PLANE&PILOT
Tuesday, February 11, 2014

A Retro Comeback LSA

Thierry Zibi's new S-LSA embraces pseudo-military design

By Bill Cox

It's the first day of the AOPA Summit in Fort Worth, Texas, and I'm sitting in a diminutive S-LSA known as the SAM. The airplane's front cockpit embraces me on all sides, and the semi-bubble canopy provides a view of the world unmatched by most certified airplanes.

It's a snug but not uncomfortable enclosure as I watch a King Air taxi past, both pilots leaning forward to check out this shiny, mostly metal, Canadian-registered sport plane. In fact, the front pit is surprisingly wide, about 26 inches across. If you haven't flown many tandem aircraft, you'll be pleasantly surprised with the copious elbow room. If seating were side by side, the SAM would measure 52 inches across.

The SAM (named after designer Thierry Zibi's son) is a clever miniature throwback to a Beech T-34 or Varga-Kachina. Zibi began design efforts when he was living in Paris five years ago, then moved to Quebec, where he recently established his headquarters. The SAM made its first flight in February 2013.

Zibi's Dynon SkyView flat panel display waits patiently with a veritable plethora of displays, everything from rpm, oil pressure and fuel on board to standard, digital PFD flight instruments to moving map GPS.

The SAM is essentially an all-metal aircraft, a different approach than so many of today's LSAs that have embraced composite construction. Zibi feels working in metal is no more difficult than dealing with composites, and workmanship on the SAM certainly seemed first class.

The airplane I was about to fly was the light-sport version; there's also an STOL model (with larger wings) and a CC model (with smaller wings). All of them are available in an amateur-built edition. All rely on a welded 4130 steel-tube frame and metal covering.

As I position the choke for a cold start (yes, a choke on an airplane), crack the throttle and twist the key to the right, automotive style, the durable little Rotax 912 coughs twice and springs to life with its usual frantic enthusiasm, and I can't help but notice the tachometer readout showing numbers running up into the 5,000s. Of course, I remember, the Rotax is a geared engine, as apparently everyone else in the world is aware. Prop rpm is in the fairly normal 2,000 to 2,600 range, after all the greasy gears do their thing.

I tap the brakes individually to make sure they're coming along before I begin taxi. The SAM responds eagerly as if it knows it's time to fly. Tower says taxi to 16, I stir the joystick and check control surfaces for proper deflection, then add a small shot of power to bring the airplane out of its parking spot and onto the taxiway. Nosewheel steering keeps me driving in roughly the right direction, as I search the cockpit to see what I'm forgetting. Zibi plans to offer a tailwheel edition of the SAM, specifically for those pilots who long for the WWII fighter look.

The designer has gone a step further in customizing his unusual LSA. If you're into a more au naturel look, Zibi has fitted the airplane with a removable canopy. Everything above the waist except the windshield comes off in a few minutes, a standard feature on all SAM LSAs.

Flaps are electrically continuous, 35 degrees worth, with a nifty indicator on the right subpanel. Four steam gauges provide backup to the Dynon; VSI, altimeter, ASI and turn and bank, right to left. Fuel selector is on the right floorboard to advise of up to 11 gallons a side, but Zibi wisely sticks the tanks every time he flies so he'll know exactly how much 100LL is on board. The airplane burns 4.5 gallons an hour at 75% power, and you can plan trips of four hours with a reasonable reserve.

Today, we're out to explore the SAM's flight envelope, nothing exotic, just steep turns, stalls power on and off and some landings at nearby Parker Airport, a few miles west of Fort Worth. My first takeoff in the SAM is perhaps strangely reminiscent of a much larger, more powerful airplane.

Designer Zibi configured the fuselage with a two-degree negative angle of attack, so it's necessary to perform a positive rotation rather than wait for the wing to gain lift and rotate by itself. Leave the stick forward on the ground above about 50 knots, and the wing will actually begin to create a downforce.

This is a characteristic of several twins, most notably, the Aerostar. Fail to rotate the wing to a slight-up angle, and the Aerostar will happily drive right off the end of the runway.

In my case, I started the joystick aft at about 50 knots, and the SAM promptly hopped off the runway and began a leisurely climb. Zibi's test specs suggest ascent slightly better than 800 fpm, but that wasn't in the cards on the day of my flights, partially because the SAM was using a borrowed wooden prop in place of the normal, all-composite Sensenich, and the spinner was missing, as well. I'd bet further flight tests will reveal that takeoff flaps, perhaps 10 degrees, provide good climb without rotating the nose quite so high and blocking the view forward.

We were vectored to the west out of the Meacham control zone to keep us away from inbound AOPA Summit traffic. We chose a small uncontrolled strip 20 miles west of Fort Worth for our landings.

On the way out, I elected to try some stalls and miscellaneous maneuvers. Zibi assured me the test pilot he hired to do the shakedown flights tried everything he could think of to induce a spin and couldn't get into anything more exotic than a hobby-horse-bucking side slip, similar to a Cherokee's reaction at the bottom of the envelope. I tried stalls, power on and off with no flaps and full flaps, and my maneuvers tended to corroborate the test pilot's conclusions. No matter what I did, I couldn't get the SAM mad at me.

The airplane manifests a reasonable amount of adverse yaw, so you'll need to remember your Cub training (if you've had any), but coordinating turns comes naturally after a little practice. Like so many other designs with good, old-fashioned adverse yaw, the SAM requires slightly more rudder than aileron for a 50- to 60-degree bank. We were flying at roughly gross weight, and the SAM could easily hold altitude in a two-G turn.

When I arrived over Parker, Texas, the wind was whipping from the south, pretty much right down the runway, so I lined up for a left downwind with no idea what the glide characteristics might be. I slowed the airplane to 60 knots for the approach and quickly discovered I was too high. Zibi commented from the backseat that full flap slips weren't off-limits, so I eased the airplane into a slip with full right rudder and hard-left aileron.

That took care of the extra altitude, and the SAM slid down final almost as if I knew what I was doing, an erroneous assumption. The SAM nevertheless snuggled onto the runway with a semblance of aplomb, proving if nothing else that you don't need to be an expert to land this airplane.

Safely grounded with nothing seriously broken, I elected for a touch-and- go, pushed the throttle full forward, and the little Rotax 912 ULS gave me its all and lifted us back into the sky. The next two landings were pretty much carbon copies of the first one.

The fourth was noticeably different. I had been using full flaps on each approach, and on the final landing at Parker, I elected to fly the airplane to the ground with a clean wing. Not the best idea. The airplane needs flaps to bring the nose down and allow a semblance of straight-ahead visibility. No-flap landings leave the nose in your face and tend to obscure the runway.

I'd be willing to bet takeoffs would also benefit from 10 to 15 degrees of flaps to both shorten the takeoff roll and improve forward visibility in the climb. Flaps are electric, and they come down fast, so you can fly most of the pattern with them full up and extend them at the last minute, if that's your preference.

If you wish to build a simple, safe LSA in a tandem configuration and are willing to do it all yourself, the total cost for the SAM kit will be $29,000. That will buy you the basic aircraft kit (less engine, prop and avionics) and you'll need about 900 hours of construction time to complete the airframe. A completed aircraft on the ramp at Lachute, Quebec, Canada will cost $131,000 plus your choice of radios and any of the other options many pilots choose. The base tab includes the Dynon SkyView system and the Rotax 912 ULS engine. Zibi had equipped the demonstrator with one of the new generation Garmin navcoms, designed specifically for the LSA market. Visit www.sam-aircraft.com for more information.