



# Evektor SportStarMAX



**Ian Seager  
finds added  
strength, a  
roomy**

**cockpit, long-range tanks  
and added comfort make  
for a great new LSA tourer**





**T**here's somewhere north of 150 EuroStar on the UK Register. They're a combination of homebuilt aircraft on LAA Permits and factory-built microlights. More often than not they're without paint; paint adds weight! There's also another aircraft, G-TMAX, a SportStar MAX, which to the unaccustomed eye looks just like a painted EuroStar – but there's more to Evektor's LSA than a mere lick of paint. We accepted an invitation to take a closer look.

From a distance, the SportStar MAX does look just like a EuroStar. Externally, the fuselage is pretty much the same, although Cosmik Aviation's Nigel Beale tells me that internally there have been quite a few design changes, in order to support

the greater loads. The extra 150kg of mauw in the LSA specification represents an increase of a third over microlight models, so it's going to take a bit of beefing up.

The wingspan is larger, as is the surface area, in order to cope with the 45kt clean 1g stall requirement, plus there are manually-operated split-flaps that have three pre-set positions (15°, 30° and 50°). The fuel tanks are contained in the wings, with each capable of taking 60lt that's a total of 120 with 118 being usable. I'm not really sure that it needs that much fuel (endurance would be over six hours), but I guess it reduces the need to refuel and provides some loading flexibility.

The empennage is entirely conventional. Although it's an all-metal aeroplane, the construction technique differs in that the joints are both bonded and riveted. This has been done to add strength, but also to reduce any oil-canning effect. The elevator and ailerons are activated through levers and rods, while the rudder is controlled via cables. The cockpit area of the fuselage is bowed in order to offer a greater width; the canopy is also shaped in order to provide ample shoulder room.

The aircraft had been pulled out, wiped (not that it was dirty – it only had three hours on the Hobbs) and warmed up. Nigel's strip at Cosmik's Deppers Bridge HQ is full of character,



## What's an LSA

**THE LSA CATEGORY** was born in the USA in July 2004 with the intention of revitalising the lighter end of the recreational General Aviation market. The theory went something like this: define a category of aircraft that fits between ultralight (microlight to you and me) and more traditional GA aircraft. Allow experimental aircraft into the category while at the same time removing the need for certification of factory-built aircraft by allowing manufacturers to effectively self-declare their products as suitable. Allow the aircraft to be flown by holders of a new pilot certificate known as the Sport Pilot Certificate, which requires a minimum of 15 hours of instruction and five hours solo flight.

Further encouragement is provided by removing the need for a medical – you only need to hold a driving licence. Furthermore, in order to keep costs manageable, the FAA introduced a relatively easy-to-obtain Light Sport repairman's certificate, meaning that owners could carry out their own maintenance.

Industry got together and suggested a specification for the LSA category that the FAA approved. It would consist of aircraft with a maximum of two seats, a max of 600kg, a 1g stall speed of 45kt (clean), max straight-and-level speed of 120kt, be powered by a single (non-turbine) engine,

have fixed landing-gear (amphibs were slightly different) and a fixed- or ground-adjustable propeller. Rather than an FAA certification or design standard it would be an ASTM (American Society for Testing and Materials) standard that would be (largely) administered by the companies involved.

When it comes to LSAs in Europe, things are slightly different. Despite a growing body of evidence to the contrary, EASA is not a stupid organisation and it realised that it needed to do something about this emerging category, so set about creating its own CS-LSA requirements (presumably just using the US specifications would not be the done thing). Those requirements may be close to completion... but we understand there will be some slight design requirement differences and we won't be adopting the Sport Pilot licensing requirements, the lack of medical requirements or the repairman certificates; LSA maintenance in Europe will come under the Part M regulations.

Meanwhile, EASA has invented the Restricted Type Certificate (RTC), which will apply to Euro LSAs. The word restricted is a bit misleading in that there won't necessarily be any operational restrictions applied. It will be perfectly legal to offer flight training and aircraft hire in the UK in aircraft in this category.

by which I mean the runway isn't particularly straight, flat or level. As access is through a gate, Eddie Clapham, Cosmik's Chief Test Pilot, decided that we'd be better off pulling the aeroplane through the gateway by hand. Good call!

