IFR reserves and a cruise speed of 145 ktas. Maximum climb rate is 1,000 fpm and the service ceiling is 20,000 feet. The takeoff roll is 1,100 feet (1,600 feet over a 50-foot obstacle), giving this aircraft true STOL capability.

The flat floor of the Airvan 10 main cabin can be configured for diverse missions, from patrol/reconnaissance/surveillance, medevac and skydiving to freight and commuter operations. The cabin measures 50 inches wide, 45 inches tall and 16 feet one inch long and can be configured for nine passengers in the cabin (plus one more in the copilot position) or a commuter configuration with an additional 32 cu ft of cargo space in the rear cabin. An optional cargo pod (600 pounds capacity) can also be attached to the aircraft, and fittings for amphibious floats are another likely option.

Arvind Mehra, executive director and CEO of Mahindra Aerospace, said the Airvan 10 would allow the company to expand existing markets and provide a “much needed boost to regional low-cost connectivity to areas where avgas is a constraint.”

Customer deliveries are expected to begin next year. GippsAero CEO Keith Douglas said the company is focusing on developing customer- and region-specific enhancements to the aircraft.

DAHER TBM 910

Daher unveiled the \$3.919 million TBM 910 in April. The new model incorporates the next-generation Garmin G1000NXi integrated flight deck, as well as cabin interior and safety enhancements. According to Daher, the TBM 910 has the same range, performance and technical features as its predecessor, the TBM 900.

The G1000NXi flight deck, a step up from the G1000 on the TBM 900, has faster processors that accelerate system boot-up and software loading, while also enabling the system to manage more data and maps, including visual approach procedures and overlays on the HSI. Another feature is improved cockpit connectivity, allowing wireless transfer of aviation databases from the Garmin Pilot app on a mobile device to the G1000NXi. Meanwhile, an enriched “feel” with the flight deck’s new keyboard joystick gives more accurate panning and fluid navigation on the multi-function display pages, according to Daher.

The TBM 910’s new cabin features updated seat styling and fittings that are identical to those on the \$4.195 million TBM 930.

CESSNA DENALI

Textron Aviation officially named this new single-engine turboprop in July last year. The Denali is slated to fly next year and the company is accepting letters of intent for the \$4.8 million,



single-pilot-capable, six-to-nine passenger aircraft. Textron Aviation reported over the summer that the company had begun constructing major subassemblies for the aircraft and that most of the production engineering drawings had been completed.

The Denali will have a range of 1,600 nm, a maximum cruise speed of 285 knots and a full-fuel payload of 1,100 pounds. The aircraft offers a flat-floor cabin; a 51-inch by 53-inch rear cargo door; a digital pressurization system that maintains a 6,130-foot cabin to 31,000 feet; and an optional externally serviceable belted lavatory with pocket door enclosure in the aft of the cabin. The cabin has large windows, LED lighting, a refreshment cabinet and a baggage compartment accessible in flight. The cabin is designed to be easily and quickly converted between passenger and cargo configurations.

The aircraft will be powered by a new GE Aviation Fadec-equipped 1,240-shp engine with single-lever power and propeller control. GE announced development of the engine late last year. The engine incorporates the modular architecture of

the T700/CT7 turboshaft for better performance and lower operating costs and features an all-titanium, 3D aero compressor design for lightweight and efficient power generation, cooled turbine blades enabling higher thrust and fuel efficiency, and integrated electronic propulsion control to enable single-lever power control. GE will flight-test the new engine next year. It will have an initial TBO of 4,000 hours.

The engine will be mated to a new McCauley (a Textron property) 105-inch diameter, five-blade, constant-speed propeller, which is full feathering with reversible pitch and ice protection. Brad Mottier, vice president and general manager BGA at GE Aviation, said the new engine is on schedule for first test run by year-end.

“All of the initial design work is complete. The detailed parts have been released. And the ATP team has printed all the additive parts. We’ve taken 855 individual parts and through an additive design and manufacturing process we have reduced that number to 12, and those parts are complete. We

also started writing the first engine assembly and disassembly procedures,” he said. The ATP software and fuel controls have been tested on a GE H80 at the company’s facility in Prague.

The Denali’s cockpit will be equipped with the Garmin G3000 touchscreen avionics suite and will have high-resolution displays and split-screen capability. The G3000 flight deck will come with weather radar, advanced terrain awareness warning system (Taws) and automatic dependent surveillance-broadcast (ADS-B) capabilities.

The Denali will be offered with a five-year limited warranty covering airframe, engine and avionics and will qualify for enrollment in Textron Aviation’s ProAdvantage programs.

