

Going *with the* Wind



From horsepower to windpower

JIM BUSHA, EAA 119684

When Craig Jones, EAA 708766, of Austin, Minnesota, gave up drag racing, he knew he had to look for something else to take its place. "I decided to get my pilot's license," he said. Ultimately, that path led Craig to build his own airplane. Not just any ship, but the first customer-built example of Sonex's Xenos motor glider. How Craig got there is a classic example of how homebuilding can provide just the right opportunity for just about everyone.



Phil High

“ . . . the main reason I love to soar is because it is so peaceful.”

Craig's father had been a flight instructor years ago and owned a Piper Cub at one time. Craig remembers thinking as a kid that it was no big deal and that everyone owned an airplane. He was somewhat mechanically inclined even at a young age, and working with his hands was something he really enjoyed. That's what got him into drag racing. Eventually, however, he got to a point where those white smoky burnouts and unbridled speed down a black, oily track became less of a thrill. "The aviation bug took a long time to chew through all that grease and grime I had absorbed from turning wrenches on race cars," he said. "It wasn't until 1996 that I seriously started thinking about doing something else to get my thrills."

File this next part under "all things happen for the best." One reason Craig delayed his plans to fly was because he was diagnosed with Type 1 diabetes in 1987. Craig knows that had he sunk his teeth into flying at an earlier age he would have wanted to make a career out of it. He now realizes that dream would have been foiled because of his diabetes. But since the mid-1990s the FAA has changed its policy on insulin-dependent pilots. Many of them can now attain their dream of flight by receiving third class medicals with just a few more requirements.

"I had to jump through some hoops, but I ended up getting my medical," said Craig. "The FAA is finding out that the people who want to fly actually take care of themselves better than most. I have a condition that will remain with me for the rest of my life, so I deal with it. Instead of getting a checkup every other year, I go every three months. I love flying and cannot imagine a day in the future where I won't be able to enjoy it. That was a big reason why I chose to build the Xenos motorglider. I not only built it because of the sport pilot rules, but because it is a glider as well."

After receiving his pilot certificate in 2001, Craig realized he wanted to fly other airplanes besides the tried and true Cessna 172 he puttered around Minnesota in. While on a vacation in Colorado, Craig found himself at the controls of a glider soaring above the majestic mountain ranges. When he returned home, he embarked on obtaining his glider rating.

"It is so nice and quiet up there," said Craig. "Once you're off the rope, you start hunting for thermals that will hopefully keep you flying for hours at a time. I also love the fact that your situational awareness is much more stimulated because you always have to know where and how far you are from the airport. But the main reason I love to soar is because it is so peaceful."



Craig Jones

Part of the price for a 24-to-1 glide ratio is building an airplane with a 45-foot, 8-inch-span wing. Each wing has 28 laser-cut ribs, each spaced a few inches apart.



Craig Jones

Choosing the Volkswagen-based AeroVee engine was a natural for Craig, since he was familiar with them from his early auto-racing days.

Building on a Passion

Craig decided to start looking for a project of his own about four years ago and got serious about it two years ago. He chose the Sonex family of airplanes because "they seemed built more solid than most other kits I looked at. And that was even before the debut of the Xenos."

Because Craig had worked with aluminum and other metals during his drag racing days, he decided to go the route of the tin man. It's true the Xenos kit wasn't even available in January 2004 when he visited John Monnett and the gang at the Sonex factory in Oshkosh. Craig was immediately impressed by the aluminum construction on the airplanes and how the Sonex team kept everything so simple. He also liked the fact that everything about their operation was geared toward keeping flying affordable.

"Everybody knows that you can spend as much as you want when it comes to building an airplane," said Craig. "But at Sonex their approach and mind-set is one of 'clean, simple, and affordable.' I also liked that they used the Volkswagen-based AeroVee engines because I used to work on those when I was a kid."

