

Photos: Aussie Brown

JOINING THE EURO

Bob Davy wasn't too sure about the benefits of cashing in on 450kg microlights until the EV-97 teamEurostar brought about his conversion



Thin anodised aluminium skin is traditionally manufactured; the lack of paint saves weight

The high-performance microlight market is widely touted as being to the 'noughties' what the kitplane revolution was to the 'nineties'. The EV-97 teamEurostar is yet another eager competitor for what is expected to be a rush in high-performance microlight sales as the flying market picks up. The Eurostar's 450kg MTOW means it can be flown on a microlight licence – which in turn means pilots need less training, a lot less money and an easier medical than required to fly Group A aircraft.

I have recently flown a couple of other modern, high performance microlights and, while I marvelled at their speed, I was underwhelmed by their construction and handling that could require care at times. So, frankly, I wasn't really looking forward to flying the Eurostar.

At first glance this diminutive aircraft looks like the infant offspring of a Bulldog and a Jodel. It measures less than 20ft long and is very low to the ground, albeit with a 26.5ft wingspan. It features split flaps, harking back to the earliest days of aviation – historically good for drag and bad for lift. We would see.

FULL METAL JACKET

The Eurostar is constructed almost entirely of metal in the traditional way. The skin is the thinnest gauge anodised aluminium I have ever seen on an aircraft, which is amazing when you consider the +6/-3g limits – the Eurostar is aerobic in its country of manufacture.

The weight-saving even extends to the paint, or rather lack of it – the test aircraft sported a polished metal finish and just a few simple cheat lines. I liked this 'American Airlines' approach very much and the aircraft looked simply great on a sunny day. I didn't think much of the looks of its trolley wheels though – my son Jack's pram had nicer ones. Why haven't SLA designers rediscovered spoke wheels yet?

Inside the closely-cowled nose there's a Rotax 912 four-stroke pumping out 80hp. A 100hp 912S is an option abroad, but it may be that the weight and balance adjustment would effectively put the aircraft over the 450kg MTOW limit here, which means you would need a PPL 'A' to fly it two-up with more than an egg-cup of fuel aboard. Alternatively, you could take the 'in for a penny...' approach and combine the bigger engine with cabin heating, wheel spats and a three-blade prop. I would. The standard propeller is a lightweight, wooden two-blader with a neat little plastic spinner.

The canopy is enormous in relation to the

rest of the aircraft; its double contours and panelling aft of the seats give the Eurostar a more classical appearance than would a simple bubble. The canopy locks at the top, military style, rather than the sides, and hinges forward to reveal a classic and spacious cockpit.

Climbing in is easy and you can put your weight just about anywhere. Some of the competition are so flimsy that this can result in structural damage, especially if you are big and heavy like me. I once put my hand through the turtledeck of a Chevron while getting in.

SMART AND SIMPLE

Once strapped in I had plenty of legroom, which was again a surprise. Cabin width is published at 1.04m, or 41.5in, but it somehow felt wider. Perhaps they didn't allow for the fact that your arms can overlap the ridge at the base of the canopy, stealing yet another couple of inches.

Modernists might argue that the Eurostar's curved panel and round instruments are a bit '20th-Century'. I disagree. The cockpit is outstanding in both appearance and function. If you could climb into the Eurostar with your eyes shut, only opening them after you had been seated, you could easily be forgiven for thinking you were in a beefy Group 'A' aircraft such as a Siai Marchetti SF260.

