EAA EXPERIMENTER
FEATURE

Check out the digital edition of *EAA Sport Aviation* for a video about Sonex's B-Model.

SONEX

BIGGER AND BETTER

BY MEGAN ESAU

THE B-MODEL IS SONEX'S ANSWER

to all the feedback builders have given about its flagship airplane over the years: increased cockpit space, the ability to hold more fuel, a larger instrument panel, and more. The best part is, all of these things have been accomplished without any reduction in performance.

Announced one year ago at the SUN 'n FUN International Fly-In & Expo at Lakeland, Florida, one thing immediately stood out about this update to the Sonex Aircraft portfolio, known for small, fast, and sporty planes: It's red. Aside from breaking up the sea of signature yellow at Sonex's facilities, this new color helps mark a fresh start in the company's line of aircraft designs. Still, even though the color has changed, the thinking behind the airplane hasn't.

"The B-Model represents the current philosophy, and it reinforces the original philosophy behind our airplanes, and that's that they're simple aluminum airplanes," said Sonex founder and CEO John Monnett, EAA Lifetime 15941. "They're basically a box with a lifting body that's created by a smooth canopy and cowling transition. That contributes tremendously to its performance at both low-speed and high-speed operations."

Perhaps the only thing as important to John as an airplane that flies well is an airplane that flies safely. The Sonex is built to match standard-category characteristics as far as strength and performance, so pilots and aircraft owners get the same safety margins with this airplane as they would with a standard category airplane.

PHOTOGRAPHY BY **ERIN BRUEGGEN**

BEGINNINGS

From the beginning, Sonex has intentionally designed its aircraft to be small. In fact, the company began forming in 1997 to 1998 to meet the need for small airplanes that would fit in the Italian microlight category. To fit the bill, aircraft had to meet a 1,000-pound gross weight limitation, and a maximum stall speed of 40 mph.

"I was commissioned to design the airplane, and my design partner, Pete Buck, and I came up with a clean sheet of paper for an airplane that could be productionized and built with unskilled labor and delivered to customers that might be in, for instance, Italy, who would be flying under this microlight rule," John said. "Turns out that this microlight category or rule was the genesis for what we now call sport pilot, and therefore our airplane was what we call a thoroughbred sport pilot airplane."

When the sport pilot certificate and light-sport aircraft specifications were introduced, they expanded on the framework set by the Italian microlight category, allowing a gross weight of up to 1,320 pounds. John and Pete immediately recognized this as an opportunity for success in the United States' experimental community.

"We had airplanes that were designed to perform adequately well at 80 hp and were all metal, easy to build, and could be constructed by unskilled labor with a minimum of tools," John said. "We knew that that had a lot of potential in our homebuilt category of airplanes and that it would make an excellent kit airplane, or scratchbuilt airplane for that matter, because the plans that were drawn for the airplane were for production and therefore they defined every part that had to be made for the airplane."

The level of detail included in the original Sonex plans meant that builders could potentially build every part from scratch if they so desired. With all the necessary materials ready-made, the pair began marketing plans for the original Sonex and the business began growing to meet the success it recognizes today.

The Sonex line of aircraft now consists not just of the heritage model, but has expanded to include the Y-tail Waiex, single-place Onex, Xenos motorglider, and the SubSonex jet airplane.

After nearly 20 years of success since the company's founding, John decided to revisit his original design and incorporate some of the wish-list items and changes customers have made on their personal builds.

"Just about a year and a half ago, we started talking about how we can improve the model, just as you would improve a new automobile from the last year's model," John said. "In that, we found that making a lot of improvements in the way that it's productionized, the cockpit layout, and some of the other things like computer-generated cowling plugs, made all-over improvement."

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BACK TO THE DRAWING BOARD

One of the most significant changes to the Sonex design that comes with the introduction of the B-Model is the expanded cockpit size. Nearly all of the angles in the forward fuselage have changed, and there are very few common parts shared with the original design. With a new width of 40 inches, the cockpit provides the same amount of space as a Cessna 172, an aircraft that for all its advantages is not known for being small and speedy.