"Before I visited the factory, my original intention was to build a Sonex. That idea went out the window when I spoke with John in Oshkosh and he showed me their newest design: the long-winged Xenos motorglider. Even though this was the prototype, it looked like a winner to me. I bought kit number 11, and although I felt a little apprehensive I also heard great things about the Sonex line of airplanes from other builders. So at the time it sure seemed like a smart thing to do, and I have never regretted my decision."

Because he knew it would take months for the kit to arrive on his doorstep, Craig used the time to transform his retired hot rod shop into a small airplane factory. In July of 2004, Xenos serial number 11 arrived at his doorstep...well, most of it anyway.

"They changed a few items from the prototype to the customer version," said Craig. When the big boxes showed up, among the items that were delayed were some pages from the plans. So, Craig said, he really had no choice on where to start the project. "The nice thing is that there are

Flying with Diabetes

A diagnosis of diabetes mellitus once meant you could kiss your airman's medical certificate goodbye. Progress in medical research, treatment, and FAA policy has changed that. While there are a few more hoops to jump through, it is possible to maintain your medical while managing your blood sugar.

Diabetes is a group of disorders affecting the body's ability to store, release, and break down sugar (glucose), resulting in elevation of glucose in the blood. The causes are many, but it is generally treated in one of three ways: insulin injections, oral medications, or diet and exercise.

According to the FAA, patients with Type 2 diabetes controlled with diet and exercise may obtain any type of flight medical certificate. Those on oral medication may also be certificated, but a 60-day period must elapse after the initiation of the treatment and the application to assure stabilization, adequate control, and the absence of side effects or complications from the medication. The treating physician will need to submit reports to the Aerospace Medical Certification Division for review

before the certificate is issued, and annual reports will need to be filed thereafter for re-issuance of the certificate. Patients who are insulin-dependent have more stringent requirements and may only be considered for a third class medical.

EAA's Aeromedical Advisory Council and Pilot Advocates consist of more than 160 EAA members who are physicians. Most are aviation medical examiners who have volunteered to assist their fellow members in obtaining medical certification. If you have questions about a medical condition and how it might affect your flying, visit www.EAA.org/aeromedical or contact Susan Sedlachek at 920-426-6112.

EAA Aeromedical Checklists: <http://members.eaa.org/home/medical/checklists/checklists.asp>?

FAA Disease Protocols: www.FAA.gov/about/office_org/headquarters_offices/avs/offices/aam/ame/guide/dec_cons/disease_prot/

Craig's Tips for First-Time Builders

- **RESEARCH** the airplane you want to buy and be realistic on what kind of flying you are going to do. When I was training to become a pilot, I thought I would end up using my certificate to fly long cross-countries. But then reality set in and I realized that with family and budgets, my flying would be more local.
- **TRAVEL** to the kit factory and talk with not only the manufacturer, but also kit builders. You may find very different opinions on how easy it is to build, and what kind of product support you can expect.
- **FOLLOW** the plans and try not to look ahead. With so many sheets of detailed information in front of you, it becomes overwhelming at times. But just remember each small piece you complete connects to several others until at last you have a finished major component. This is not a race, so take your time and enjoy what you are doing.
- **STOP** watching the clock. Try to work on your kit every day for at least 15 minutes, because if you don't you may begin to lose interest. Try to build it at home or in your garage. If you have to travel, you will inevitably forget a tool at home and have to drive back to get it. And when you need that extra set of hands, your spouse is only a few feet away. People would constantly ask how much time I had invested. I started out keeping a logbook, but pretty soon I started to feel like building it was a job. Throw that book away and leave your watch in the house. After a while I really didn't care how long it took. Another thing I did was to limit my work time and make sure I was done before 10 p.m. every night. That way I didn't burn myself out and had a fresh approach to the project the next day.
- **BE REALISTIC** with a budget and make sure you have enough wiggle room built in. I think I spent no more than \$2,000 on incidentals. I had that as part of my budget so it wasn't a complete shock when the time came to pay up.
- **GET TRAINING.** Whatever you build, make sure you receive proper training and instruction in a similar type aircraft. The time I spent getting my tailwheel endorsement was invaluable. Not only did it prepare me for my test flight, but also it made me a much better pilot.



