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BY PIA BERGQVIST
PHOTOGRAPHS BY GLENN WATSON AND EPIC AIRCRAFT

With a larger engine inlet than its predecessor, the E1000's Pratt & Whitney PT6 breathes easier.

Sunday mornings at the Waypoint Cafe at the Camarillo Airport (KCMA) in California are generally bustling with hungry visitors eagerly awaiting a seat while drooling over the delicious menu. But on the Sunday in early May when I met Doug King, Epic Aircraft's CEO, outside the restaurant, it was deserted despite crystal-clear blue skies. The reason for the quiet was the coronavirus pandemic. The Waypoint was closed.

I walked across the nearly empty ramp to greet King at the Epic E1000 he had flown from the factory in Bend, Oregon—the first certified example of the sleek, carbon-fiber, single-engine turboprop. King had picked up its new owner from his vacation home near Lake Tahoe to bring him to Bend for training. Sadly, we had to opt out of hugs and handshakes, donning face masks and keeping our distance as much as we could.

The airstair (above) saw major improvements over the LT. Glenn Watson (right) shoots the E1000 from his customized Beechcraft Bonanza.

LONG WAY TO CERTIFICATION

Epic emerged nearly two decades ago, and the first kit was delivered in 2004. Plans from the start were to build a certified turboprop and two jets (single- and twin-engine)—all streamlined, carbon-fiber designs. The company chose to start marketing an experimental version of the turboprop, the Epic LT, to build capital for the certification effort. The reasons that effort took so long are many; I cover the first fascinating decade in my article on the Epic LT ("We Fly: Epic LT," November 2014).

When I flew the LT in 2014, Epic Aircraft expected certification of the E1000 the following year. However, the delays continued. Had it not been for a seemingly limitless cash flow from the Russian owner, Engineering LLC, and an equally limitless passion for the product from the company leadership (such as King, who took the helm in 2010), Epic's journey might have ended similarly to other composite aircraft manufacturers in Deschutes County, Oregon.

Columbia Aircraft went bankrupt, and in 2007, its aircraft designs were taken over by Cessna, which later moved the production to Mexico. The assets of Redmond-based Lancair were purchased in 2017 and the company moved to Uvalde, Texas. Epic owners can thank these events for the talented composite builders they left behind.

Increasingly stringent FAA regulations for aircraft design along with supply-chain issues, slight performance and structural modifications, and bugs in the flutter-analysis software that extended the testing program for months were only a few of the issues that added complexity to the effort, King said. "We had some opportunities to accelerate the [type-certification] schedule but were unwilling to do so if it compromised performance," he said. "For example, the decision to optimize the engine-airflow induction system likely cost us several months but certainly boosted our performance numbers."

FROM LT TO E1000

At first glance, the E1000 looks nearly identical to the LT kit airplane. However, King said, "Everything changed—but only a little bit." The most notable exterior modification is the larger engine inlet, which helps the PT6 engine breathe easier and improves high-altitude-takeoff performance. An emergency exit on the opposite

It Really Is This Good

A first customer's epic experience

"Her flying qualities are delicious."

Larry Brooke makes no equivocation when asked about his first few hours in his new Epic E1000. After having owned a series of airplanes—from a couple of custom-built Maules to an Embraer Phenom 100—the Santa Rosa, California-based entrepreneur has a broad range of experience to draw upon. He's been flying since New Year's Eve 1976, and he's had several airplanes that could be considered predecessors to the E1000, including a Lancair Legacy, a Columbia 350 and a Columbia 400.

As we went to press, Brooke was transitioning from his Pilatus PC-12 and finding joy in the E1000's combination of speed and efficiency at altitude—and low-speed manners that allow it to get "into tight spaces." He agrees that a few minor tweaks are in order. "When it has a [Garmin] GFC 700, it will be the best single-engine aircraft in the world," he says.

As a successful businessman, Brooke understands both the journey Epic has been on and the powerful tool the E1000 represents. "I've used aircraft for my business, to visit my customers. Who wants to fly commercial when you're a captain? When you drop in, in your airplane, your customers feel valued and respected.

"Epic fought long and hard to bring the E1000 to market, and they deserve the accolades."

With a stunning silhouette, terrific short-field performance and ample cabin space, the E1000 lives up to the company's intrepid name.

wall from the airstair has also been added. Other little changes include a larger trim tab for the rudder and double pitot tubes—a certification requirement resulting from the devastating Air France Flight 447 crash in 2009. (Some LTs have double pitot tubes too.)