SONEX-B SPECIFICATIONS

LENGTH:	18 feet, 1 inch
WINGSPAN:	22 feet
WING AREA:	98 square feet
COCKPIT WIDTH:	40 inches
EMPTY WEIGHT:	620 pounds
FUEL CAPACITY:	20 gallons
CRUISE SPEED:	130–135 mph
STALL SPEED (FULL FLAPS):	40 mph
STALL SPEED (CLEAN):	46 mph
MANEUVERING SPEED:	125 mph
NEVER EXCEED SPEED (V_{NE}):	197 mph
RANGE:	687 miles
COST OF COMPLETE AIRFRAME KIT:	$23,997

For a full list of specs, visit *www.EAA.org/extras*.

Opening up this space has had more outcomes than just comfort. A CFI for the company's T-Flight Transition Training Program noted that with the original model, many pilots transitioning to the Sonex experienced trouble straightening out their landings due to the taper of the fuselage. When landing, people would subconsciously use their peripheral vision to line up the edge of the runway with the lines of the cockpit. This isn't such a problem in most airplanes, because cockpits are traditionally designed with parallel walls, but in the original Sonex many people would land the airplane cocked off to the left. Having these lines straightened out in the new cockpit should take away that optical illusion.

A larger cockpit also means a larger instrument panel, an obvious benefit of the B-Model's design given the general aviation community's general shift toward large, glass-panel displays and dual screens. The choice was also made to install the panel vertically, as opposed to the original design in which the panel is tilted slightly away from the pilot. Not only does this give more room behind the panel for avionics, it also takes away some of the glare issues that were associated with the angled panel.

Sonex was careful not to go overboard with all of these expansions, though.

"We didn't go hog wild with a 42-inch or 43-inch cockpit, because of power-loading considerations," said Sonex General Manager Mark Schaible, EAA 453310. "Our mission is always to leverage smaller engines to get really good performance."

Unlike most kit manufacturers, Sonex produces more than just the airframe — it produces its own line of engines as well: the highly regarded AeroVee.

"I've spent the better part of my aviation career developing engines like the AeroVee engine, and that's what our designs are based around," John said. "We're a unique company in that not only do we produce airframes, but engines for those airframes. That's just a little part — there's not very many companies that do that, and that's our prime focus."

John's expertise in the world of powerplants has had a positive impact on all of the company's aircraft designs, no matter which engine the customer ultimately selects. And speaking of engines, the B-Model offers an expanded list of engine options, adding Rotax and ULPower engines to the traditional Jabiru and AeroVee lineup.

"It gives a little bit more choice out there, especially for our European customers and South American customers that really like the Rotax," Mark said.

Perhaps the greatest draw to the B-Model, one of those instances where more is more, is that the new design can carry four more gallons of fuel than the original, which means more flying time — nearly an hour of it.

Some of these changes incorporated into the B-Model's design came at a cost in weight, though, so Sonex compensated by lightening other areas of the aircraft to ensure there was no real reduction in performance.

Many of the kit's parts, including the base of the stick and the pushrods that extend into the wing, have been changed from steel to aluminum. Further, where once builders would make a number of parts to join pieces of the fuselage, the structure is now a one-piece machine. The resulting design weighs about as much as a comparably equipped A-Model. Though the changes may not be substantial on their own, they add up to a greater whole.

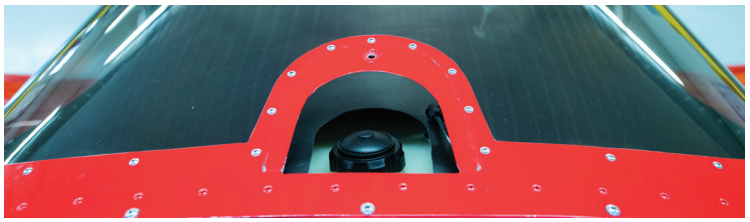
"You get the same speeds that we have published for the regular Sonex," Mark said.