With the experience fresh in his mind, Craig Jones penned these nuggets of wisdom for would-be builders.



The Lexan windshield went in place rather easily. The Plexiglas canopy, less so.

a lot of mile markers that are milestones that you get to enjoy in little steps," said Craig. "The first one I can think of is when I was working on the tail section, and when I got that aluminum skin wrapped around, it hit me that it was finally starting to look like an airplane."

When he had the tail and fuselage complete, Craig turned his attention to the long wings of the Xenos. With a 45-foot 8-inch wingspan, it's easy to see why the Xenos has a glide ratio of 24-to-1. It's also easy to see why constructing a set of them can be time consuming. With a laser-cut wing rib spaced every few inches, Craig had to file and sand 28 of them per wing, and just completing that task took him a couple of weeks. When the wings were finished, it was time to move the project to the airport for assembly. Craig decided that as a weight-saving measure he would paint only the fiberglass parts: cowling, wingtips, wheelpants, and tips of the V-shaped ruddervators. Everything else was left bare metal and eventually polished to a mirror finish. With the metal pieces complete, Craig turned his attention toward one of the most fragile and difficult parts of the entire project—the canopy.

"The front piece of the canopy is made from Lexan, and that was pretty easy to work with," said Craig. "But the rear piece is made of Plexiglas, and working on it became very nerve-racking, to say the least. The problem was that I tried to form the canopy in the springtime, and the temperatures in Minnesota are far from tropical, so the cool weather actually worked against me. I ran into a little trouble with it, but was able to stop drill the crack before it spread. I decided to wait for a hot summer day, and after letting it rest in the summer sun, it became much more workable. The only other issue I had with the entire project was polishing the bare metal. Man, that took a lot of elbow grease, but when it was all said and done, you could comb your hair in that mirror finish. Then, it was time to see how it shined in the air."

After two and a half years of construction, the Xenos made its first flight on January 21, 2007. After some initial taxi tests, some of the past hot rod days returned to Craig's mind as he increased his speed on one of the runs and crow-hopped for a few feet. Everything seemed to be in working order so Craig decided to take the next step and see what the Xenos could do in the cold Minnesota air.

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Courtesy Craig Jones


To keep up with these Joneses, you'll need to build your own Xenos motorglider at home. Craig and his wife, Mary Jo, are shown here with the ultimate in front lawn decorations.

"I had trained over 20 hours in a Citabria to prepare myself for the tailwheel flying I was about to experience," Craig said. "I knew from speaking with John that I was well within my class of airplanes. The only thing that took getting used to was the 45-foot wingspan—I had to be very careful when taxiing because of the taxiway lights."

Craig had heard too many horror stories about initial test flights that were going great until the guy decided to make "just one more landing." That wasn't for him as he made a circle over the airport, came in hot, and landed.

"I did have one small scare on that initial flight," he said. "I pulled the lever to activate the wing spoilers, and I thought I had broken something. It felt like I stopped in mid air. Those little four-foot flaps on top of the wings are very effective. After I landed everything checked out fine with no leaks, and I put the Xenos in the hangar until another day."

Craig found that the Xenos flew as advertised both with and without power—sometimes even better without. Although Minnesota is not known as a soaring mecca, Craig is able to scratch his soaring itch. He says he divides his flights into half-powered and half-soaring, and most of that is determined by thermal activity.

"One of the best days I ever had was when I took off and climbed to 2,800 feet," said Craig. "I shut the engine down and descended to 2,300 feet before I picked up a thermal that took me to 4,000 feet. I exited that one, messed around, and took the next one up to 5,000. I was thinking about heading back to the airport when I found a thermal that was like an express elevator. It took me up past 8,000 feet. I had been up for over two hours when I decided to head for home. I had used only enough fuel for my initial climb to 2,800 feet that day. Back in my racing days, I probably used more fuel doing one burnout than I used for that whole day's flying." 

