Flight Design CT: No Medical Required

By Robert Goyer
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Robert Goyer flies one of the first generation of Light Sport Aircraft and finds a lot more performance and utility than you might expect.

The era of the light sport aircraft is here, and pilots are working hard to understand what, if anything, it means to them. The 452-page rule that the FAA put into law last fall is a complex one, to be sure, defining a whole new category that encompasses a number of very different types of flying machines. As far as fixed-wing airplanes are concerned, pilots probably will soon learn to refer to LSAs as either experimental light sport aircraft (E-LSAs) or special light sport aircraft (S-LSAs), which is an important distinction. Technically, the Flight Designs CT, one of the first of the new breed, is an S-LSA, so you can buy one ready to fly. Complicated nomenclature notwithstanding, pilots will no doubt soon start referring to it, and others like it, simply as an airplane.

I got the chance to fly a CT late last year as it was awaiting delivery to one of the type's first customers. The CT is being imported into the United States by FlightStar, an Ellington, Connecticut, company that has been designing and building the popular FlightStar line of light sport aircraft (experimental and ultralight) for more than 20 years. The company's owner and president Tom Peghiny has been working for years to help create the category, and he served on the FAA/industry advisory council that drafted the rules behind LSA. (See sidebar.)

Even before the advent of LSA, the CT was already a certified airplane, having earned approval in the U.K. and Germany (where it was designed and originally built). Because of its existing certification status, the CT was eligible for reciprocal LSA certification. The airplane's major components are now built in Ukraine and imported into the United States by FlightStar, which installs the engine and instruments and assembles the airframe. More than 300 CTs are flying around the world.

I'd been reading and writing about the new category for years, so I was curious to see what a real live LSA was all about. My big question was, could designers work within the limitations of the new category and still come up with an airplane that was more than a fly-around-the-patch-on-a-sunny-summer-weekend flier and deliver an airplane that feels and flies like, well, an airplane?

This is what I was wondering as I flew in the SR22 from Westchester County Airport to Windham (IJD) in central Connecticut to go flying in the CT. It was

a cold late fall day with strong gusty winds and ceilings not much above VFR minimums. There was also, as you might expect, a good deal of mechanical turbulence to deal with around the otherwise pretty New England hills and dales.

As I taxied in and around the row of T-hangars to the local FBO, I saw the CT sitting there on the ramp. The airplane has been described as a “flying egg” or a “pod with wings,” and if you look at the accompanying photographs you can see why. One thing to note, though, is that in photographs the airplane looks much bigger than it actually is.

Now, it doesn’t much matter what you build an LSA out of as long as it meets industry standards for design and construction. So you might expect a lot of these airplanes to be built out of steel tubing and doped fabric, like Cubs and Champs, or out of sailcloth and aluminum tubing, like ultralight-style experimentals.

Instead the CT is constructed mostly from carbon fiber and Kevlar, and the engine is the certified four-cylinder four-stroke 100-hp Rotax 912-S, a more modern engine than the IO-550 in the SR22. And the quality of the design, and the fit and finish, is done with typical German precision. It’s an impressive package.

The beautiful cantilever wing on the CT is 30 feet in span, which looks even longer because the airplane is only 20 feet in length. With its sailplane-like high-aspect ratio design and big slotted flaps, the CT wing makes a lot of lift and can keep flying at what seem like ridiculously slow speeds (34 knots) to people transitioning from conventional singles.

Part of the preflight was to climb up on the wing to check the fuel level. While this is a chore that pilots of low wingers don’t miss, it does indicate a good thing: that the fuel, in fact all 34 gallons (a lot) of it, is in the wing.

Once I climbed inside the airplane, not a difficult chore at all by little-airplane standards, the “pod” design suddenly made a lot of sense. Unlike conventional two-seaters, in which flying with a companion is inescapably an intimate experience, in the CT you’re barely within shouting distance of your cockpit partner. There’s elbow, shoulder and headroom to spare. Nice.

