The SportCruiser: Custom Designed for Americans

A next generation LSA from Czech Aircraft Works

By Dan Johnson, EAA Sport Pilot Magazine, October 2006

Czech Aircraft Works (CZAW) began life in the newly freed Czech Republic not long after the history-making fall of the Berlin Wall in 1989. Tapping a wellspring of aeronautical training and experience that became available when the Soviets pulled out of the former Czechoslovakia, American owner Chip Erwin started CZAW in 1992. Using the highly trained but low cost labor force available, Erwin manufactured parts for and assembled the CH 601 and CH 701 designs of Chris Heintz's Zenair Ltd. The young company found a solid market in Europe for fully built CH 601s and CH 701s. Each year it grew in size and built ever more of the all-metal designs.

As CZAW increased its production capability, it began to explore designs of its own. It found success first with its Czech Floats; many American aircraft are fitted with this all-metal amphibious system. Three years ago, CZAW partnered with Sport Aircraft Works (SAW) of Palm City, Florida, led by Danny and Zaneta Defelici, to pursue the development, sales, and marketing of light-sport aircraft (LSA). Erwin and Defelici waited to see what the final LSA requirements were, and then "we pulled the trigger on development," says Defelici.

Two years ago, CZAW introduced its first designs, the low-wing Mermaid amphibian. I saw drawings of the Mermaid at EAA AirVenture OshKosh 2003; by Sun 'n Fun 2004, the airplane debuted. Response to the prototype was overwhelming. Many refundable orders were taken even as development continued. Next came the Parrot, a high-wing, relatively sophisticated design that uses flush rivets, which are time-consuming to install, and a stretched aluminum skin that looks terrific but also adds labor hours. The low-wing SportCruiser, the subject of this month's review, followed.

With no less than three new designs, it's obvious the development team at CZAW and SAW does not proceed on a leisurely basis. The result is the two companies have developed and certificated three special LSA (S-LSA) in less than two years, giving them a veritable fleet of LSA-specific designs to make major inroads to the U.S. marketplace. With plans to build "an aircraft a day," the companies are positioning themselves to occupy a leading role among LSA producers. All are American ready designs, offering spacious cabins. "We have three of the largest interior volume LSA on the market," observed Defelici.

The SportCruiser: A Simple Design

Some have suggested the SportCruiser is a copy of the CH 601 XL, which is now sold as an S-LSA by American Manufacturing and Development (AMD) of Georgia and in kit form by Zenith Aircraft of Mexico, Missouri. But, CZAW's engineers said the SportCruiser has "no interchangeable parts with the 601." The SportCruiser represents an "evolved, completely fresh design," said Defelici. (Zenair and CZAW recently announced termination of their licenses agreement for CZAW to build Zenair aircraft. See Flightline, page 17.)

Compared to CZAW's Mermaid and Parrot, the SportCruiser is a much simpler design and, therefore, can boast more price flexibility. This simplified construction also accounts for its fast development. In fact, the SportCruiser is already in its second generation of development, thanks to the flexibility of the ASTM consensus standards for LSA. The refined SportCruiser highlights a lower, smoother line to the canopy (the first one bubbled quite a bit higher) with a new composite canopy frame structure. Seats were also lowered a small amount, and cabin width grew from 41 to almost 46 inches. Not only do occupants have more room than in the prototype SportCruiser I flew but also the instrument panel space increased.

Besides SportCruiser's roomy cabin, including a large baggage area plus a hat rack, the new model has a useful load of 600 pounds. With full fuel (30 gallons), it has more range than the average human bladder and can hold two 190-pound pilots *and* 40 pounds of baggage. A roomy cabin must also accommodate a tall pilot, and SportCruiser does so with adjustable rudder pedals rather than adjustable seats. "We had a 6-foot, 6-inch pilot weighing 280 pounds inside," reported Defelici. He stressed legroom as one of the SportCruiser's great qualities.