The ergonomics are tops, the simple systems are easy to bring on line and use without any conscious effort. To start I simply switched on the battery and ignition, then the mags and set

EVEKTOR TEAM EUROSTAR



DIMENSIONS

Wingspan	26.5ft
Length	19.6ft
Height	7.5ft
Empty Weight	578lb
Maximum Weight	993lb
Useful load	415lb
Fuel	15.4 imp gal (65litres capacity)

SPECIFICATIONS

Engine	Rotax 912 4-cylinder
Propeller	2-blade wood propeller
Max Power 80hp	5800rpm
Fuel consumption	2.4 imp gal/hr

PERFORMANCE

Take off distance	910ft
Rate of climb	1000fpm
Maximum level speed	103kt
Never exceed speed VNE	127kt
Stall (clean)	42kt
Stall (landing config)	35kt
Cruise speed	97kt
Service ceiling	16,500ft

COST

Kit with analogue instruments	£25,509+VAT
Kit with electronic data instruments	£25,853+VAT
Estimate for factory build aircraft	£31,000 + VAT

CONTACT

Cosmik Aviation 01926 612188 fax 01926 613781

Canopy is enormous, providing excellent views, and locks at top, military style, rather than side

▷ the throttle friction nut, which was very tight, (more on this later) and pressed the button. For a change the starter sounded purposeful, not the wrenching Rotax I've been used to, and the engine roared into life after the second blade. We held easily on the toe brakes, which work a treat, and it's not a big effort to keep your toes off if the other guy is handling.

NOT SO CLEVER

One big criticism, though, concerns the throttle. It's spring loaded to the open position, the logic being that if the friction nut or cable fails in flight you'll be left with full power. This is all very well in the air, but what if it happens on the ground? I reckon the spring should be removed.

Believe it or not, the basic Eurostar weighs just 262kg empty – there are people who weigh more than that! Nevertheless with my 90kg and Dave the instructor's 80kg, this left just 18kg for fuel – about five imperial gallons or 22.5 litres, good for an endurance of two hours, a range of 145nm plus 30 minutes' reserve. To get the full 65 litres of fuel you'd need find two lightweight adults with a combined mass of 132kg – not much. If you are overweight yourself, then this aircraft seems like a good reason to get dieting.

