

A Bold Yet Efficient Euro-Designed Light-Sport Aircraft



CT2K

Flightstar imports the CT2K in anticipation of the light-sport aircraft rule.



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As FAA's proposed light-sport aircraft rule looms ever closer, one of the first aircraft that will likely fit the field and be recognized by American pilots is Germany's CT. For the U.S. market, and with a nod to the new millennium, producer Flight Designs has renamed the model as the CT2K.

"CT" stands for Composite Two-seater. It is certainly not alone in being "white, glass, and built overseas," a theme that emerged at EAA AirVenture Oshkosh 2002. But the design was a leader in the move from tube-and-rag ultralights to the modern microlights of Europe. And it distinguishes itself in a number of ways that we'll explore in this review.

My experiences flying the CT on two occasions were both with European-based check pilots. The most recent opportunity was with Allistair Wilson, formerly a major with the Royal Irish Regiment in Northern Ireland. Allistair has since relocated to the United States where he is working with former CT importer, Rollison Light Sport Aircraft.

I first flew the CT not long after its release while attending an air show in southern France, accompanied by French importer, Pascal Chanéau. Between my first and second flights in the aircraft, Flight Designs altered the CT

to better address customer comments. These two CTs weren't identical.

Reviewing CT2K Features

As with virtually all the light-sport aircraft (LSA) candidates, the preferred powerplant is one of the two Rotax models, either the 80-hp 912, or the 100-hp 912S. This may be the perfect engine for aircraft like the CT2K, but it comes with a price tag and complexity not familiar to many American ultralight enthusiasts.

Most experts acknowledge that the 912 is a complicated engine with many parts, far more so than any two-stroke engine used to power ultralight aircraft. However, you shouldn't have to replace those parts very often. For example, Allistair maintains that if you change the oil and the spark plugs faithfully at 200-hour intervals, the 912 will run "pretty much forever."

That longevity, in combination with its better fuel economy and lower noise output, goes a long way in balancing the sharply higher cost of the 912 series.

To Yankee pilots, CT2K's cantilevered, all-fiberglass (and carbon fiber) structure also seems foreign compared to the more common aluminum tubing structures that have dominated U.S. ultralight aircraft. The CT's glass and carbon materials

are widely used on American homebuilt kits like the Lancair, Pulsar, and Velocity aircraft. Apparently, composites also will be common on LSA, based on what we've seen in recent years.

As shown in last month's story about European aircraft, literally dozens of aircraft as beautiful as the CT2K are being built in European factories. Many of these LSA candidates have already passed some level of certification and are being built ready-to-fly. This may give designs like this a leg-up once the LSA rule is passed into law. Certainly, the CT2K is well positioned within this new market segment.

But there are large differences in price—\$50,000 and more for European LSA compared to \$15-\$25,000 (or even less!) for American-built ultralight kits. Some pilots will be willing to pay for fully assembled, deluxe LSA; others will want the economy offered by more reasonably priced kits. Fortunately, FAA's new rule allows for both—though even current kits may likely rise in cost somewhat to accommodate the mandatory effort required to meet consensus standards. (Note: The requirement for ultralight trainers to be replaced by "certificated" LSA takes effect only after a three-year transition period beginning at the passage of the new rule. EAA and others have asked the FAA to extend that period



Left - The CT2K serves a different market in Europe, where amenities like leather seats are popular on aircraft that cost \$50,000 or more. The CT2K's cockpit measures a generous 49 inches wide and offers small floor storage compartments under your calves that can be accessed in flight. Note the position of the BRS ballistic chute handle on the aft bulkhead.



Above and below - The CT2K's exterior is nothing if not smooth and shapely. The gullwing doors are large and open wide helping entry and exit for all pilots, and they secure on the bottom of the wing. Closed, they add to the sleekness of the design. Door locks are standard on the CT Cruiser.



Above - Even with its main spar running overhead through the cockpit, the CT2K offers skylights that illuminate the cabin and provide extra visibility in turns or when checking for traffic. Note the compass mounted on the leading edge spar.



Above - The CT2K features an uncluttered instrument panel that leaves room for a few more gauges if you like. The FlyDat panel, which comes on the CT Cruiser, is roughly similar to United States-manufactured electronic instrumentation packages. Small map pockets are available on either side of the panel.