While there are not many changes on the outside, "from the skin in, it's different," King said. Many improvements have been made in the cabin, beginning with the airstair. The stairs themselves have been aesthetically and functionally improved, and a small button near the hinge point of the door provides power to the interior lights for 10 minutes, lighting up the path to the cockpit. The windows are electrically dimmed, allowing each passenger to choose how much natural light is brought in and how much of the outside world they see. When parked, the windows automatically dim to the darkest setting, keeping the cabin cool on hot days.

The E1000 cabin is better than many for social distancing. The passenger area provides enough space that, sitting opposite the owner—who is 6 feet, 3 inches tall—there were several inches in between my knees and his, which is more than I can remember observing in other turboprops and light jets. Part of the reason for the ample space is that there is no separate luggage compartment cutting into the fuselage area. There is, however, a space behind the aft-most seats where 120 pounds of luggage can be placed. The Epic has a full-fuel payload of 1,070 pounds, or it can carry as much as 2,238 pounds with 90 gallons of fuel on board.

Frankly, it's a bit tricky to get seated in the cockpit, but experienced aviators know that most general aviation airplanes require some awkward maneuvering to access the coveted flight controls. Once you're seated, the Epic provides terrific

comfort.

The first thing I noticed as I slipped into the left seat was the generous headroom. I remembered having to cock my head slightly to the right so as not to lean my head against the left side of the windshield in the LT when seated in the highest and most forward position on the left seat. I prefer to sit close to the controls and high enough to see above the cowl—though I'm hardly short at 5 feet, 7 inches. In the highest and most forward position in the E1000, I was able to sit upright with ample space around my head.

Now for the goodies. While Epic had decided initially to stick with the original version of the G1000 to reduce certification time, it was decided to swap the old for the new. The panel is dominated by the G1000 NXi, which much has been written about in the pages of *Flying* since Garmin introduced the system in 2017. With crisper, swifter componentry in the displays, Garmin also added new features—such as SurfaceWatch to prevent runway incursions, visual-approach capabilities (with a three-degree glideslope), and a selectable map overlay for the HSI, which can also display weather and traffic in the pilot's field of vision.

The E1000's G1000 features two 10-inch PFDs, mounted on the pilot's and copilot's sides of the panel, and a 12-inch MFD in the center with a keypad mounted below for quicker data entry. I prefer the tangible keys of this system to the touchscreen controllers that are available for Garmin's G2000, G3000 and G5000 systems.

Only one thing takes away from the avionics. Rather than Garmin's integrated autopilot, the E1000 uses Genesys Aerosystems S-Tec IntelliFlight 2100. The autopilot works great, but the setup results in additional data entry.

One of my favorite things on the panel—mostly because it's unique to the Epic—is a small screen below the windshield called the Wedge Annunciation Panel, or Wedge for short. The Wedge serves as a status panel to use before takeoff and landing. This miniature checklist activates when the takeoff/go-around button on the power lever is pushed and held. Anything not configured properly is shown in red on the status panel. Once the airplane is set up correctly, all of the items on the Wedge are displayed in green. "All of the actions that need to be addressed prior to takeoff are clearly displayed right in front of you," King said.

Right next to the Wedge checklist is an angle of attack gauge integrated with the Safe Flight stall-protection system, which provides a stick-shaker warning and stick-pusher stall prevention. The FAA requires two independent computers, both of which must agree, to activate the stick pusher. L3's stellar ESI-500 serves as the electronic standby instrument.

The logic on the panel is beautifully laid out, with button sequencing from left to right for startup and right to left for shutdown. The sleek push buttons and switches are optimized for clumsy pilots and turbulence. Three beefy color-coded levers make up the power, prop and condition lever. The POH also has oversize pages and big fonts to help pilots whose near vision is beginning to fade. "You have to know your customer," King said.

The circuit breakers are lined up at the bottom of the panel for easy access. The fuel-switching process has been automated to prevent fuel imbalance. When we made sharp turns on the ground, the fuel would slosh over to the outside wing and a fuel-imbalance alert would come on, activating the system.

For $3,250,000, almost anything you could wish for is included, but options such as Iridium satellite communications, radar, TCAS and TAWS can be added.

FLYING THE E1000

I was in the right seat for the first leg to take notes. I connected my

Epic Training

While the E1000 flies at jet speeds, it does not require a type rating or annual proficiency checks as any jet-powered airplane would. However, Epic has established a training program that incorporates guidelines established by the FAA for type-rating programs for single-pilot jets.