The huge canopy tilts forward and is supported by two hydraulic struts and is separated from the rear canopy by a rollover protection bar. There's a large rear baggage area, covered by a cargo net. Weight rather than space is likely to be the limiting factor here. Access is over the wing, happily from the rear. This particular SportStar MAX has both the optional comfort seats and the luxury interior pack – as it's the only one in the country, I didn't have a standard interior to compare it to, but Evektor has done a pretty good job. There's a 'canopy open' warning light in front of the pilot, which goes out when the canopy is locked, a process helped by pilot and passenger leaning on the small arm-rest built into the canopy. The lock, which self-engages, is checked by reaching up and feeling for it somewhere above your right shoulder. The system works and the light goes out when it should – but I'd prefer to have a more audible clunk as the lock engages.

Although there are several panel options, including Dynon glass, Nigel has chosen a fairly basic analogue set-up that perhaps reflects the microlight heritage; there's an ASI, turn coordinator, VSI and altimeter and that's it. The centre 'stack' has a GPS mount, a transponder and radio, while the right-hand side contains eight engine and fuel instruments. Happily the engine is fitted with Nigel's EASA-approved carb throttle-

While Cosmik's demo machine is loaded with options, the panel is very basic, and very analogue. Glass options are available





body heater, which is plumbed into the coolant circuit. Thanks to this, there's no carb heat control and no icing.

The start is more or less straightforward Rotax: a bit of fuel pressure, choke (how quaint), key to turn the mags on, and ignition. The only difference here is that Cosmik has insisted on a separate starter button so that the engine can be turned over with the ignition off. You can, if you prefer, still use the key. If you don't fly behind a Rotax that often, it's worth reminding yourself that they are designed so that a throttle cable failure will

lead to full throttle being applied through a spring. The theory is that you can then fly to the nearest convenient landing strip using the mags to control the power. The flip side is that if you don't have enough throttle friction, then the throttle plunger helps itself to a gulp of avgas and gives you an unintended dollop of power as a result.

With the engine nice and warm, I made my way to the end of the undulating strip, with the undercarriage seeming to cope very well. The nosewheel is steerable, which is fine, and although a fully-castoring one makes for smaller

turns, you've got half a chance of not cooking the brakes when taxiing a long way in a crosswind, i.e. if you only have to use them to stop, rather than stopping and keeping straight.

### **Lovely tourer**

Pre-take-off checks complete and one stage of flap set, we point in the direction of the workshop and set off. With some Rotax-powered aircraft there's a bit more of a tendency to veer to the left, but the SportStar is very easy to keep straight. Approaching 40kt, the aeroplane is light on the



Fuselage and canopy 'bulge' can be clearly seen. Together they provide a roomy cockpit



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## The competition

**WHILE THE USA** has a large variety of types competing for sales in this sector, there are fewer manufacturers jumping through the Euro regulatory hoops. Here are the main competitors in the UK for the SportStar MAX.

### Cessna Skycatcher

The initial design was tweaked a couple of times thanks to some spin recovery issues, and then the decision to manufacture the aircraft in China raised more than a few eyebrows. Cessna flew the prototype with a Rotax engine but, in a nod to the huge potential of the home market, replaced the ubiquitous Austrian engine with a Continental. With over 1,000 orders and 150 aircraft due to be delivered in 2011, the Skycatcher will no doubt top the worldwide LSA sales charts before too long. The aeroplane is roomy if somewhat spartan inside and the stick/yoke type arrangement works well, as does Garmin's G300 PFD. Handling is good and despite the light weight, there's a solid feel to the aeroplane.

The in-flight visibility is more restricted than its bubble-canopied competitors, but the flip side is that with its high wings, top-hinged doors and swept struts, the Skycatcher is one of the easiest LSAs to get in and out of.

