

Laser technologies bring legends to life

CSIR laser cutting specialist Jan Koster and his colleague, computer-aided design ace Johan Broodryk, have contributed to bringing the Porsche 917 legend alive once more - using some of the latest technologies employed at the CSIR National Laser Centre.

Koster relays the background of this rather unusual project in which laser technology was used to build replicas of the Porsche 917 to take part in races: "In the 1971 edition of the Guinness Book of Records, the Porsche 917L is quoted as the world's fastest production car.

Sporting a 12 cylinder 4,9 litre engine, the Porsche hurtled down the famous Le Mans Mulsanne straight in April of that year at 374,4 km per hour. In June of that year, the Porsche 917 went on to win the Le Mans 24-hour endurance race. The 917 dominated sports car racing in the late '60s and early '70s and became one of the most revered sports cars of all times."

Now, the vision and determination of the father and son team, Peter and Greg Bailey, who head up Bailey Edwards Cars, are resulting in the Porsche 917 and other legends from the golden era of sports cars once again gracing the race tracks of the world. Bailey Edwards Cars is a small South African company that specialises in manufacturing ready-to-race replicas of the classic sports cars. Their current product range includes the equally famous Ford GT40 as well as the Ferrari P4.

Koster explains where laser technology came into the picture. "At the heart of a sports car's performance is the chassis. This is literally the 'backbone' of the racing car, providing the rigidity and stability required at high speed and in tight corners. In these classic sports cars the chassis takes the form of a frame that consists of tubular sections that are welded together. For the first models, the tubes were hand cut but it was soon realised that a more sophisticated approach would be needed to achieve the accuracy and fit-up necessary to maintain the required dimensional tolerances and weld integrity. Laser cutting was the obvious answer, but the combination of relatively low volumes, large range of different parts, high accuracy and tight configuration management, made this unattractive to commercial vendors of laser cutting services."

The CSIR was approached to assist and agreed, based on the technical complexity of the project as well as the organisation's commitment to the advancement of SMMEs. After the car's first race at Kyalami in September this year, the clearly improved 'golden oldie' elicited positive responses from a delighted client, commenting on the performance of the car.

The CSIR's commitment to the advancement of SMMEs and the high levels of laser based manufacturing expertise proved to be an ideal solution for the laser cutting requirements of Bailey Edwards Cars. The CSIR's



A Porsche 917 replica gracing the track at Kyalami recently. The CSIR National Laser Centre played a key role in bringing this legend back to life



The CSIR's Johan Broodryk (left) and Greg Bailey of Bailey Edwards Cars pictured with the chassis component of one of the Porsche 917 replicas



A close-up of a welded frame of one of the replica cars that was laser-cut

laser cutting expertise resulted in a service that satisfied the stringent demands for quality and delivery for which the automotive industry in general - and its racing branch in particular - is well known.

The tube end geometries were modified to optimise fit-up and parts were nested to minimise material consumption. In addition, configuration management was enhanced by laser engraving a unique number onto the part during the laser cutting process.

"It has been a steep learning curve for all involved, but the success of this undertaking is the result of the ingenuity and many hours of hard work put in by specifically Jan Koster and Johan Broodryk," says manager of laser materials processing at the CSIR, Hardus Greyling.

To date five complete sets of chassis components have been delivered and there are already orders for five more sets. Several of the cars are destined for overseas customers. The CSIR is proud to partner Bailey Edwards Cars in the fast lane of international motor sport.

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