Naturally, that's not all that sets the new low-wing model apart. The controls are another way the new plane shines, Defelici said. When he and I flew together at his residential airpark, Naked Lady Ranch, the airplane exhibited easy and forgiving manners, with stalls so docile as to be uneventful. "The

SportCruiser is basically stall resistant because if its wingtip design." Defelici explained, "The SportCruiser's handling is a combination of good airfoil and a wingtip design that came from a French study done in the 1970s that showed this tip configuration was one of the most efficient, even more than traditional STOL-type droop tips."

And you can land the SportCruiser in a short space given its lowest operating speed of 30 mph. Slow speeds dramatically reduce energy in the event of an upset. The SportCruiser's low-speed flying characteristics and its thicket wing, which equates to slower flying overall, makes it appropriate for lower-time pilots.

Let's Go Cruising

The SportCruiser's cabin features a forward-opening canopy that locks via a dual side latch, with a center handle between the seats. Entry, via stepping up on the wing, is aided by a steel step that helps you step over the flaps. A handhold is built into the glare shield to assist entry, as does a strong "T handle" between the seats – more so than the seat back. "We listened to people's comments at air shows," Defelici said about these entry accommodations.

Dual control sticks with the throttle mounted on a center console make the SportCruiser a viable trainer, and the nearly 46-inch wide cabin means folks won't be cramped. Four-point seat belts hold you securely in the side-by-side seats. Once seated, you adjust the pedals for your height (remember, the seats don't adjust).

Taxiing for takeoff means using differential brakes to pivot a castering nose wheel. While the nose gear is 4130 steel, the main gear is built of composite legs inserted into a box. The good news about this system is that you can spin around in a tiny space once you become adept with the brakes and castering movement. For takeoff, set one notch of flaps; an electric motor deploys the surface 10 degrees. Lesser flap angle deployments are possible because of the efficient Fowler flap system. Even on Naked Lady Ranch's turf runways, the SportCruiser left the ground energetically. The factory states 420 feet, and I have no reason to doubt this figure.

As with many LSA, climb is strong given the light weight being lifted by the potent 100-hp Rotax 912 engine. Turns in the SportCruiser could be done to shallow angles with no use of rudder and without strong feelings of slipping or skidding. "It took some work," said Defelici, "but the aileron differential is just right," referring to the difference between aileron up versus down angle, which is a popular trick to achieve finer handling response and reduce drag. "I'm a stickler on controls," he reported. "The prototype SportCruiser's control rigging had a rather sensitive pitch response. The ailerons were slightly heavier than the elevator, and pitch wasn't slippery, but it was lighter than roll control." Defelici worked with the designer to reduce these issues, proving engineering can be aided by the test pilot's prowess in the final finessing of such adjustments.

Adverse yaw in the SportCruiser is modest; you generally won't need much rudder to fly the plane. Rudder control response also received a close eye from Defelici, and the yaw control friendliness reflected well upon his effort.

"Cessna 172 pilots go crazy in many light sport aircraft," Defelici said. He believes most general aviation (GA) pilots find LSA too light in control response. Hence, he made the extra effort to get the SportCruiser's handling as predictable as possible. Defelici may be right about the GA pilot's feel for controls in LSA< but most GA pilots I've spoken with focus on performance. And, the SportCruiser delivers well in this realm, yet is also displays a demur side that newcomers will appreciate. I didn't attempt spins in the SportCruiser even with a parachute on board as the design had not undergone such factory tests at the time of my evaluation flight in April 2006.

Landings call for two notches or 20 degrees of flaps; a maximum deployment of 30 degrees is available. When you deploy flaps, the nose moves downward a bit. When I tried a landing without flaps, I found rotation to be somewhat more abrupt. Using the flaps made for smoother touchdowns at various settings. The SportCruiser's flaps are effective enough for most operations, but it you want to make the steepest possible approach, a deep slip can be comfortably achieved. Defelici indicated that doing so with full flaps creates no control problem.