Right - Cargo compartments that can hold up to 55 pounds each are available on both sides of the aircraft. On the passenger side, the cargo door also allows access to the ballistic chute installation.



to ease the economic hit on instructors.)

When LSA becomes a reality, Flightstar Sportplanes, CT2K's new importer, will be ready to serve American interests in that aircraft, while continuing to build and sell their line of Flightstar ultralights and light aircraft.

Flightstar is no newcomer to importing. Though best known for their line of ultralights like the Flightstar II SL and SC, the company once imported the Icarus-Comco C-42, which they renamed the Cyclone. (In an interesting role reversal, Rollison now imports the C-42 and no longer represents the CT.) Flightstar's sibling company, H-Power, is the importer of the Japanese HKS four-stroke engine that continues to find favor among light aviation enthusiasts.

Flying the CT2K

My general flight experiences with the older and newer CT models gave duplicate impressions of a solid and sturdy aircraft. Even when a strong thermal threw me against the shoulder strap during one flight, nothing appeared to flex or strain. Such anecdotal information is far from scientific, but with over 200 CTs flying worldwide, the model enjoys a good safety record.

Starting the aircraft is general aviation (GA)-like; you engage a starter motor and the 912 fires; no yanking a rope. And again, as with GA planes, you start watching gauges.

When flying with the Rotax 912, Al-listair prefers to wait for takeoff until the oil temperature is up to 120 degrees, at which time the oil pressure will drop, a normal action, he reports. France's Pascal did likewise, waiting for a 50°C water temp before takeoff. Since this equates to 122°F, it appears they're both reading the same engine manual.

CT2K's cockpit has comfortable, supportive seats with four-point shoulder and seatbelts. It also has an array of knobs and switches. As I looked over the flight control system I observed that flaps have positions of reflex as well as positions of flaps down. Reflex, rare though not unheard of on American designs, allows improved performance at cruise speeds by curving the trailing edge upward rather

than downward. Allstair pointed out that flap settings from -12 to +40 degrees are available. Few American ultralights or light planes have this range.

In a center console, the CT2K has other levers (from aircraft's right to left): hand brake lever with parking brake lock, throttle, starter lever, and trim lever.

Aft of the CT2K's rear cabin bulkhead, Flight Design mounts the ballistic parachute handle often supplied on this aircraft. In fact, the CT design is distinguished in BRS parachute history for the documented use of a BRS parachute as Save 100. This high-speed (nearly 300 km/h or 180-plus mph!) deployment occurred when a test pilot did his job of pushing the limits of the aircraft. He ultimately shed the wings—talk about beyond-the-envelope testing!

Up front on the instrument panel, my flight test model CT featured a nice array of instrumentation, including an air speed indicator (ASI), altimeter, vertical speed indicator (VSI), slip indicator, FlyDat electronic engine panel, and intercom unit (the latter two optional). A compass was mounted above, on the spar carry-through in the cabin. Fuel quantity could be seen through curved clear tubing at the wing root.

With the engine properly warmed up we started to taxi. CT2K's brakes are hydraulic and work quite effectively, making the aircraft precise to taxi. Visibility was broad in all directions except upward; independent brakes made it easier to twirl around 360 degrees prior to takeoff.

Creature Comfort

The CT2K is a fully enclosed design, which may please many buyers, and it boasts easy entry. The doors swing up gullwing-style, where they clasp on a secure fitting fastened to the bottom of the wing. The door sill is level and sturdy enough to use as a support during entry and exit. You simply turn around, sit down, and swing in your legs.

CT2K's doors are held open with the same steel latch mechanism that holds the doors closed in flight. You reach out to the back corner of the door to release the latch after entry, though I wasn't able to do so while strapped in place.

Once those big, convex doors are closed, CT2K's wide cabin becomes obvious, offering 49 inches of lateral room. Three to four inches separated a lean Pascal and me in France though less room remained between a bulkier Allstair and me.

The CT2K allows 55 pounds of baggage on each side behind the pilot and passenger. Dual exterior doors access the area so you can't use the space for in-flight items. Fortunately, an interior floor compartment on each side offers a small but handy area for stuff you may want while aviating. Flight Design claims you can carry 660 pounds inside the airplane, a rather amazing payload for an aircraft grossing at 1,232 pounds (the limit described in FAA's LSA proposal). I didn't get to examine weight and balance documents to prove that claim, but there's no doubt that the CT2K is a very spacious aircraft.