The cockpit is surprisingly spare, but in a high-tech kind of way. The seats are comfy leather-upholstered shells that adjust back and forward, and the long-throw sticks are bent so that they fall nicely to hand. The panel itself is a pod within a pod. Again, it’s a spartan layout; remember, as per the regs, it’s a VFR airplane. But the gauges are nicely located, low enough to preserve the marvelous view the big-windowed egg shell provides.

Taxiing in the CT reminded me of two things: one, that despite its capacious cockpit it's not a big airplane; and, two, that its design owes little to the sport planes of the 1940s. The four-banger Rotax sounds completely different, higher pitched and faster turning than the old Continental 80-100-hp engines of yore, and the efficiency of the powerplant is immediately apparent as you advance the throttle. In an unusual but workable combination, the CT utilizes nosewheel steering and a hand brake on the console for ground steering.

On takeoff, the airplane gets off the ground in a hurry—it's little more than one, two, three, and you're flying. One thing I didn't like about the CT is the low flaps-extended speed that requires a steep deck angle on climbout and a quick retraction of the flaps from 15 or zero degrees to the reflex setting of -6 degrees. Especially on any longish runway, say 2,000 or longer, I'd be tempted to do without the flaps altogether.

One myth about very light airplanes is that they're easy to fly. This is not necessarily so, especially compared with the Cessnas and Pipers that have been doing training duty in the United States for the past 40 years. Like the big-winged taildragger trainers that predated the Cessna 150, the CT takes a different set of piloting skills. You need, for one thing, to be good with your feet. At first I alternately over- and undercontrolled the rudder. After a few hours it would doubtless become second nature.

The view from the high-wing, strutless CT is nothing short of spectacular. It was, despite the low gray skies, a beautiful day to go flying down low. We pulled the power back to ultra-economy cruise and flew along, checking out the gold and yellow oaks and maples and the rushing streams of the Connecticut countryside that surrounded the small towns with their white-steepled churches and clusters of clapboard-sided antique homes below.

But the CT is more than a recreational airplane. For one thing, it's pretty fast, actually a good deal too fast for the LSA category without a pretty serious climb prop on it. The composite prop that comes standard is ground-adjustable. And the airplane has a couple of good-sized baggage compartments. Moreover, the airplane's no-wind range, around 800 nautical miles with reserve at 75 percent cruise, puts many certified four-seat cross-country airplanes to shame.

Landing the CT, given the strong turbulence, was a wild ride, so it's hard for me to make any judgments about how it would handle in more benign conditions, though I expect that it would be a good deal easier and that it certainly won't need much runway.

The optional configuration goes for the hefty price tag of $85,000 and comes complete with a BRS whole-airplane recovery parachute system, strobe and position lights, leather seats, digital engine gauges, wheel pants and gear leg

fairings, drooped wingtips and more. Most CT buyers—by the end of the year there were more than a dozen in line for one—have chosen one of the most sophisticated navigation packages available, the Garmin GPSMap 296 handheld, for the panel (well, to be mounted on the panel, anyway). Also available is a night lighting package.

Will the price of the CT prove too high? Time will tell, but so far FlightStar is selling the airplanes as fast as they can get them in, and Peghiny believes that demand will far outstrip supply for some time to come.

The CT makes one thing abundantly clear. Pilots who decide to, or are forced to use their driver's license to fly an LSA for medical reasons, will not be relegated to airplanes that are too slow or small for some very real cross-country travel.

With considerable ramp appeal thrown in for good measure.

2005 Flight Designs CT

The airplane flown for this report was outfitted with the deluxe equipment package that features leather seats, digital engine gauges, a BRS whole-airplane recovery parachute system, wheel pants, gear leg fairings, high-lift wingtips, window vents and strobe and navigation lights. Performance figures are from the manufacturer and are for standard conditions at sea level unless otherwise noted.