Despite being called a 'lightweight variant', the Continental engine is nearly 30kg heavier than the Rotax 912S, meaning that to stay legal many people will be trading fuel for pies. Empty, an averagely-equipped Skycatcher will weigh in at about 378kg, leaving 222kg to share between pilot, passenger, fuel and baggage. Thanks to the glacial start to deliveries and the Euro-regulatory delays, the Skycatcher won't be seen in the UK for a while, so there's no reliable price available; in the US the base version sells for \$112,250 to which you'd have to add UK VAT and delivery.  
[www.cessna.com](http://www.cessna.com)

### SportCruiser

Just over a year ago, Czech Sport Aircraft, the company behind the SportCruiser, entered into a distribution agreement with Piper and the PiperSport was born. A year later, and with a bunch of aircraft sold in the USA, the partnership was ended abruptly with both



parties citing differences in business philosophies as the reason for the parting of ways. Existing orders will be delivered as the PiperSport, but new orders will once again be called SportCruiser. UK agents, Onega, told **FLYER** that the factory has plans to implement several significant enhancements to the aircraft this year, although it's unclear exactly what these will be.

The low-wing, bubble-canopy aeroplane has a spacious cockpit, excellent visibility and decent handling, although it is a bit light in pitch when compared to other LSAs. It's currently the most prolific of the LSAs (operating on an EASA Permit) on the UK register. A basic version of the SportCruiser should, according to the manufacturer, have an empty weight of 330kg and set you back from £74,000 ex vat.  
[www.czechsportaircraft.com](http://www.czechsportaircraft.com)

### Breezer

The Breezer is an all-metal German-designed LSA that's been around in one form or another for the last ten years. The UK demonstrator has just arrived and a full flight test will soon feature in **FLYER**. The low-wing design has a reputation for sweet, benign handling combined with a high-quality build. The UK demo aircraft (which I understand is loaded with lots of options) comes in with an empty weight of 360kg, while a more basic version should weigh in at around 340kg. Uniquely for the LSA market (as far as we can tell) the UK dealers, Absolute Aviation, is offering car-like lease and rental schemes for the aircraft. A basic version should cost in the region of £70,000.  
[www.breezeraircraft.co.uk](http://www.breezeraircraft.co.uk)

### Flight Design CTLS

This carbon-fibre aircraft comes from Flight Design, one of the main players in the LSA market.

The CTLS is just one version in the CT series (of which about 1,500 are flying worldwide) that now encompasses an all-metal version. The CT series has a distinctive look and we've heard it described as everything from 'great looking' to something somewhat less flattering. The company claims an impressive 326kg typical empty weight (including an



airframe parachute recovery system), but with plenty of avionics options available it pays to watch the weight. The interior is spacious, with a great finish. The view out, while not as good as the low-wing bubble-canopy configuration, isn't bad, thanks to the windscreen which terminates behind the wing's leading-edge. Entry and exit is easy thanks to the cantilever wing and top-hinged doors. Prices start from £85,500 ex vat.  
[www.flightdesign.com](http://www.flightdesign.com)

### Tecnam P2008

With a carbon fibre fuselage and metal wings, the Italian Tecnam P2008 offers elegant lines and fun handling. It's obviously been built to a strict weight budget, with non-structural parts such as the doors being a bit on the flexible side. That said, it's a tough aeroplane and the undercarriage soaks up bumps seemingly without noticing, while the fully-castoring nosewheel makes precision ground handling in tight spaces a piece of cake. Tecnam takes a fairly conservative line on approvals and EASA Permits, preferring to wait until EASA has its ducks in a row on the CS-LSA rather than taking the EASA Permit route. A lightweight version (equipped with, well, not very much at all) will come in at about 345kg – but as yet, no UK pricing has been set.  
[www.tecnam.com](http://www.tecnam.com)



### Remos G3

It's composite, German and, unlike any of the others mentioned here, it has folding wings. The Remos G3 is a great little aircraft with good handling and a high build quality. For a while, the company seemed to be spending large amounts of money on both stock and promotion in the US. In late 2009, the company filed a notice of insolvency and restructured its manufacturing arm. The Remos UK website quotes an impressive 404kg empty weight and a price of £65,000.  
[www.remosuk.com](http://www.remosuk.com)



To buy back issues of **FLYER** featuring flight tests of the Skycatcher, CTLS, SportCruiser, Tecnam and Remos, call Charlotte on 01225 481440





gear and shortly after that, one of the undulations launches us skyward. The ground roll was about 300m, but that said more about my technique than the aeroplane.

