



Université Laval race car team benefits from low-friction bearings

Twenty-five students (mostly engineering) from Université Laval in Quebec finished 14th out of 130 in this year's Society of Automotive Engineers' Formula SAE competition in Detroit. The competition engaged students from more than 100 colleges and universities throughout the world in the design, fabrication and competition of small, prototype race cars that could be manufactured and sold for less than \$25,000.

Designed for a high horsepower-to-weight ratio, the 480-pound Laval car was powered by a 600cc Honda CBR600 F4 engine that delivers 88 horsepower at 8,500 RPM and can accelerate from 0 to 100 MPH in under four seconds. However, to improve its performance and reduce its weight, the team GGB Bearing Technology to provide a number of its DU metal-polymer plain bearings to replace another manufacturers' heavier rolling-element bearings.

"In addition to weight savings, the DU bearings provide better, more consistent low-friction performance in critical parts of the car," explained Martin Carrier, coordinator of the university's Formula SAE project. These include the accelerator, brake and clutch pedals, where $\frac{3}{4}$ -in. DU bearings are installed in the pivot joints. The rack-and-pinion steering system contains two $\frac{1}{2}$ -in. DU bearings, as does the linkage from the gear shift to the gearbox.

The parties involved say DU bearings provide excellent friction performance in rotating, sliding or oscillating motion applications. Unlubricated, they can withstand loads of up to 3.5 MPa x m/s, speeds up to 2.5 m/s and temperatures ranging from -200°C to 280°C.

Its structure consists of a rigid steel backing, which provides high load-car-

rying capacity, and a porous bronze inner layer impregnated with a homogeneous mixture of PTFE and lead.

Judges from DaimlerChrysler, Ford and General Motors, as well as a number of independent automotive consultants, evaluated the cars based on both static and dynamic criteria, including marketing presentation, design, cost, acceleration, handling, autocross (timed lap), fuel economy and endurance.

"Aside from the competition itself, Formula SAE is a phenomenal opportunity for students to develop practical concepts, make contacts within the industry and prepare for the job market," said Carrier. "Students participate on an entirely voluntary basis since no grades are attributed for the project. Hence, we encourage students to get deeply involved in Formula SAE or any such student competition, as it is a very enriching experience." **DE**

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Laval students in the Formula SAE race car competition used GGB's DU metal-polymer bearings (installed, inset).