Before heading to Bend, Oregon, the owner-operator is put through a skills-development program called the Epic Challenge, followed by online self-study and interactive Zoom meetings with a ground instructor.

Epic plans to establish two Epic training centers—east and west—with simulators available for initial and recurrent training. Until those centers are established, Epic is willing to provide as much training as the customer needs, however, in their own airplane. The only stipulation is that the pilot must have high-performance and complex endorsements, and be current on G1000 instrument flying. The instruction is free; the customer buys the gas.

Thorough knowledge of and recent experience with the G1000 logic makes a big difference versus a pilot transitioning to it. Turbine experience is also helpful, King said, because everything happens faster compared with a piston-powered airplane, and procedures are paced quickly for higher-altitude flight. Departure procedures are more extensive, and the controllers generally spit out more instructions at the same time. "They need to get faster at the basics," King said.

Following in the footsteps of the Cirrus Vision Jet, HondaJet and Gulfstream G500, the Epic E1000 won *Flying*'s 2020 Innovation Award. Its unique Wedge Annunciator Panel provides a quick status check right in the pilot's field of vision. Beefy color-coded power levers instill confidence. Deschutes County's legacy of exceptional composite-aircraft manufacturers ensure quality construction of the sleek fuselage. And the pilot's job is made easy with such features as automatic fuel selection and sequenced buttonology.

A The E1000 panel is dominated by Garmin's G1000 NXi, with two PFDs and a center-mounted MFD, providing the most-current avionics features available today.

B Epic's innovative Wedge Annunciation Panel gives a quick indication of whether the airplane is properly configured, alerting the pilot with green, red and white icons.

C Innovation can also be found in the E1000's buttonology, which is sequenced left to right for startup and right to left for shutdown.

D The fuel selector automatically moves from left to right, which will eliminate the possibility of the pilot forgetting the critical task of switching fuel tanks.

iPad to the Garmin Flight Stream 510 installed in the G1000, and the IFR flight plan from KCMA to Half Moon Bay (KHAF) from the panel-mounted avionics automatically dropped into my ForeFlight app.

The takeoff in the E1000 is truly impressive. The PT6 can crank out 1,200 shp for the first 5 minutes, after which the power is limited to 1,000 shp. I could feel myself getting pushed into the backrest of the seat as we rolled down Runway 26.

The climb performance is equally as awe-inspiring. In the initial climb, we averaged 3,000 fpm. At FL 300, we were still climbing at around 1,300 fpm, and we made it all the way to the service ceiling—FL 340—in a little more than 17 minutes despite a short level-off at FL 300.

Once at altitude, the PT6 was sipping about 48 gph to give us 315 ktas, with all gauges happy and well in the green. King had started with a full 264-gallon tank of jet-A in Bend that morning and then landed once to pick up the customer before getting me in Camarillo. According to the fuel rings, if staying at FL 340 at the same power setting, we could have flown all the way back to Bend with a 45-minute reserve.

While 315 ktas is respectable, I wanted to see quite how epic the speed could get. Dropping down to FL 260 and pushing up the power for a fuel burn of 65 gph, we got up to 329 ktas. That's with ISA+8, so Epic's published max speed of 333 ktas is not exaggerated. Yes, the E1000 is as fast as it looks.

Closing in on Half Moon Bay, there were several airplanes in the vicinity of the nontowered airport despite gusty 25-plus-knot winds. We were on a 4-mile final for Runway 30 when a Cirrus reported on downwind. "We'll come in behind you," King announced. "How's this going to work out?" I thought to myself. I figured for sure that we would have to make some S-turns or potentially go around. But King demonstrated the incredible speed range of the E1000 by slowing to around 90 knots with gear down and full flaps. He had no trouble slotting in behind the SR22 and made a nice, smooth landing, getting off about halfway down the 5,000-foot runway.

Despite having about 40 knots on the nose, we made the trip in an hour and five minutes—almost twice as fast as I could get there in my Mooney M20C and about six times faster than in a car, even without California traffic.

Only a handful of airplanes were in the parking area at Half Moon Bay. King showed off by putting the power lever in full beta and backed the Epic into a parking spot. We grabbed some very tasty fish and chips from a busy restaurant on the shore—takeout only.

With bellies and gas tanks full, we departed the beautiful Bay Area. I had a big smile as I took the controls and shot up to FL 330. With 60 knots on the tail, we could have made it to Puerto Vallarta, Mexico. Without quite as much help from the wind, Memphis, Tennessee, and Baton Rouge, Louisiana, were also in reach, with a 45-minute reserve, according to the fuel rings on the G1000.