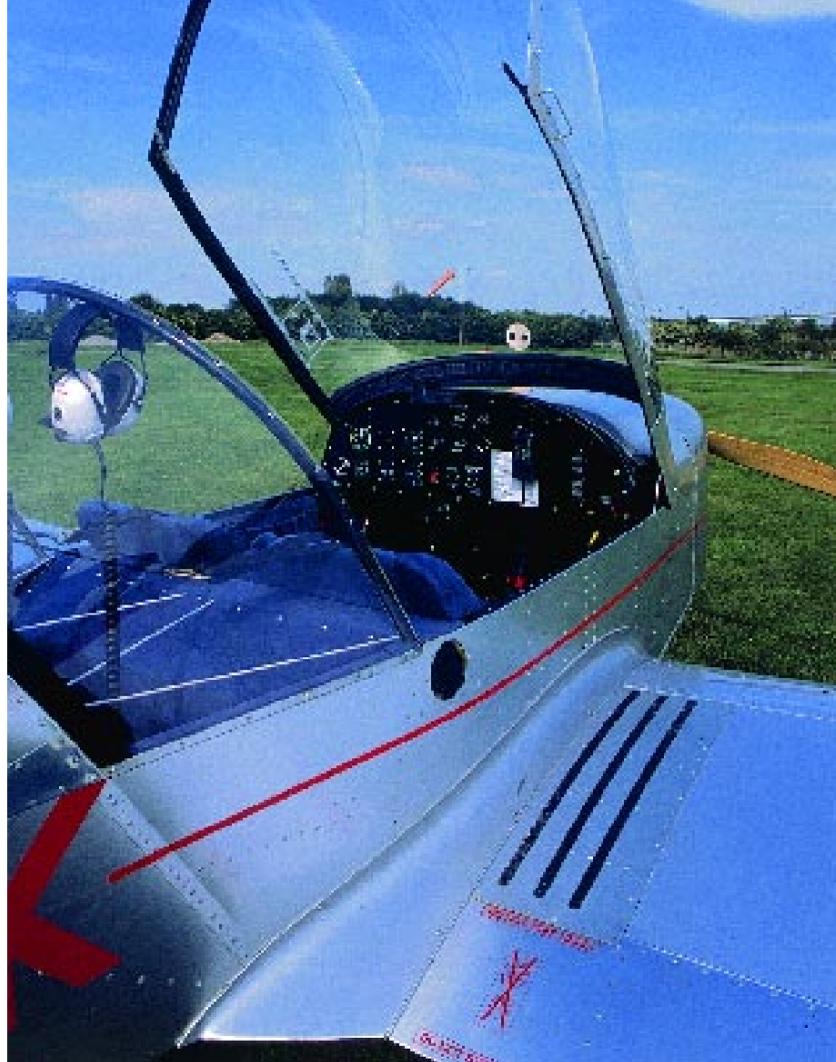
FIRST FLIGHT

Taxying across to Barton's short easterly runway the aircraft felt very easy to control on the grass; the pedals were firm and the brakes effective. The grass was quite bumpy on the day which allowed the Eurostar to demonstrate its excess of prop clearance admirably.

Run-up was easy, taking care with the throttle friction of course, and a quick scan revealed that we were ready for the off with nothing else to set – although one notch of flap can be used for takeoff.

Because of the large difference in types I decided to take off before the camera ship, a C182, and orbit around to join it after departure. I lined up right at the start of the runway, conscious of the housing estate at the far end. With a smooth application of throttle the Eurostar surged forward, surprising me a little with its brisk acceleration. I checked Ts and Ps and needed only small rudder inputs to keep the aircraft straight – there was never a feeling that we'd need extra help from the toe brakes.

In just a few seconds the rotation speed of



Some might call cockpit styling dated, but Davy reckons it's outstanding in both appearance and function; ergonomics are tops, too

50kt came up. As I brought the stick back gently the Eurostar soared into the air with a moderate swing, easily caught with the rudder, and we settled into a 1000fpm climb. We'd used less than 200m of runway – so much for the housing estate. It was an impressive performance considering the size of the engine.

The most dramatic aspect of the flight at this stage was not the Eurostar itself but what I could see out of it. The view is staggering, more like that from a helicopter than a fixed-wing aircraft. I even had a touch of vertigo as I looked down into the back gardens of the housing estate several hundred feet below. We had stabilised at 60kt in the climb at what seemed a very high nose angle, so I traded 10kt for a shallower climb, which fitted in better with the Group 'A' traffic in the busy circuit.

At 500ft I used the lively stick, leading slightly

'As we banked we could see the wing skins flexing under even this light load – I reminded myself it was stressed to +6/-3g'

with rudder, to turn us north and towards high ground for our photo session. As I made this first bank I assessed the roll rate as a moderate 30-40° per second at climb speed but, more than this, I was already impressed at how 'normal' the controls felt. I already felt that the aerodynamics of this aircraft were excellent and the harmony of the controls close to perfect.

Dave then pointed out a slightly disconcerting feature. As we banked, we could see the upper wing skins flexing under even this light load. I reminded myself that the aircraft is stressed to +6/-3g and I ought to be used to it – I flew my first aros in a Beagle Pup – and the sound of the upper surfaces 'oil-canning' sometimes penetrated our headsets.

By now the 182 had caught up and I slotted in behind. Controlling the Eurostar had already become natural and I couldn't help but move in and out of station for the sheer pleasure of it every time Aussie Brown changed films (he gets

through a roll every seven seconds when his finger's on the trigger).

EDGE OF THE ENVELOPE

As the 182 peeled away it was time to play. First I tried a clean stall. I closed the throttle (locking the friction nut) and let the speed come back slowly as I trimmed out the control forces. I stopped at 50kt and the aircraft started to buffet shortly after this. At 42kt we had started to descend reasonably quickly but there was no other sign of a stall. The aircraft was stable and still completely controllable in pitch, roll and yaw.

Next I tried it with a little power. This time I got a small wing drop which I caught with the rudder, then held the stall while the aircraft rocked gently backwards and forwards. Still relatively stable. The stall with flap and power was the least dramatic of the bunch, with only the descent rate increasing. This was happening at an indicated speed of 32kt!

