SPOTLIGHT ON THE VIPER SSDR

Brian Hope takes a closer look at Barry Conway's exciting jet design…

Certainly one of the most extreme new aircraft at this year's LAA Rally was Barry Conway's sleek, carbon fibre, four-engined, jet powered SSDR Viper, which took centre stage in the Homebuilders Marquee.

The project has appeared at the Rally a couple of times in recent years but this time the completed fuselage was presented, and what an impressive piece of work it is. Built entirely from carbon fibre, the structure was made using the resin fusion process, where the cloth is laid in the mould dry, with a final layer of thin mesh known as the flow media. It's then vacuum-bagged and the mixed resin fed in via a pipe, with a tap to control flow.

The resin is drawn through the lay up and the tap turned off, once the cloth is fully wetted out. The beauty of this system is that it allows time to build large components, eliminating the pressure of resin going off before the lay up has been completed.

(Above) **Barry's Viper is certainly very sleek. The green nose cone is removable and the canopy was supplied by Todd's Canopies in the US.** *(Photo: Neil Wilson)*

Barry's fuselage tub is made from only four separate pieces, rather like an Airfix kit. And talking about kits, Barry was a keen radio-controlled modeller, before going on to build a WAR replica Fw190, which he's been flying for a good many years – indeed, he flew it into the Rally this year. No doubt the expertise gained in both disciplines have helped in the design and build of the Viper!

The Viper's undercarriage is mechanically retractable – the main gear via cables with a hand brake lever to raise and lower, plus an up-lock to ensure they won't droop when in flight. The steerable nose gear is retracted via a separate lever under the instrument panel.

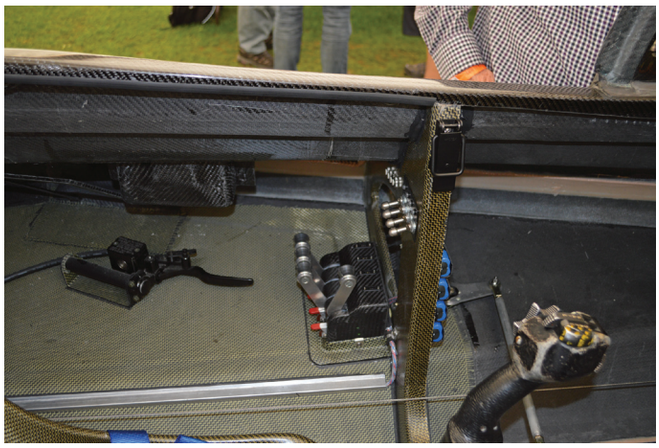
The four motors are Jetcat P220 model jet turbines, similar to those used by Yves Rossi, the Swiss chap who performs with a short wing strapped to his back. Each weighs only 2kg and produces around 52lb of thrust. They'll be fitted into a simple slot at the rear of the fuselage. The turbines have automatic starting, and Barry has a neat bank of four throttles and ignition switches with which he'll be able to operate them very simply.

COMPUTER ANALYSIS

With the help of Flitzer designer, Lyn Williams, Barry has been able to use computer analysis and 'fly' the aircraft with X-Plane. The Viper is showing a top speed in the region of 150mph and a climb rate of around 1,000fpm, and with its high-lift wing profile promises a satisfactory stall speed to meet the 35kt SSDR requirement.

The fuel consumption is relatively high, at 0.75 litres per minute, per motor at full power,

(Above) **The retract 'handbrake' is on the RHS – the small lever outboard of it is the main undercarriage up-lock.** *(Photo: Brian Hope)*



(Above) **The bank of four throttles and ignition switches is mounted on the LHS. The hand lever is for the mainwheel brakes.** *(Photo: Brian Hope)*

(Left) **The rear view, with the 'engine bay', which will take four small jet turbines.** *(Photo: Neil Wilson)*

(Below) **Barry receives the Albert Codling Trophy from Steve Slater, with Rally Awards team members Harry Hopkins (*right*) and Dave Sentence.** *(Photo: Neil Wilson)*

and some flight experience will be necessary before Barry is going to know the Viper's maximum endurance, but he anticipates it will be in the region of thirty minutes. However, as he says, it was never designed as a 'go places' aeroplane, rather it's a 'go and have some fun' machine.

Weight-wise, the completed fuselage with the engines installed will come to 130kg. The wings – Barry has completed one and is part way through the other – weigh 15kg each, so the complete aircraft should come in at 160kg. Full tanks allow for a pilot of 80kg – ie Barry weight.

Completion of the Viper is planned for next summer, when flight testing will start from a suitably long and hard runway.

Well done to Barry on his exciting design, which takes the SSDR concept in a completely new direction. He was awarded the Albert Codling Trophy for the Best Part-Built Aircraft at the Rally. ■