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## CZAW SportCruiser





*Electrically operated trim tab on starboard aileron, handy for trimming out asymmetric fuel and cockpit loads.*

# CZAW SportCruiser

US Light Sport Aircraft category comes to the UK

By James O'Dell. Flight impressions by Francis Donaldson



Unless you have been on a holiday to Mars for the past few months you will almost certainly be aware that the European Aviation Safety Agency (EASA) is currently reviewing the way in which the lighter end of GA is regulated. There is much optimism that this will bring about a 'lighter touch', and much has been written about adopting the new American Light Sport Aircraft system within Europe – a 600kg all up weight class with a less onerous certification process and reduced pilot licensing requirement. There is a certain irony in that a great many of the new LSA aircraft on the US market are being imported from European manufacturers, as supplying heavier versions of 450kg microlights has opened up this huge new market to them.

It was perhaps inevitable that some of these manufacturers would see the potential of offering these new 600kg machines to European recreational pilots, and I believe there is a lot of logic in doing so. The 450kg microlight class has spawned a large number of ultra modern machines using new, lightweight and efficient four stroke engines. It has effectively re-invented the light, recreational aeroplane. However, for Group A licensed pilots, these aircraft have the major drawback of having minimal useful load, often being unable to fly two average sized people with a full tank of fuel, let alone any luggage. By moving up to 600kg you get the same benefits of modern, efficient design, but in a far more practical package.

One manufacturer who is currently thinking along these lines is Czech Aircraft Works, but rather than a 'beefed up' microlight, their offering, the SportCruiser, is an all new, purpose designed LSA. CZAW are of course, not new to the UK market. For many years they have been the European manufacturer and supplier of Zenair kits and complete aircraft. American Chip Irwin, established the company in 1992 and has supplied over 750 Zenair aircraft, principally the CH601 Zodiac range.

The 601 was originally designed as a boxy and basic two seater with a low-set, and very thick section parallel chord wing, whose mission was to fly two people on the limited power of a VW engine. The design first appeared in the mid 1980s, and seated two side-by-side under a side-hinged canopy which, uniquely, could open either to port or starboard depending on whether the pilot or passenger wanted to disembark first.

It wasn't until the lightweight, 80hp, four stroke Rotax 912 came onto the scene in the early nineties, that the true potential of the design was realised, and kit sales went



## SPORTCRUISER SPECS

WING SPAN	28.2 ft.	8.5 m
LENGTH	23.3 ft.	7.0 m
WING AREA	131.3 sq.ft.	11.8 m <sup>2</sup>
WING LOADING	10.0 lb/sf.	49 kg/m <sup>2</sup>
EMPTY WEIGHT	675 lbs.	307 kg.
GROSS WEIGHT	1320 lbs.	600 kg.
USEFUL LOAD	645 lbs.	293 kg.
CABIN WIDTH 4	5 ins	114 cm.
FUEL CAPACITY	2 x 56 liters	
LUGGAGE SPACE	10.6 cu. ft.	300 dm <sup>3</sup>
G Load Factor (Ultimate)	+6 -4 g	

## FACTORY QUOTED PERFORMANCE

Take-off (Grass)	350 ft	105 m.
Takeoff (50' object) (Grass)	700 ft.	210 m
Climb Rate	1200 fpm	6 m/s
Stall Speed with Flaps	30 mph	55 km/hr
Stall Speed w/o Flaps	33 mph	61 km/hr
Cruise Speed (75% Power) (True airspeed)	125 mph	201 km/hr
Never Exceed Speed (Vne)	160 mph	258 km/hr
Range (75% Power, no reserve)	550 sm	886 km
Endurance (no reserve)	5 hours	
Landing Ground Roll (Grass)	400 ft	120 m

*Figures with 100-hp Rotax at a typical load; pilot and passenger + fuel & baggage = 600kg or 1320 lbs*



*Each wing contains a useful, 20kg capacity baggage locker, an idea that I am surprised other kit manufacturers haven't adopted.*

through the roof, so much so that Zenair in Canada had their work cut out just supplying the home and US markets, and this gave Chip the opportunity to establish the European connection, taking advantage of plentiful and relatively cheap, skilled eastern block workers who found themselves unemployed in the recently unified Europe. CZAW carried out an extensive programme of improvement of the basic Zodiac design, some of which was adopted by the Canadian/US parent company, and its 450kg UL version has been enormously popular throughout Europe, including the UK. Zenair itself has responded to the changing marketplace and launched the XL, which features a thinner, two-piece tapered wing with plain flaps and wider-chord inset ailerons, and the CZAW developed refined and confidence-inspiring forward-hinged canopy.