Max continuous power on the Rotax is 5,500rpm; with that set and trimmed for 60kt, we climbed at about 900fpm. The handling proved itself to be solid, stable, but not at all dull, and the roll rate worked out at a leisurely 30-odd degrees per second. The stall, clean or otherwise, produced lots and lots of airframe buffet, followed by a bit of a nod at just over 40kt clean and about 38 with full (50°) flap. Eddie obviously decided that I was being a bit too gentle, so he demonstrated some accelerated stalls, which passed with no drama at all.

At our weight, a max continuous power cruise yielded just under 110kt – a much more leisurely 4,800rpm had us purring along at 90kt burning an estimated 18lph.

This particular aeroplane has an electric elevator and aileron trim. They're controlled by four buttons on top of the stick and they sit just proud of the surface. A couple of times during the flight I found myself out of trim; I'd much prefer to see a slightly beefier hat-type trim, or no aileron trim at all and a manual elevator trim.

Pushing the nose down to accelerate towards Shotteswell, the airspeed rose without the controls getting noticeably heavier – mind you, the Vne is placarded at 144kt and we didn't get anywhere near that. Thanks to the liquid-cooled engine,

closing the throttle completely slows you down in a hurry (providing you maintain height), but there's little satisfaction to be had from such heavy-handed flying and gradual reductions.

It was a pretty nice winter's day, so a stable approach through a deserted sky wasn't too much of a challenge. Even with the C of G well forward, there was more than enough trim (helped by a trickle of power). This aircraft will flatter most pilots' landings – possibly helpful for pilots who've learned to fly in just 20 hours.

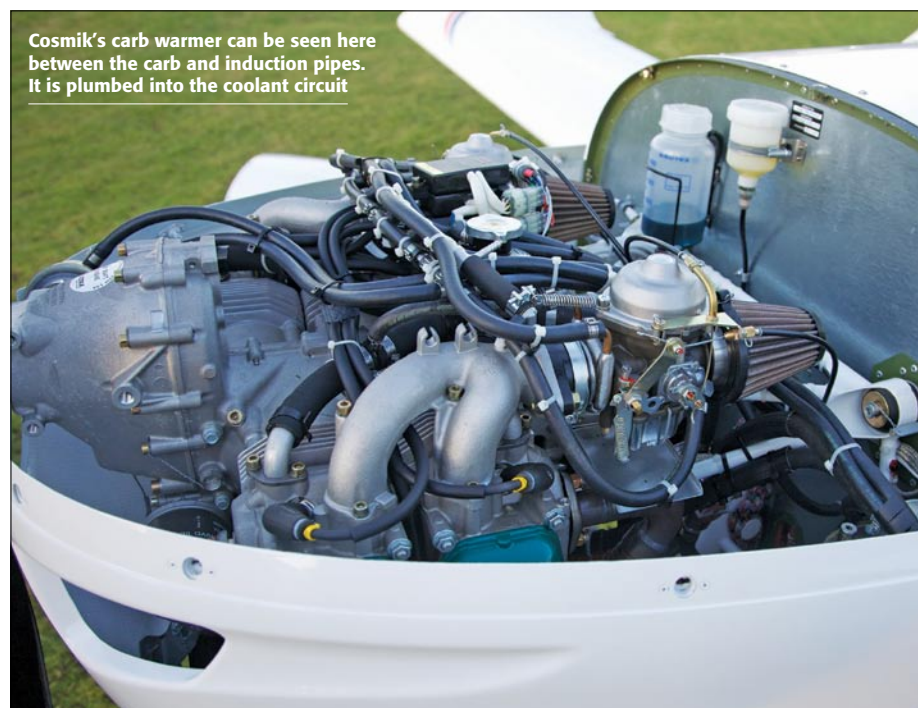
Applying full throttle with full aft trim does result in a pitch-up, but it's not impossible to control while you retrim. I was happy enough with the aeroplane's ground handling to taxi it through that gate.

My verdict? Well, I loved flying the SportStar MAX. The visibility is excellent, it handles well, climbs well, has a decent cruise and is easy to land. It may look a lot like a painted EuroStar, but in the air it feels more stable and solid without feeling turgid. The lightweight EV-97 EuroStar may be great fun of a summer's evening but would, I imagine, get a bit tedious on a long cross-country on a thermic or turbulent day. With the SportStar MAX it feels as if you could jump in and fly it across the Continent without needing two days to recuperate at the other end.