Price, as tested: **$85,000**
Engine: **Rotax 912-ULS, 100 hp**
TBO: **1,500 hours**
Propeller: **Neuform, two-blade composite, ground adjustable, 66 in dia**
Seats: **2, side-by-side**
Length: **20.3**
Height: **7.9**
Wingspan: **30.5**
Wing area: **116 sq ft**
Maximum takeoff weight: **1,320 lbs**
Empty weight, as tested: **620 lbs**
Useful load, as tested: **700 lbs**
Maximum usable fuel: **34 gals/204 lbs**
Payload, full fuel: **496 lbs**
Wing loading: **11.3 lbs/sq ft**
Power loading: **13.2 lbs/hp**
Best rate-of-climb airspeed: **76 kts**
Best angle-of-climb airspeed: **56 kts**
Maximum rate of climb: **960 fpm**
Never exceed speed (Vne): **167 kts**
Max cruise (@ 8,500 feet): **115 kts**
Fuel flow, max cruise: **4.5 gph**
Endurance, max cruise, 45 min res: **7 hours**
Maneuvering speed: **85 kts**
Stalling speed, flaps up: **45 kts**
Stalling speed, flaps down: **34 kts**

Light, Sporty and Looking for Love

As the smoke fades and details emerge, it becomes clear that the Light Sport Aircraft Category is a whole new ballgame. And—surprise, surprise—it might just matter.

It should have been huge news, and there was a lot of hype surrounding it when the FAA last summer overturned decades of Beltway-bureaucratic-business-as-usual and created two new rules: a new pilot certificate (Sport Pilot) that will allow more, older and less affluent pilots to get into the air with fewer medical restrictions; and a brand new aircraft category (Light Sport Aircraft) that is already beginning to engender a gaggle of new and surprisingly capable airplanes.

Amazingly, the reaction by many pilots to this remarkable turn of events, has been, “So what.” While this reaction might at first seem hard to explain, there are some good reasons for it.

First, pilots like everybody else tend to care deeply about the things that affect them directly and not much at all about those things that don’t. After all, what does sport pilot and light sport aircraft mean to a pilot who already owns an airplane and flies mostly for transportation? Not much. And while people’s flying habits tend to change as they get older, until that time existing pilots are largely unaffected by the new rules.

The new rules are also confusing. Take, for instance, the inclusiveness of the Light Sport Aircraft Category. If it was just about airplanes, that would be one thing, but LSA encompasses powered parachutes, gyroplanes, weight shift (trike) apparatuses, and even, I’ve been told, mini-dirigibles. So there’s a sense out there, perhaps justifiably, that LSA is a bit of an oddball rule. Whether that’s true or not, the impression is hard for a lot of pilots to get beyond.

Also confusing is the fact that the rule encompasses both experimental and factory-built airplanes. Perhaps it would be less confusing if there were two new categories, one for Experimentals and one for newly type certificated LSAs. As it stands now, there are experimental light sport aircraft (E-LSAs) and special light sport aircraft (S-LSAs, pronounced “salsas”). E-LSAs can’t be flown for hire, rented out or used for most training. S-LSAs are for all intents and purposes just like regular Part 23 airplanes that can be used for training and rental. (The novel way that these S-LSAs are certified has gotten very little attention. For more on this, see the sidebar on S-LSA certification standards.)

Perhaps most importantly, S-LSAs are delivered ready to fly. Quite ironically, this is the holy grail for companies that have made a living selling homebuilt airplane kits. These firms have griped for decades that most of their prospective customers have had little interest in the homebuilding part of homebuilt airplanes. With LSA, they now expect to sell a lot more airplanes.

There's another widespread misconception about the rule that has to do with the place that existing airplanes have in the new paradigm. Here's the bottom line: A Piper Cub, Aeronca Champ or Taylorcraft will never be a light sport aircraft. Their previous airworthiness certifications endure, and owners have to get them annualed and worked on by A&Ps, and so on, no matter how they're flown or by whom. But because they fit the standards of the LSA rule, they can be flown as an LSA, which means that sport pilots can fly them or that private pilots can fly them using the privileges of a sport pilot. But existing type certificated airplanes are not and never will be LSAs.