An avid pilot and longtime contributor to EAA publications, Jim Busha is the editor of Warbirds magazine and the owner of a 1943 Aeronca L-3.

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Bonnie Kratz

AIRCRAFT DATA

Make & Model: Xenos

Certification: Experimental Amateur Built

Length: 19 feet, 9 inches

Wingspan: 45 feet, 8 inches

Height: 59 inches

Maximum Gross Weight: 1275 pounds

Empty Weight: 750 pounds

Fuel Capacity: 16 gallons • **Seats:** 2

Powerplant Make & Model: 2180 AeroVee

Horsepower: 80

Propeller: Sensenich

Cruise Speed : 100 mph at sea level,
120 mph at 8,000 feet

VNE 150 mph • **VSO** 44 mph

Price: \$19,495 (Complete airframe kit)

For more information:

Sonex Aircraft LLC

511 Aviation Road

Oshkosh, WI 54902

920-231-8297

www.SonexAircraft.com

The Xenos:

More than a Motorglider

Roger Tanner, EAA 236432

EAA and the sport aviation community have been the foundation for an incredible amount of innovation over the years, and its members are the thrust behind ways to make flying more accessible and affordable. The Xenos is a great example of that innovation. One of the biggest developments over the last several years has been the light-sport aircraft (LSA) rules. One of the attractions to LSA is the driver's license medical option. (Note: Your medical must have not been previously denied.)

The Xenos is unique and versatile in that it can be registered as an experimental airplane (and qualifies to be flown by sport pilots) or as an experimental glider, which also does not require a medical. When operating as an experimental glider you are also not restricted to 10,000 feet or to a speed of 120 knots (138 mph) as you are under sport pilot regulations.

No matter what you love to fly, I suggest you consider getting your glider rating or at least take a few hours of dual in a glider. Learning to fly gliders will teach you some new skills such as formation flying (behind the tow plane) and energy management (managing airspeed, altitude, and distance to your next landing site or thermal) and will make you much more aware of small atmospheric changes that create lift and sink. For pure flying enjoyment there is probably nothing better than flying the entire afternoon covering hundreds of miles in a motorglider without using the engine (except for the launch). It's just Mother Nature and your skills as a pilot. I guarantee you will find flying gliders challenging and rewarding.

If you already have a private pilot certificate for airplanes, getting your glider rating is fairly easy. You can do it without even taking an FAA written exam. You will need to take a little dual instruction to solo, log a minimum of 10 solo flights, then take a little more dual to polish up for your checkride. Getting qualified for a "self-launch glider" also requires an endorsement by a qualified certificated flight instructor-glider (CFI-G). For more information about soaring and learning to fly gliders, visit the Soaring Society of America website (www.SSA.org).

The Xenos is more than a motorglider. Yes it has the versatility to be soared like a glider, but also it can be used like an airplane. I've been fortunate to fly both the Jabiru-powered Xenos maintained by Pete Buck at Mountain Valley Airport, California, and the AeroVee-powered Xenos maintained by Sonex at Wittman Regional Airport in Oshkosh, Wisconsin. The Xenos is a joy to fly, both power-on and power-off. Flying qualities include responsiveness, good control harmony, and good pitch and yaw damping. It is a very forgiving well-behaved taildragger; it is easy to handle on the ground with a steerable tail wheel attached to the small rudder and has good visibility over the nose. The Xenos opens up a new opportunity for fantastic sport flying for homebuilders. Imagine taking off from your home airport, flying a few hundred miles to wherever the soaring is good (such as the Sierra Mountains in California), spending the afternoon or entire weekend soaring, and then flying home. The best part: You never need a towplane or a trailer for your "glider."

Roger Tanner is a full-time test pilot and part-time CFI-G and tow pilot at Mountain Valley Airport, California, where he enjoys sharing the thrill of soaring with others.



Bonnie Kratz