Generally I found the SportCruiser to be a well-behaved aircraft. Even when stalls are done fairly aggressively, the wings don't tend to drop, except slightly in significantly accelerated stalls. Despite the good behavior, this is a new design without a lot of field experience, so I was pleased CZAW had installed an emergency parachute system in the forward compartment aft of the engine.

Most test pilots would likely say the SportCruiser is a medium performance aircraft. However, in one common measure of engineering skill, the design can manage the magical 4-to-1 ratio from slowest to fastest speeds (that is, the fastest speed should be four times the slowest). To me the real magic is this airplane flies slowly well, probably inheriting some of this prowess from its older sibling, the Mermaid amphibian, which uses a slower speed wing to make water operations more efficient. Getting off the water quickly is a prime objective for floatplanes, and short ground runs are an attribute of the SportCruiser.

Calling the SportCruiser a "medium performer" is hardly accurate, though. The design can maintain 125 mph (109 knots), which is only 11 knots below the LSA maximum allowed speed at continuous power (120 knots). Never exceed speed (V_{NE}) is a generous 160 mph, almost 30 percent beyond normal cruise, yielding a wide safety margin for over speed situation. The SportCruiser also has a "huge weight and balance envelope," Defelici added, making its sensitivity to aft center of gravity conditions low. Weight and balance planning is always paramount, of course.

A Cruiser of Your Own?

After a strong response to the SportCruiser at EAA AirVenture OshKosh 2006, it would appear the marketplace thinks the low-wing, all-metal LSA is a winner. Several orders were reportedly finalized, and Defelici indicated the first four SportCruisers would be delivered by early fall. By the end of the year, CZAW and SAW think they can deliver around 40 aircraft. Defelici said, "We are setting up the factory to produce one aircraft a day." New, larger quarters for CZAW will help the company meet that ambitious production plan.

The standard base price for the SportCruiser is $74,500, which includes shipping to Florida and five hours of flight orientation with a flight instructor. Twenty hours of sport pilot training are included in the price of the aircraft for those needing a pilot certificate.

For those seeking a lower priced aircraft, SAW will sell you an amateur built (51-percent) quick build kit starting at $35,000 less engine. You can select a Rotax 912S 100-hp engine or the Jabiru 3300 120-hp, but ask SAW for the latest engine price as they vary depending on exchange rate fluctuations. Under sport pilot you cannot use an amateur built aircraft for compensated instruction or rental, but if that's not your goal, you can have a lot of fun building and save yourself thousands of dollars. Kit prices do *not* include shipping from the Czech republic.

Other pilots may prefer more equipment on board, and SAW is ready to please, offering a feature laden SportCruiser for $87,195. Besides its Rotax 912 ULS 100-hp powerplant, the deluxe SportCruiser includes:

- Garmin GPS 296 color map with AirGizmo docking station
- Full glass panel Dynon EFIS/EMS with analog backup gauges and fuel flow
- King 97A VHF radio
- Garmin GTX 320 transponder with altitude encoder
- Standard instruments: airspeed, altimeter, tachometer, oil pressure, oil temp, cylinder head temp, and Hobbs hour meter
- PS Engineering PM 3000 intercom
- Three-blade Woodcomp ground adjustable propeller with spinner
- ELT with remote display controls plus two antennas
- 30-gallon wing tanks with gauges
- Trim and radio transmit controls on pilot control stick
- Electric aileron and pitch trim with position indicators
- Electric flaps with position indicator
- Four point seat belt harness
- Cabin heat
- Wheelpants
- Two-tone paint with accent trim stripes and matching upholstery
- Corrosion protection

If you want more options, plenty are available: parking brake ($275), a night lighting package ($1,900), leather interior upgrade ($950), metallic paint upgrade ($1,350), and a BRS soft pack

parachute system ($4,995). This list does not reflect every potential option; contact SAW for its up-to-date price sheet.

"We're in full compliance with the ASTM standards," said Defelici, and the SportCruiser is ready to buy and fly for $75,000 to $90,000. To some pilots that may sound like a lot, but general aviation pilots perceive a bargain. The SportCruiser's sales would indicate that it's off to a great start with American consumers.