EPIC E1000

Anticipated FAA certification of the \$2.95 million Epic E1000 turboprop single has slipped again, this time to next year’s first quarter. The E1000 has carbon-fiber construction, three-screen Garmin G1000 avionics and a Pratt & Whitney Canada PT6A-67A (derated to 1,200 shp from 1,825 shp thermodynamic) mated to a Hartzell four-blade propeller. Fuel capacity is 288 gallons. Time to climb to FL340 is 15 minutes and the maximum rate is 4,000 fpm. The cabin seats six and measures 15 feet long, 4.6 feet wide and 4.9 feet high. Mtow is 7,500 pounds. Takeoff distance is 1,600 feet; landing distance is 1,840 feet over a 50-foot obstacle.

The E1000 differs from Epic’s LT kit aircraft in that it has an emergency exit, different pressurization, air conditioning and lighting systems and several different switches, and a few structural changes. It will also have a service ceiling of 34,000 feet, 6,000 feet higher than the LT’s. The E1000 is expected to have a full-fuel payload of 1,100 pounds, a range of at least 1,600 nm and cruise at better than 300 knots on 40 gph. Epic holds orders for 60 aircraft and plans an initial production run of one aircraft per month following certification next year, gradually ramping up to one aircraft per week.

DIAMOND DA50-JP7

Conceived as the diesel-powered, seven-seat Super-Star in 2006, this updated version first flew in January 2015 with a 465-shp Motor Sich AI450S dual-Fadec turboprop made in Ukraine. Diamond claims that the AI450S burns 20 percent less fuel than comparable engines and is fuel-efficient even at medium altitudes.

Diamond plans to develop two variants of the aircraft: the Tundra, with oversized tires and STOL capabilities that will enable it to use unpaved runways as short as 650 feet; and another version for private owners and for use as a trainer that would feature conventional landing gear and cruise at up to 230 knots. The DA50-JP7 is designed to fly in harsh environments such as Africa and Russia, and its engine can endure an outside air temperature range of -50 degrees C to 50 degrees C, according to Diamond.

The aircraft will be produced at Diamond’s Wiener Neustadt factory in Austria. Diamond collaborated with Ukraine’s Ivchenko Progress on the aircraft design and will use the resources of Diamond’s Austro Engine subsidiary in the certification program. Certification of the \$1.1 million DA50-JP7 is slated for next year.

ONE AVIATION KESTREL K-350

Work on One Aviation’s Kestrel K-350 turboprop single has been suspended as the company has shifted resources to the Eclipse 700 very light twin jet. However, One continues to take the K-350 mock-up to trade shows. Through last year, the company had selected major suppliers for the K-350, among them Garmin for the G3000 touchscreen avionics system and Honeywell for the TPE331-14GR engine, flat-rated to 1,000 shp and providing a 5,000-hour TBO.

The aircraft has a four- to five-seat executive interior with high-gloss wood veneers, fine leathers, a wide aisle and oversize oval cabin windows. Kestrel is developing nine interior options, with passenger seating for five to nine people. The others will accommodate missions as diverse as

medevac, cargo and a high-density configuration for eight passengers. The cockpit features sidestick controls; a low, contoured instrument panel with large flat-panel displays; and a wraparound windshield allowing views of both wingtips.

One Aviation has not released a price for the Kestrel but it is expected to be in the neighborhood of \$3 million. Preliminary specifications: maximum cruise speed at least 320 ktas; 1,300-nm range (pilot, five passengers, maximum cruise speed at 31,000 feet and NBAA IFR reserves with 100-nm alternate); 1,200 pounds of payload with full fuel (319 U.S. gallons/2,137 pounds usable); and 8,500 pounds mtow.

CAIGA AG300 (FORMERLY PRIMUS 150)

This new \$1.5 million, five-seat, all-composite aircraft is loosely based on the Epic Escape and remains in flight-test, according to China Aviation Industry General Aircraft (Caiga), and now appears to be falling significantly behind the original development schedule. Caiga claims the AG300 will have a maximum cruise speed of 352 knots (identical to the Escape), a range of 1,410 nm and a ceiling of 28,000 feet. Power comes from an 850-shp GE H85.

PRIVATEER INDUSTRIES PRIVATEER

Construction has resumed after being halted in July 2015 and relocated to Titusville, Fla. The prototype for this futuristic-looking, single-engine, carbon-fiber amphibian is entering final assembly and could fly later this year. Last November the assembly team received a custom MT propeller from Germany.

This past June, the company began to address structural changes to the aircraft, landing gear modifications, and establishing weight and balance criteria. The company also hired a test pilot.