But perhaps the thorniest issue is that of performance. Many pilots seem to believe that LSAs will only be good for recreational flying. While this is certainly true for many of the airplanes that will emerge as E-LSAs or S-LSAs, the rule actually allows for fairly capable airplanes. They can weigh up to 1,320 pounds (more with floats), fly straight-and-level as fast as 120 knots, carry two adults and potentially fly at night. In fact, with the exception of passenger capacity and useful load, LSAs are in many cases as capable or more capable than many conventionally certificated airplanes that are widely used for transportation.

Here's a chart (below) that compares a couple of two-seaters, a 1975 Cessna 150 and a Diamond DA20 Katana, and a four-seat 1977 Piper Warrior with the performance of an actual S-LSA, the Flight Designs CT. (All figures are from the manufacturers.) As you'll see, the performance of the S-LSA, as represented here by the Flight Designs CT, more than holds its own against these existing certified airplanes.

For some pilots the cruise performance allowed by the LSA category is good enough; after all, they're already flying cross-country in Cherokees and Skyhawks and Sundowners, all of which cruise around or slightly slower than LSA standards allow. And none of those Part 23 airplanes, it should be noted, have near the climb performance or short takeoff and landing capabilities of the CT or several other under-development S-LSAs.

For those pilots who do fly primarily for recreation and aren't looking for sky-high performance, LSAs might be a godsend. Buy an S-LSA for $20,000 or $30,000 and start flying an airplane with performance simply unavailable from certified models for less than $100,000 or so. Compare a certified RANS S-7C with a 40-year-old Super Cub, and you'll see what I mean.

If you buy an S-LSA, your options are great. You can lease it back, or if you're a CFI, you can give flying lessons in it.

Buy a kit for an E-LSA (the "kit" company can build 99 percent of it), save some money in the process and you have an airplane with a lot of utility.

The downside for S-LSAs is likely to be the price. While costs will be small compared with Part 23 certification, other costs, including labor, materials and parts will be exactly the same, or higher for start-up companies building these new airplanes. These costs will keep many S-LSAs, including the Flight Designs CT, competing against some pretty capable used Part 23 singles for some time to come.

LSA Equals Deregulation? You bet.

One element of LSA that's not widely understood within the pilot community is in the way that it differs from FAR Part 23, the rule that has been used for decades to guide the certification of all small airplanes.

Instead of measuring the construction, design, performance and safety of a proposed design against an existing set of labyrinthine federal rules, as is the drill with Part 23, LSA allows manufacturers to build their airplanes to meet industry developed standards, as managed by the American Society of Testing and Materials (ASTM). In essence, it's self-type certification. In the end, every airplane is inspected by an FAA designated airworthiness representative (DAR).

The FAA signed off on this dramatic change of process because the agency believes that such standards, when applied to the airplanes defined by LSA, will guarantee an equivalent (or better) level of safety while greatly cutting the costs previously associated with bringing a new airplane to market.

One advantage of the ASTM approach is its flexibility. As technologies change, so can the industry standards, which are updated every two years in a process that's dirt simple compared with the official rulemaking process the FAA must employ when it makes changes to the FARs.

Also, under Part 23, an airplane that was originally certified in the 1950s only has to meet the safety standards that were in place at that time. Not so for ASTM, which will require new airplanes to meet the current industry standards.

Although you won't see the word used much, LSA essentially deregulates the certification process for airplanes that meet the rule. Under LSA, a company can design the airplane, build it and then self-certify that the airplane meets industry standards, all without involving the FAA to any great degree.

And the ASTM standards are rigorous, addressing all the same areas the FARs address, from materials to load calculations to production procedures and flying qualities. The document is not easy reading for non-engineers.

Still the issue of deregulating the process will remain a controversial one, and there are people who question the wisdom of taking the direct oversight of the process away from the FAA. Others applaud the move, saying that it should have happened years, if not decades, ago.