In response to the huge demand from the USA for Light Sport category factory-built aircraft, the Czech Aircraft Works has decided to enter the market with its own aircraft, and its initial offerings of the Parrot, a cantilevered high wing two seater, and the Mermaid, a sport amphibian, were quickly followed by the SportCruiser, which flew for the first time in late 2005. Inevitably, the company has learned a lot from its development of the European CH601, and the aircraft features a similar wing, main undercarriage and canopy arrangement as the CH601 XL, but with an all-new fuselage, nosewheel undercarriage and tail arrangement the SportCruiser is a whole new aircraft.

Such is CZAW's confidence in its new SLA contenders that it is about to embark on a new, greatly enlarged, production facility, plus an increase in staff and installation of more high tech computer controlled production machinery. All SLA production will take place at the Czech facility, the Florida based US outlet simply re-fitting the wings of the factory completed aircraft for the US market.

The Sport Cruiser fuselage is streamlined and curvy-modern, in stark contrast with the rather angular lines of the XL. A highly swept back fixed fin and separate cable operated rudder, set forward of the tailplane and one-piece pushrod operated elevator, brings a quite different arrangement to the tail end, making the aeroplane slightly reminiscent of a tiny Socata Tobago. Unusually, the elevator is not mass balanced but a substantial linear damper connects in to the elevator control system, not apparently to prevent flutter but to cure a slight 'overshoot' on the



*This general cockpit shot highlights the overall high quality of the interior finishing. Production kits will feature a narrower centre console and more forward placed throttle quadrant to enable stronger, wider seats to be fitted.*

*Swept fin and rudder give the Sport Cruiser a graceful look. Note large, electrically operated trim tab.*



*Ample behind the seats baggage area compliments the wing lockers. Note also the full upper torso harnesses. The external channelling under the top longeron houses the optional ballistic parachute's cable. This will be moved into the new, composite canopy frame on production models. The actual chute is housed under the starboard side coaming.*



*Main gear is via undamped twin composite legs, and steel nose gear features rubber in compression and castoring nose wheel. Note also the handy step just behind the wing trailing edge.*

elevator controls that was otherwise felt in turbulence. CZAW is looking at a change to the elevator design which may make the damper redundant on future models. A large elevator trim tab, operated by an electric servo, spans most of the span of the elevator.

The wing has electrically operated slotted flaps to help achieve an even lower stall speed than the XL, and the ailerons are pushrod-operated for better control response. The starboard aileron is fitted with another servo-operated tab, chiefly to trim out any lateral imbalance due to asymmetric fuel levels in the twin, wing leading-edge fuel tanks, each of 56litres capacity. Like the Zodiac, the SportCruiser features the eminently practical wing lockers, each capable of carrying 20kg (44lbs) of baggage. The amply sized behind the seats baggage area has a weight capacity of 18kg (40lbs), giving a total baggage capacity of 58kg (128lbs). The very generous 293kg (645lbs) useful load means that a combined pilot/passenger weight of 25 stones, full fuel, and maximum baggage can be accommodated. Now that's what I call practical!

The main gear consists of two composite gear legs equipped with differential hydraulic disc brakes operated by substantial toe brake pedals on the pilot side only, passenger brakes being an option. The nose leg is steel, with rubber donut suspension at the top end and a castoring nose wheel at the other. Typically, CZAW has sold roughly just 15% tail wheel equipped aircraft, so a tail wheel equipped SportCruiser, though not a difficult design exercise, is not currently high on the agenda.

The cockpit on the Sport Cruiser is accessed via a projecting steel tube step located to the rear of the wing trailing edge, and a wing root walkway. The huge forward-opening canopy allows ready access to the leather-upholstered seats. On this prototype machine, the rudder pedals seemed to be mounted a few inches further aft than would have been ideal – giving a slightly cramped seating position for a six foot pilot, but apparently on production machines the firewall and rudder pedals are both mounted several inches further forward. Closing the canopy was easy as its weight is taken by a large gas strut, and a gentle slam is needed to engage the twin automatic car-door type canopy latches. A visual check that both latches are engaged is an important safety check before take off, although with the canopy being forward-hinged, even a complete latch failure would presumably not have any too-alarming consequences. ➤



*The large, forward hinged canopy is supported by a gas strut, which alleviates the need for Schwartzenegar sized arms. Closure is via two automatically catching, car type latches.*



*Wings (above), fin, rudder, tailplane and elevator all feature high quality composite tips.*



➤ Conventional twin sticks and a sophisticated central throttle/carb heat pedestal, which incorporates a very neat throttle friction device, add up to a very user friendly cockpit environment.