Power for the seven-seat aircraft comes from a 714-shp Walter 601 spinning a ducted pusher propeller. Predicted performance numbers: 215-knot cruise speed, service ceiling of 25,000 feet, range of 1,000 nm fully loaded, water takeoff run of 1,300 feet over a 50-foot obstacle and useful load of 2,000 pounds. Plans call for the airplane to be marketed first as a kit and then as a certified aircraft. Starting price is in the \$1.5 million range. Privateer claims to have received interest from prospective customers in Canada, Brazil, Great Britain, France, Indonesia, China, Chile and the Dominican Republic. □

UPGRADES/MODIFICATIONS

TWINS

TEXTRON AVIATION/ BEECHCRAFT KING AIRS

Blackhawk Modifications is offering the XP67A engine upgrade for the King Air 350. Certification flight-testing was completed at 15,000 pounds maximum takeoff weight. Blackhawk CEO Jim Allmon said the upgrade makes the XP67A-equipped turboprop “the fastest King Air on the planet.” Blackhawk said that at FL280, ISA +20 degree C day, max cruise, 13,000 pounds, the XP67A upgrade delivers 332 ktas compared with 292 ktas for a stock King Air 350. Under the same conditions, the

XP67A climbs from sea level to FL350 in 18 minutes, versus 45 minutes for the stock King Air 350.

The XP67A engine upgrade installs two factory-new Pratt & Whitney Canada (P&WC) PT6A-67As and new five-blade composite MT propellers and spinners. Training, support and a five-year or 2,500-hour new-engine warranty are provided by P&WC.

The company is also equipping a King Air 350ER with the XP67A engine upgrade and expects certification this year at 16,500 pounds mtow. The final phase of the project will be to

equip and certify a King Air 300 with the XP67A engine upgrade starting early next year.

In July, **Raisbeck Engineering**, in collaboration with Hartzell, announced that it is offering a new carbon-fiber, five-blade swept propeller for the King Air 350. STC approval is expected shortly, and the price is expected to be \$140,000 per aircraft. The 105-inch diameter prop features a six-year, 4,000-hour TBO and a three-year, 3,000-hour warranty. The propeller is expected to improve overall aircraft performance by between 5 and 7 percent and is designed to maximize thrust and boost cruise speed, improve single-engine climb and generate less blade tip noise. The Raisbeck propellers are available with the Blackhawk XP67A engine upgrade.

Innovative Solutions & Support (IS&S) and Blackhawk have announced an agreement for Blackhawk to distribute and install IS&S's NextGen flight deck and integrated turboprop autothrottle for King Air 200s and 350s. The two models account for 3,000 airplanes, according to IS&S, and another 2,000 C90 through E90 and F90 models are upgradeable as well. The King Air NextGen flight deck will be similar to IS&S's STC'd Pilatus PC-12 avionics upgrade (*see below*), which installs new PFDs and MFD, dual SBAS GPS receivers and IS&S's integrated flight management system with LPV approach capability.

In the twin-PT6 King Air application, the autothrottle will provide engine-out thrust control, which in case of engine failure automatically sets the remaining engine to the correct power level if airspeed approaches minimum controllable airspeed. The IS&S PT6 autothrottle is able to control an engine fully with a hydromechanical fuel control, and it protects against over-torquing during takeoff or over-tempering in climb or at high altitudes.

CenTex Aerospace has received FAA approval for a 14,000-pound mtow for Beechcraft King

Air 200s, A200s and B200s with high flotation landing gear. The Halo 275 conversion yields a 1,500-pound mtow increase, a 1,000-pound gain in maximum landing weight and, for model year 1993 and later, a 500-pound rise in the zero fuel weight. As a result of its certification in the Part 23 commuter category, the Halo 275 conversion adds five safety systems: an engine fire extinguisher, elevator trim warning, overspeed warning, emergency cabin lighting and an ice mode for the stall warning system.

The new systems raise the empty weight by 80 pounds. Overall, the net payload increase can equate to eight 170-pound passengers with 60 pounds left over for baggage or another 1,420 pounds of cargo or fuel. According to CenTex, a fully fueled King Air 200 with the Halo 275 conversion can fly 1,900 nm (zero wind, 45-minute reserve) while carrying a pilot and nine passengers. To fly that far, a standard King Air 200 would have to leave behind eight of the nine passengers.

DHC-6 TWIN OTTERS

Manufacturer **Ikhana Aircraft Services** has received U.S. FAA parts manufacturer approval (PMA) for the "Re-Life" DHC-6 fuselage. The PMA approval for the remanufacturing process followed U.S. supplemental type certification that was granted in 2011. The process involves replacing all fatigue-critical structural components with new components, resulting in new certified life limits of 66,000 hours or 132,000 flight cycles. The PMA enables Ikhana to supply the fuselages with an FAA Form 8130 for component manufacture. With the fuselage, "all of the Twin Otter life-limited structural components are now eligible for Re-Life re-manufacture, providing regulatory approved 'new' components," Ikhana said, noting that it also offers the process for Twin Otter wing boxes, flight controls and nacelles.