We tried stability tests next, which showed that the Eurostar is neutrally stable in roll (it stays where you put it) and dynamically stable in pitch (it goes back to where it was before you touched it). By now I was trying to find a vice but I simply couldn't. Shame we couldn't do some aros because I might have had a chance to find something terrible to write about, but somehow I doubt it.

Next it was time to try a few high speed runs. I opened up to full power and started a descent, letting the speed build steadily to a maximum of ▷



Closely cowled nose hides 80hp Rotax 912, perfectly adequate power for such a lightweight



Eurostar is very low to the ground which aids exit and entry; prop clearance good for rougher fields



Despite Eurostar's small size, large cockpit and canopy help to accommodate two large adults



Aerodynamics are excellent, while the control harmony through lively stick is close to perfect



127kt. At about this point in a Dyn'Aero Ban-bi I had experienced a pitch oscillation through the stick which I found alarming. Not here. The Eurostar's little trim lever, which sits between the two seats, came in handy as the out-of-trim forces began to build. At this point the controls still felt great, and not heavy in roll or sensitive in pitch as with some others.

Levelling off I let the speed come back to the max level of 103kt, which it did to within one percent – less than a knot! Next was the cruise speed setting, which gave a healthy 100kt on the day, actually better than the book figure. How refreshing. The 100hp mod raises the cruise by 11kt from the book figure of 97kt to around 108kt, which I find entirely believable.

The only thing left to do was to return to the circuit to see what mischief we might be able to find there. As we descended I removed my headset to sample the cabin noise – the aircraft is quiet and could easily be operated without headsets; so, no internal noise complaints, either.

The circuit was still busy so I elected to use typical PA-28/Cessna 172 speeds. Once again I couldn't get the Eurostar to misbehave at all, finally settling on final at 70kt with full flap,

reducing to 60kt over the hedge. I cut the throttle at 10ft and managed to get a greaser with virtually no float – until a gust launched us back into the air for another 10m along the runway. But it's so, so easy to fly.

Once again, the circuit is an arena in which the competition lets itself down, or rather won't let itself down. Ultra-slick aeroplanes managing 150kt plus on 80hp are a handful in the circuit because they lose energy at about the same rate as a high performance sailplane (and they have airbrakes) – get the speed just 10kt fast on final and you'll be lucky to get one down on 800 metres of runway. Believe me, I've tried it.

HORSES FOR COURSES

In the last 10 years I have flown a number of microlights, all of which were different and most of which had marked strengths and weaknesses. My first was the Thruster three-axis taildragger, which I thought was heaps of fun but very slow. Next was the Chevron, another three-axis machine which I felt had very average handling both in the air and on the ground, and one of the worst cockpits I have ever sat in. Next up was a weightshift microlight in Africa – a great

'The Eurostar is viceless with fantastic handling qualities, good visibility and it's robust – most of all, it's a joy to fly'

view, but I wouldn't like to go up in one again.

Next, and within just a few weeks of both each other and the Eurostar, were the Flight Design CT2K and the Ban-bi. These latter two machines have been pared down to the minimum and optimised for high speed flight. And fast they are. The compromise is their aerodynamic qualities and general handling. Both the aircraft that I flew had bad control balance and I found them difficult to fly well, especially in the circuit and on the runway.

The Eurostar is viceless with fantastic handling qualities, good visibility and, despite its weight, a robustness which belies its stature. Most of all it's a joy to fly and will enthral pilots from all disciplines. The Eurostar represents a safe way for microlight pilots to learn to fly conventional aeroplanes and it will also appeal to PPLs who want to get more bang for their bucks or simply fly for less. The kits are reasonably priced with reportedly quick build times – and a factory-built option may become available over here.

If the current estimates and costings are correct we could be talking about a brand new Eurostar for around £37,000 including VAT, which I think is extremely good value for money considering what a little beauty it is. ■



Despite its diminutive stature, Eurostar is robust; well designed control surfaces give good handling



Davy likes it, then; the simple flight qualities will have appeal for both PPLs and microlighters alike