Most aspects of flying the Epic E1000 were straightforward and ergonomic. I loved the beefy, color- and shape-branded power levers and the panel layout. However, the trim switch on the yoke took a little getting used to. It must be engaged by pushing the button down before it can move up, down, left or right. Also, the armrest was too low for me in my preferred seat position. However, I felt comfortable enough flying without having my elbow supported.

While its nimble climb- and cruise-performance capabilities are important, so is the airplane's ability to descend quickly. This is valuable not only in case of an emergency but also for the ability to remain at high altitude, where true airspeed and fuel burn are optimal, for longer. You can keep up the power in the descent or get down really quickly. During our descent, the red line kept creeping up from 215 kias at FL 320 to 230 kias at FL 280 (giving us 358 ktas). We were able to descend at well over 4,000 fpm. Thankfully, the pressurization system kept up.

We dropped down to 10,500 feet to do some maneuvers, with no surprises. With help from the flight-path marker, I found it easy to make perfect, steep 360-degree turns. Slowing it down and getting it dirty, I experienced the E1000's exceptional slow-flight characteristics, which had helped King get behind that Cirrus at KHAF. The controls were remarkably responsive even at 80 kias with gear and full flaps, and the stall in the E1000 truly was a nonevent. Forcing the yoke into my lap after the stall shaker started alerting me of the high angle of attack, the pusher broke the stall inside the red line, around 67 knots on the airspeed tape. The break was straight, smooth and easy to recover from.

Satisfied with the handling characteristics, I pointed the E1000 toward Camarillo. The tower controller instructed me to come in on the right downwind—the usual approach coming from the northwest. King suggested between 15 and 18 percent torque on the descent in the pattern and 95 kias on final with full flaps and gear down. The winds were light, and the airplane made it easy for me to softly kiss the ground.

With King coming to Epic as an LT owner, he wanted to ensure continued support for the experimental fleet, even though the production of the LT has ceased. There are 50 LTs flying. "We didn't want those people to be orphaned," King said. The maintenance and support for the LT products are, however, driven through a separate company, Epic Flight Support.

Epic is also committed to keeping their customers engaged. Each year, the company hosts an event in Bend to inform and entertain their customers. Having been fortunate enough to be a part of the event in 2018, I know it's a tightknit group of people who truly love their airplanes. In 2016, six Epic LTs—more than 10 percent of the fleet—flew around the world in 21 days, covering 16,405 nm in 51.5 flight hours and landing in nine countries, which is a huge testament to the design.

The certified E1000 is likely to be equally as beloved by its customers as the LT has been. The E1000 can get in and out of short fields, climbs like a homesick angel, and can take you around the world quickly and efficiently. The name Epic is a tough one to live up to, but the E1000 truly does.

Epic E1000 Specs:

Price [as tested]: $3,250,000
Engine: Pratt & Whitney PT6A-67A
Horsepower: 1,200 shp
Propeller: Hartzell 4-blade HC-E4A
Seats: 6
Wingspan: 43 ft.
Wing Area: 203 sq ft.
Wing Loading: 38.6 lb./sq. ft.
Power Loading: 6.67 lb./shp
Length: 35'8"
Height: 12'5"
Cabin Height: 54"
Cabin Width: 54.4"
Baggage Compartment: 18 CFT [200 lb.]
Basic Empty Weight: 5,161 lb.
Max Takeoff Weight: 8,000 lb.
Max Landing Weight: 7,600 lb.
Useful Load: 2,839 lb.
Max Payload: 2,238 lb.
Fuel at Max Payload: 450 lb. [67 gal.]
Max Fuel Payload: 1,070 lb.
Max Usable Fuel: 1,770 lb. 264 gal. usable
Max Rate of Climb: 4,000 fpm
Max Operating Altitude: FL 340
Takeoff Distance [50 ft. obstacle, MTOW]: 2,254 feet
Landing Distance [50 ft. obstacle, MTOW]: 2,399 feet
Max Range: 1,558 nm @ 260 knots, ISA, no wind, 45 min reserve
Max Cruise Speed: 333 ktas
Long Range Cruise Speed: 260 ktas
Stall Speed [clean]: 88 kias
Stall speed [dirty]: 68 kias
Vmo: 270 kias
Mmo: 0.6 Mach

Pia Bergqvist is an airline pilot, flight instructor and Mooney owner who is crazy about all things flying.