SINGLES

PILATUS PC-12 NG AND PC-12

Advent Aircraft Systems received STC approval for anti-skid brakes for the Pilatus PC-12 in April. The STC applies to all PC-12s equipped with a Waas-capable GPS, such as those with Honeywell Apex avionics or Garmin or IS&S Waas GPS receivers. The Advent eABS weighs 27 pounds installed, comes with all required installation hardware and requires no changes to the existing PC-12 brake system. List price for the PC-12 eABS is \$50,604, not including installation at an Advent-authorized dealer.

The eABS reduces pressure on the braking system to provide the anti-skid modulation that prevents flat-spotting or blown tires. After landing, the eABS allows the pilot to “confidently apply” the brakes immediately after touchdown or in other situations where hard braking is needed, such as a rejected takeoff. Essentially eABS acts as an alternative to reverse thrust, reducing prop erosion and the risk of FOD ingestion. During the ground test and FAA flight-testing, the eABS allowed pilots to bring PC-12s to a halt on wet and dry pavement in light wind with average ground rolls of 710 feet on approaches flown at normal VREF speeds throughout the aircraft’s weight envelope.

Earlier this year, **Innovative Solutions & Support** (IS&S) received FAA STC approval for a Pilatus PC-12 retrofit avionics suite with two eight- by 10-inch LCD primary flight displays and a 13-by 10-inch LCD multifunction display. The IS&S NextGen Flight Deck for the PC-12 has dual SBAS GPS receivers that enable LPV approach capability using IS&S’s integrated flight management system (IFMS). “The result is an integrated avionics suite providing unrivaled situational awareness, safety enhancements and operational

performance,” according to IS&S. Other standard features: IS&S’s integrated standby unit; synthetic vision and enhanced vision; ADS-B OUT AND IN; and electronic checklists. The upgraded flight deck can display airport diagrams, runway depictions, approach charts, airspace, high and low airways, nav aids and intersections. Satellite weather and iPad control are optional.

IS&S has also received STC approval for a non-Fadec turboprop autothrottle for the Pilatus PC-12 equipped with the IS&S NextGen flight deck. According to the systems integrator, the retrofit allows pilots to automatically control power settings of the PT6 to prevent overtorque and over-temperature while providing speed-envelope protection. The autothrottle computes and controls the appropriate power levels and features an automatic takeoff and go-around (TOGA) mode that will bring the engine to max power in a few seconds. Other modes allow the pilot to select the desired torque or airspeed, and if those manual settings approach limits in either parameter, the system will respond with a built-in throttle-shaker.

CESSNA CARAVAN

The Garmin G1000NXi flight deck is now standard on new-production Cessna Grand Caravan EXs and Caravans. **Textron Aviation** has already received FAA and EASA certification for the upgraded avionics on the turboprop singles, allowing deliveries to begin in the U.S. and Europe. The G1000NXi updates the display of flight information, with faster processing times, improved graphics rendering and enhanced readability with LED backlighting. Other improvements: map overlay on the HSI; more capable FMS; standard ADS-B OUT and



optional ADS-B IN; VFR and IFR charts displayed on the moving map; and animated Sirius XM weather depiction. SurfaceWatch, which provides enhanced runway situational awareness, is an option.

In July, **Blackhawk Modifications**, in partnership with **Metal Innovations**, launched a program to revitalize aging Cessna Caravans. The Caravan Reset Program will address issues for Caravans with 20,000 hours total time and at 5,000-hour intervals thereafter. It is coupled with a Blackhawk engine upgrade. “This program will allow Caravan operators to reset their aircraft to like-new standards for a fraction of the cost of a new airplane. Typical maintenance schedules for the Caravan are frequent and costly. Cessna maintenance inspection requirements significantly increase at 20,000 hours of

total time, then again every 5,000 thereafter. These intensive inspections take hundreds of man hours to complete and can cost an operator hundreds of thousands of dollars in maintenance and lost revenue from aircraft downtime,” Blackhawk asserted.

The Reset program comes with a pending FAA-approved Metal Innovations Cessna 208 Special Inspection Document (SID) Reset STC along with the new 867-shp Blackhawk XP140 engine, the same PT6A-140 engine installed on the production Caravan EX. The engine upgrade delivers 28 percent more horsepower for takeoff, climb and cruise, while retaining the existing cowlings, engine mount and exhaust system. The upgrade installs a 325-amp starter generator that lowers start temperatures by 100 degrees F, a new Hartzell 106-inch propeller and Hawkeye DigiLog engine gauges. □