The CT2K offers leather-clad seats that are adjustable in-flight both fore and aft. You pull a wire to allow repositioning within a several-inch range. The seat back also adjusts via a webbing strap, but you'll want to perform this adjustment on the ground.

While test flying the aircraft during a hot and humid EAA AirVenture, the CT2K was a little warm because it doesn't have any swivel ventilation ports like many American kits. Europe tends not to be as warm as the United States, so improved ventilation will no doubt come with the importer's input.

Fairly small skylights are installed between the nicely finished spar carry through. Despite their smaller size, dictated by the cantilever-wing construction, the skylights aided visibility in steeply banked turns. In shallow turns though, they did little to assist lateral vision.

The CT2K has high ground clearance, which is valued by many pilots but, like four-wheel drive vehicles, this quality is rarely used outside of those operating in the bush. This is a sophisticated aircraft that you are unlikely to land among desert rocks very often. Damage to the fiberglass and carbon aircraft will not be something you'll repair as easily as a bent landing gear tube on a Quicksilver.

Pascal recommended an 80 km/h (50 mph) approach speed to landing, which

puts the speedy CT2K right in the range with many ultralights. The phrase "Fifty is Nifty" for landing speeds works just as well for CT2K as it does for many mainstream U.S. ultralights. Of course, flaps are essential to maintain such low speeds.

Sweet Handling

Unless you prefer your aircraft to have "handling with feedback" (another way of saying, "not so light handling"), you'll like CT2K. It exhibits very light and responsive handling. Dutch roll coordination exercises went well almost immediately, though always keeping the ball centered will take some experience (a similar comment applies to the Kitfox and other kit-built designs). Flight Designs' engineers have clearly done their homework and fiddled with the linkage as the CT2K possesses well-balanced controls. I found precision turns to heading were easily achieved. On the downside adverse yaw is significant, as it is on many of the more responsive ultralights.

During my first flight in southern France, Pascal and I got the earlier CT down to 60 km/h indicated (37 mph) in slow flight, at which time the controls became sluggish but still workable. This is admirably slow, but many Yankee ultralights are willing to fly more controllably at such slow speeds.

In addition, the earlier CT proved very light in pitch, enough that it took familiarization to not overcontrol. Rollison had first represented CT2K, as it was sold in England by his trike supplier, Pegasus Aviation. After work by aerodynamicist Billy Brooks of Pegasus, the CT2K has lost this pitch sensitivity. In fact, I believe handling of the CT2K is somewhat tamer than the earlier model I flew. Most pilots will prefer it, I believe.

Indeed, on initiation of turns in the French registered CT, I had to use a little high side rudder pedal movement to coordinate the turn entry. Once in the turn itself, it coordinated nicely. The newer, British-refined CT2K model seemed to show better in-turn behavior.

The CT2K has passed muster with certifying organizations. Both German and English certifications have been won—and meeting the British BCAR-S rules is



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quite challenging, perhaps even more so than the program many expect under the LSA consensus. In my trials, CT2K showed normal stall response, had proper longitudinal response, and its response to throttle changes were positive.

The evaluation CT2K was fitted with a parachute, which I appreciate, though the activating handle is rather awkwardly located. You must twist tightly around in your seat in order to reach the handle, and most occupants will only be able to reach the handle with one hand.

Other changes were made between my first and second CT flights. In the French aircraft, flaps were manual and had five detent positions (-4°, -8°, +15°, +20°, and +26°). Contrarily, CT2K now features electric flaps with an indicator light showing -12°, +15°, +30°, and +40°. Because they are electric, no detents keep you from setting an infinite adjustment to your liking.

In France, I saw a top speed of about 230 km/h (144 mph) on an engine that did not rev up as high as it should, according to Pascal. It had more speed

Flying several hundred miles in a CT2K is a different experience than flying in many ultralights. Tom Guttman, who brought this CT Cruiser to EAA AirVenture Oshkosh 2002, flew in from Tulsa, Oklahoma, and said the airplane cruised comfortably at an average speed of 120 mph. Because the light-sport aircraft category is not yet finalized, Tom's been flying this CT2K on a reciprocal agreement between FAA and the aeronautic authority of the Ukraine, where the aircraft is manufactured. Accordingly, he's able to fly it with the faster two-blade Neuform propeller as he's not restricted to the top speed limitations for the proposed light-sport aircraft category.

potential, he said, but the prop choice is critical.