Thanks to the company's T-Flight training program, transitioning into a Sonex is straightforward for just about any pilot, no matter what he or she has been flying previously. For pilots who already have time in a Sonex, transitioning to a B-model is a nonevent.

"There's no major changes in controls or anything compared to what we already have in the B-Model," Mark said. "People are coming back that tried the airplane on years ago and ruled it out for comfort reasons and tried the B-Model on and are really liking the change."

Other updates include electric flaps, a Y-stick option, and a windshield skirt, which many Sonex owners had already incorporated into their personal builds to help round off the lines of the airplane.

PHOTOGRAPHY BY **ERIN BRUEGGEN**



BUILDING THE B

The first B-Model kits shipped in July 2016, and Sonex reported that a number of builders who bought quick-build or conversion kits are getting close to finishing. Going forward, the B-Model will be the only kit offering for the Sonex design. However, anyone who endeavors to build a Sonex from scratch will receive plans for the original design, as those are the only plans that have enough detail. Customers who have already started building have options, too. Sonex has put together a conversion kit allowing builders who are in the right spot in construction to convert their airplane to a B-Model with little waste. The cost of the conversion kit is $10,000, and the number of people who have purchased it speaks well for how the B-Model increases in space and fuel load were received by the Sonex building community.

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"I think at the end of the day we ended up with a much better-looking airplane," Mark said. "You put this side by side with a legacy Sonex and just the lines of the cowling and everything are much more visually pleasing." EAA

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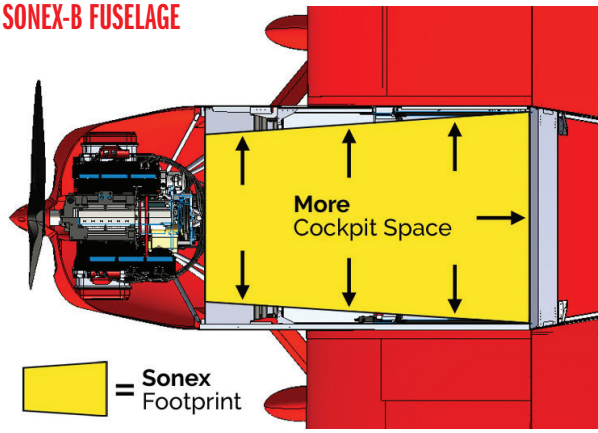
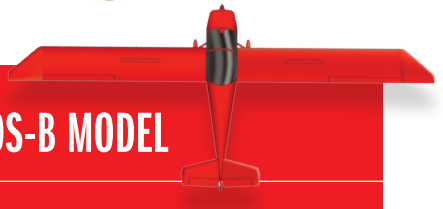
SONEX-B FUSELAGE



SONEX-B FUEL CELL



XENOS-B MODEL

On January 4, 2017, Sonex announced the production of the new Xenos B-Model kit, which will include many of the same enhancements as the Sonex and Waiex B-models, including more space, engine options, and fuel. The Xenos is a motorglider variant of the Waiex with more than twice the wingspan, nearly 46 feet when set up for soaring. The wings support interchangeable aerobatic wingtips that reduce the span to a little less than 40 feet. In either configuration, the Xenos can be flown either as an LSA or by glider pilots with a self-launch endorsement. The traditional AeroVee/AeroVee Turbo and Jabiru engine mount options will continue to be available, along with the added choice of mounts for ULPower and Rotax 912 series engines. The Xenos B-Model fuel tank can accommodate four more gallons of fuel than the original model, offering room for a total of 20 gallons of fuel. Shipments on the Xenos B-Model were slated to begin in March.

Cost of complete airframe kit: $27,495.

PHOTOGRAPHY BY **ERIN BRUEGGEN,** ILLUSTRATIONS COURTESY OF **SONEX AIRCRAFT**