

TURBOCHARGER TESTING

Two hours outside of Paris, in Bruay La Buisserie, an independent laboratory called CRITT M2A tests turbochargers for automakers, industry, and race teams. Opened in 2000, the Centre de Recherche, d'Innovation Technique et Technologique en Moteurs et Acoustique Automobile also offers seven engine test beds, reverberating rooms and a semi-anechoic chamber for NVH testing, and will open an electrical test center later this year.

Only a small percentage of the lab's turbo testing is for racing. OEMs take up the largest share. When we spoke to Philippe Lagasse earlier this year, CRITT M2A was testing turbochargers for one Formula 1 team, and for one current and one potential WRC customer.

What CRITT M2A offers, to OEMs as well as racers, is not only its specialized expertise, but its unbiased consistency. "Every turbocharger manufacturer has its own testing methodology," said Lagasse, and they tend to be secretive about the particulars. So while they can provide

performance maps to customers, there's no way to realistically compare one manufacturer's map to another. Further, racers and OEMs alike naturally want confirmation of the performance maps provided by the turbo manufacturers.

Mostly, customers seek efficiency, that is, the horsepower consumed by the turbine versus the horsepower out of the compressor. "If it consumes, say 130 kW (176 hp) on the turbine side, and you see 90 kW (122 hp) on the compressor side, that would be a pretty good turbocharger," he said, because the peak efficiency is a high 69 percent.

CRITT M2A is also working on the possibilities regarding testing for turbocharger electrification, where kinetic energy recovered by a generator is stored in a super-capacitor and then used to power an electric motor on the same shaft with the turbine and compressor. "So then a race car is braking for a turn, it is charging the super-capacitor; and then coming out of the curve the car has more power and torque just when it needs it." —John F. Katz



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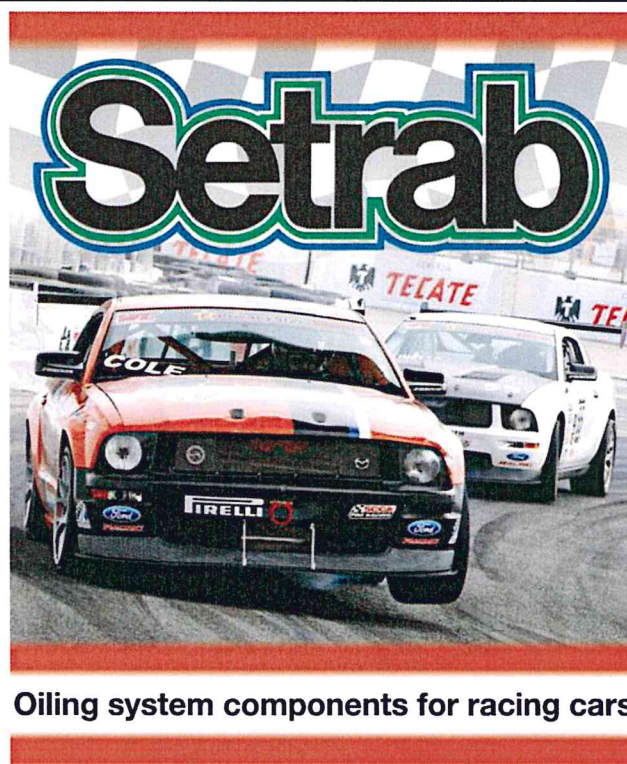
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