Former importer Rob Rollison wasn't sure the speedy CT2K could be made to stay within the proposed LSA rule. Yet installing a three-blade Ivo prop seemed to do the job. With that prop, it hits the wall at around 130 mph. The two-blade Neuform prop that is popular in Europe allows about 140 mph, according to tests in England after a static source was fitted. One of FAA's challenges under the LSA regulations will be to keep owners from refitting their planes with faster props. Most owners will not want to invalidate their aircraft's certification.

But the CT2K slips through the air easily at 120 mph, with lower power settings, lower noise, and reduced fuel usage. Wheel fairings are standard equipment, which help keep CT2K clean and efficient. On approach to landing with the engine at idle thrust, I was very impressed with the glide angle.

To CT or Not to CT



JIM KOEPNICK

I love American ultralights, simple and fun. I'd also rather pay for the much lower-cost machines we've been enjoying for two decades. But, the proposed sport pilot/light-sport rules will offer new flying options for those who might want something just beyond ultralights.

The CT2K is priced at two to three times the average Yankee ultralight kit, but it's aimed at a different market, or at least a buyer ready to "move up" from simpler and slower flying machines. If that describes your pleasure, you can buy and fly the CT2K for \$55-\$65,000, depending on how you equip it—a full option list can help you unload excess cash. Simple or fully loaded, CT2K will put a large smile on new owners.

The CT Cruiser, as flown, comes with droop tips, the FlyDat digital instrument, gear leg fairings, cabin heat, parking brake, door locks, strobe and position lights, and a 912S, 100-hp engine. Our test model had a ballistic parachute, leather seats, and the Ivo prop, which helps keep the CT2K within the 132-mph speed limit proposed for LSA. To have all this, plan to spend close to \$63,000 delivered ready to fly.

One of many benefits proponents of the LSA rules speculate about is financing (others are insurance, airport access, greater utility, among other positives). Using my handy financial calculator, I can envision a monthly installment payment of \$982, assuming an 8 percent finance cost spread over seven years.

For those not in the \$60K-plus price

range, the standard model CT Sport is no slouch, and most ultralight enthusiasts would love its equipment list. You can lower your investment by over \$10,000 for the standard CT still equipped with a parachute and using the 80-hp 912 engine. That's still more than twice the average cost of an American ultralight of the late nineties or early 'noughties," but these comparisons are apples and oranges. If \$55-\$63,000 is too much for you, then you will still have many choices of kit-built aircraft including Flightstar's original aircraft—whose line

presently runs under \$20,000. It's probably best to look at this new aircraft this way: The CT2K is a well-equipped aircraft that will offer you comfortable cross-country travel for far less than a certificated GA aircraft or many homebuilts.

For those with the cash or those willing to sign finance papers, the CT2K looks like a winner to me. It flies sweetly and swiftly and has features to compare with many modern automobiles. For

all it offers, the price tag really isn't out of line. You'd be well advised to fly one when you can and make your own judgment. I predict a lot of smiles after such an experience.

Flight Designs CT

Imported by Flightstar Sportplanes

Specifications

Seating—2, side-by-side
 Empty weight—580 pounds
 Gross weight—1,232 pounds
 Wingspan—30.5 feet
 Length—20.5 feet
 Height—7 feet
 Wing area—116 square feet
 Wing loading—10.6 pounds/square foot
 Delivered—fully assembled

Performance

Standard engine—Rotax 912
 Power output—80 hp at 5,500 rpm
 Power loading—15.4 pounds/horsepower*
 Fuel capacity—34 gallons
 Fuel economy—4.5 gph
 Range—1,000 miles
 Cruise speed at 75% power—132 mph
 Normal cruise speed—120 mph
 Never Exceed (VNE)—192 mph
 Rate of climb at gross weight—1,000 fpm
 Takeoff distance at gross weight—300 feet
 Landing distance at gross weight—450 feet
 *Wing loading with the 912S (100 hp) engine is 12.3 pounds/square foot.

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