

Power versus speed

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The ability to find and fix problems quickly is a key skill for many motor sport businesses. One of these is Oxfordshire-based Menard Competition Technologies (MCT). The company specialises in the design and production of racing engines and other components. Eighty per cent of its output goes overseas particularly to the highly popular US NASCAR race series and its derivatives. "The constraints on NASCAR engine are very severe," explains MCT managing director Charlie Bamber. "As a result, teams will go to extreme lengths within the rules to get extra performance." For MCT, this means a lot of work supplying pistons and other parts built to extremely high precision. The company makes extensive use of CAD and analysis technology to deliver its products with Unigraphics NX3 its basic CAD system together with the Abacus analysis environment. "We also have a lot of proprietary software for the analysis of complex part performance," explains Bamber. "In these engines, each individual piston actually operates in very different conditions. It is our knowledge of the complete engine environment that allows us to deliver robust solutions to our customers."

Typically, those customers want their solutions in a hurry. MCT will often analyse, design and manufacture a new piston- to tolerances measured in m - in around ten days from start to finish. Increasingly, the company is finding that the design skills and flexibility learned on the race track is leading to jobs building limited production runs for road cars too. The company already produces an add-on kit for the London taxi that greatly extends the interval between costly timing chain changes and it has just been awarded the contract to supply complete engine building services to the Caparo T1 road car programme.

The Caparo is a two-seater car that exploits aerospace and motorsport technologies to provide what is said to be the first 1,000 horsepower per tonne road car project. Designed Ben Scott-Geddes and Graham Halstead, both formally of McLaren, the car was unveiled at last year's Monaco Grand Prix and with extensive use of composite materials, weighs approximately 575kg and reaches 100mph in less than five seconds. The Caparo development team also boasts Gordon Murray as director of advanced concepts.

MCT will be responsible for the delivery of the Caparo V8, a brand new, 3.5 litre V8, normally-aspirated engine. The unit will run at up to 11,000rpm and offers 585bhp. It is envisaged that up to 50 vehicles will be made every year. Low weight has been one of the driving principles behind the design of the chassis and engine in order to deliver both performance and fuel economy, as Caparo's chief executive, Angad Paul, notes, "The automotive industry needs to exploit lightweight technology more. By reducing weight, we improve fuel performance and therefore cut down on carbon emissions."

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