The aircraft has a base price of £69,995+VAT; G-TMAX, with all of its options, adds another

£10,000 to that. A more frugal buyer with an eye on empty weight might well specify fewer options. I'd certainly want to spend a while sitting in the standard seats before I decided against the optional 'Comfort' seats – and I'd like to know how much the 'luxury' interior contributes to suppression of the interior sound levels.

Saying that, I'd happily discard the aileron trim without a thought and the position lights could go too. I would, however, swap some of the analogue steam for a Dynon and if I had enough useful load and a little extra money available, I'd consider the TruTrak autopilot for those long cruise flights. ■



Cosmik's carb warmer can be seen here between the carb and induction pipes. It is plumbed into the coolant circuit

## Running costs

**IT'S ALL VERY** very well buying what will eventually become a Euro-flavour LSA, but what is it going to cost to run? With a mauw of just 600kg, every kilogram of empty weight counts. When you are specifying extras, consider your weight budget as well as your financial one, and ask to see the actual weight-and-balance schedule for a similarly-equipped aircraft rather than relying on a line in a brochure

Pretty much every LSA with the exception of Cessna's Skycatcher runs the Rotax 912ULS. This excellent powerplant delivers 100hp with a consumption of between about 15lph and 20lph. So, if 100hp Rotax pilots plan for 18.5lph they won't be far wrong. In terms of fuel, the Rotax will run on mogas, in fact the Rotax prefers mogas – so your hourly fuel costs will be between £24 and £37.

The 912 has a TBO of 2,000 hours, and a new one will cost you about £11,700 plus VAT, so plan for an hourly engine fund of about £7/hr. Allowing about £2.70 an hour

for ongoing engine and gearbox maintenance should cover those costs.

Airframe maintenance is a bit of an unknown right now. Unlike the USA, where LSA owners can take a course and become a certified 'repairman' and inspector for their own aircraft, EASA's LSAs will fall under Part M, and while the application of this is getting better thanks to a degree of evolution, it's possibly one of the worst bits of aviation legislation that we've seen – it has increased costs and increased complexity with no improvement in safety or reliability.

The good news is that its application in the LSA world should come under the proposed (and much lighter) ELA1 rules, and as we're talking simple, new airframes surprises should be kept to a minimum.

The other main fixed costs are hangarage and insurance. Looking at the the rivals (see the panel on page 28), the Remos should win out in terms of hangarage, thanks to its folding wings, but as far as insurance goes, they should all be very similar.

## TECH SPEC

### SportStar MAX



#### DIMENSIONS

Wingspan ..... 8.65m/28ft 5in  
Length ..... 5.98m/19ft 1in  
Height ..... 2.48m/8ft 2in

#### WEIGHTS & LOADINGS

Empty weight (basic aircraft) ..... 309kg/680lb  
MAUW ..... 600kg/1,320lb  
Engine weight (no prop) ..... 23kg/50.7lb  
Fuel capacity ..... 31.7usg/1120lt

#### PERFORMANCE

Vne ..... 146kt  
Cruise (75% engine power) ..... 110kt  
Stall (no flaps) ..... 45kt  
Stall (full flaps) ..... 40kt  
Rate of climb ..... 1,020fpm  
Range ..... 710nm

#### COST

Ex-factory base price ..... £69,995 + VAT

#### ENGINE

Rotax 912ULS. Propellor: Woodcomp Klassic

#### SEATING

2

#### CONTACT DETAILS

[www.cosmikaviation.co.uk](http://www.cosmikaviation.co.uk) / [www.evektor.com](http://www.evektor.com)

## Eddie Clapham



I thought I was going to fly the SportStar MAX with Cosmik's Nigel Beale, but he suggested I fly with Eddie Clapham instead.

According to Nigel, Eddie had much more experience on the aeroplane: Eddie had flown it for 20 minutes while Nigel had only managed 10.

Eddie took early retirement from his role as a senior engineer at Rolls-Royce Aero Engines and has been involved with Cosmik for years. He's a Cosmik's Engineering Design consultant, Chief Test Pilot and Chief Inspector. He's also dabbled with microlight competitions and was the European champion in 1993.