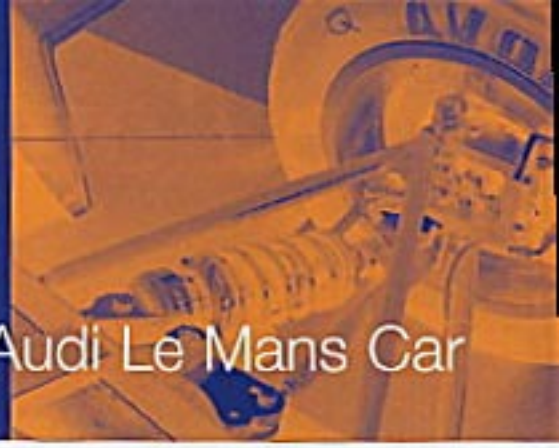

Stohr DSR Mini Audi Le Mans Car

Although not strictly speaking an amateur constructor of one-off racers since he sells replicas of his superb productions, Lee Stohr works in the spirit of the Special Builder from his base in Oregon, USA. Lee's beautifully crafted Formula Ford 1600 and 2000 chassis have had considerable success in North American competition over the last ten years and now he has turned his attention to the SCCA's 'D' Sports-Racing class.

D Sports-Racing has undergone a resurgence of interest of late, encouraged by the arrival of the motorcycle-engined Radical from the UK. Lee has produced his own motorcycle-engined sports-racer for the class, which has a minimum weight of 900lb including driver.

"DSR has very few rules - the rule book is only 4 pages long!" notes Lee: "DSR is probably the last bastion of design creativity left in the USA, fighting against the plague-like spread of one-make classes."

Lee designed his DSR to capture the look of the Audi R8 albeit scaled down as a single seater. The Stohr DSR was entirely designed by Lee on CADKEY 98, using solid modelling. CAD files for brackets and bellcranks were e-mailed to local machinists for production. The body and other composite work was subcontracted to Composites Unlimited in Scappoose, Oregon, makers of aircraft components.

"I decided to build a sort of mini-Le Mans Audi"

Illustration by Rudy Bartel

The Stohr DSR bodywork is pre-preg glass/epoxy with 1/8" thick honeycomb core. The parts are vacuum bagged and oven cured, and come with a special oven-curable primer, similar to a gel coat. The complete Stohr body weighs only 51lbs. This does not include the composite floor, which is a partially structural piece.

The floor is made of 3/4" thick honeycomb, and contains numerous solid inserts for bolting down the frame and drivetrain sub-assembly. It also contains the rear diffuser. The front splitter/diffuser is another composite part.

The centre frame section is mostly made of 1" thick composite panels which are curved and molded around the driver. The basic frame is only slightly wider than a Formula Ford, but the cockpit is more comfortable with no tubes in the way. The front clip part of the frame is raised 3", so the driver's feet are raised. Airflow from the front diffuser moves over the main floor and exits behind the front tires. Flat bottoms are required in DSR, but only over 45% of the wheelbase.

The Stohr DSR uses the current Yamaha R1 motor, four cylinders with 20 valves. It revs to 11600rpm. In stock form it produces 150hp at the crank, tuned versions are over 180hp. The Yamaha has six speeds, and is shifted through a Stohr designed paddle shifter, mounted behind the steering wheel. It is mechanically operated through lightweight pull cables.

The Stohr DSR front suspension has an external shock/spring but also uses a pushrod and bellcrank to increase motion ratio. The shock/wheel travel is 1:1.

The Stohr drivetrain is somewhat unique in the world of chain driven, motorcycle-engined cars. Behind the engine is a machined, hollow case. Dubbed the 'Stohr spar', this structural box carries the a-arm pickups, bellcrank pivots, shock/spring mounts, rear wing mount, rear jack point, Quaife differential, and chain adjuster mechanism. The Stohr spar bolts to the 2 main lugs on the back of the Yamaha motor. The composite floor is bolted to the spar in several places as well.

Four of the new Stohr DSRs were delivered late in 2001. Their progress this season will be watched with interest.

"The complete Stohr body weighs only 51lbs. This does not include the composite floor, which is a partially structural piece."

The Stohr DSR chassis is mostly 1" square steel aircraft tubing. It is produced as three sub-assemblies - a front clip(dash forward), engine bay clip, and cockpit panels. The three sections are joined by welding and epoxy bond/riveting at the Stohr facility.