The test aircraft was fitted with basic VFR analogue instruments, but 'glass' options will be available. It is also worth noting that further improvements are planned for production models, including a composite canopy frame to replace the prototype's tube and alloy sheet example, and a narrower central console, with farther forward mounted throttle quadrant, to allow for slightly wider seating. The instrument panel will also feature a composite glare shield cowl, and with the training market in mind, additional grab handles and strengthened seat backs will be fitted to improve cockpit entry and exit.

Fitted with the 100 BHP Rotax 912-ULS engine, the prototype SportCruiser fired up instantly at the first turn of the key, being still warm after its ferry trip from the Czech Republic. Taxiing on the Turweston apron was easy, although the absence of dual toe-brakes on this particular prototype machine caused a few moments of excitement until we realised that pressing harder on the P2 pedals didn't make any difference! There was no sign of any undue pitching on the undamped sprung undercarriage. Loaded with two large people, half fuel and with overnight bags and a great deal of CZAW sales material in the baggage compartment, acceleration was moderate on take off. Glancing at the tachometer revealed the cause – the ground-adjustable three blade Woodcomp propeller had been pitched coarse for cruise purposes so that the engine was held back to only 5000 rpm (of a possible 5800) for take-off. Stabilised in the climb, and with the electric flaps cleaned up, a respectable rate of climb of around 1000 feet per minute was achieved with a good view over the nose and it was at once apparent that this was a very well-mannered aeroplane, positively stable about all axes and with nicely balanced controls. In the cruise, a speed of 105 knots was comfortable at 5200 RPM, which resulted in very low noise levels and fuss. Though in flight adjustable props are outside of the SLA definition, it would be possible to fit one for the European market, the wide C of G range easily coping with the additional forward weight.

Trimming was easy in pitch and roll, and it was noticeable that the changes in stick force with both flap deflection and power were moderate and easily trimmed out, other than in the power off full flap case



*Graham Smith, of UK SportCruiser importer Sprite Aviation Services, demonstrates the more than adequate headroom within the canopy.*

where (at this cg, at least) the residual back stick force with full up trim was trivial. This is an aeroplane where a go-around can be carried out without having to frantically re-trim to relieve the stick forces, yet still possesses positive speed stability.

The powerful controls of the SportCruiser invite you to manoeuvre the aeroplane with gusto and here the greater leverage offered by the twin stick arrangement compared to the centre stick of the 601 XL means that roll control takes much less effort on the SportCruiser than on its Zenair cousin. Definitely non-aerobatic, the Sport Cruiser was nevertheless great fun to play with in amongst the gathering cumulus.

The SportCruiser's stall behaviour was exemplary, with the aeroplane buffeting strongly from the tail end before the stall and eventually breaking with a straight nose drop four times out of five – when a wing drop did occur, or was induced, the wing drop was to the right but only through 15 to 20 degrees, the wing starting flying again as soon as the nose had fallen through, even against full back stick. Turning stalls were likewise relaxed, with unmistakable tail buffet followed by the aeroplane rolling gently through level and out of the turn.

In the approach configuration, the SportCruiser gave a very good over-the-nose view of the runway whether flaps up or flaps down, and the landing was a non-event, the large slotted flaps conferring a very low touch-down speed.

Thanks to the excellent view all round through that huge canopy, ability to haul a large load, easy flight handling

characteristics and well thought-out ergonomics, this aeroplane was very comfortable and confidence-inspiring to fly and seemed an ideal sporting/touring machine for pilots whose experience is limited, being very much more benign than many kitplanes in this category, yet sparkling enough in its handling to please even the most critical connoisseur.

A new company has been established to import the SportCruiser into the UK. Dover, Kent, based Sprite Aviation Services will be operated by PFA inspectors Graham Smith and Dave Wood, and the good news is that the projected pricing is very competitive. The level of kit completion is currently still under discussion, but a possibility is for a complete airframe with skins attached by a minimum number of locating rivets. The customer will have to finish rivet the skins and paint and assemble the aircraft.

Graham and Dave will be building their own demonstrator just as soon as PFA Engineering give them the go-ahead to start, and they hope to have either their own, or the CZAW demo aircraft to show at the PFA Rally in August. I think they may well have a winner on their hands.

Please note, the SportCruiser is not currently a PFA Approved design. Please contact Sprite Aviation Services for updates on the approval progress and not PFA Engineering. [www.spriteaviation.co.uk](http://www.spriteaviation.co.uk)  
Tel: 01304 827266. ■