OAKLAND UNIVERSITY

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OU student receives top engine design award

*By **Jeff Samoray**, OU Web Writer*

Bill Edwards, a master's student in mechanical engineering and SECS '90 alumnus, applied his Oakland University studies to an automotive project that earned large praise this past year. Edwards' contributions to the 1.6 liter supercharged engine for the BMW Mini Cooper S received a **Ward's Auto World** Ten Best Engine Award for 2003.

Edwards, who worked on the joint venture project as a DaimlerChrysler engineer, received the award last January. Among the engine's attributes Ward's reviewers cite are its use of torque and lively "cut-and-thrust driving."

"It's really a unique engine," Edwards said. "It's one of just five in the entire world that delivers over 100 horsepower per liter, and it drives extremely well. Its response is fantastic and it has a great power-to-weight ratio. The Mini is a pretty small and light car, but it will outrun a Mustang."

The engine, which propels the vehicle from 0-60 miles-per-hour in just seven seconds, also is among the most cost-effective supercharged engines in the world.

"I was the engineer responsible for the long block. This includes the bearings, rings, spark plugs, cylinder head – the whole base engine," Edwards said. "BMW had the vehicle responsibility and designed the intake and exhaust manifold. The engine itself was produced in Brazil, and the crankshaft and some other components were made in Mexico. The project started out as mine alone, but as the project progressed and became progressively bigger, it became a team effort with myself as the team leader."

Edwards said his OU studies helped him in taking a different approach toward engine design.

"My classes at Oakland certainly gave me a solid engineering background," Edwards said. "They also gave me a different way of looking at things. For example, with the Mini Cooper engine, we did a couple of experimental things with connecting rods to push the level of performance. We tried to get a lot of the rotating weight out of the engine to make it tight, compact and powerful."

Another production challenge Edwards faced involved working across time zones with the work styles of various cultures.

"DaimlerChrysler is known for being a lean and fast-moving organization," Edwards said. "But in the European culture, companies generally work at a slower pace and are more methodical. Diplomacy and communication skills definitely played a role in creating the engine."

Edwards currently is a lean manufacturing specialist for DaimlerChrysler's advanced manufacturing department. He visits different plants as a manufacturing consultant and plans on applying the experience he's gaining to future design projects.

"DaimlerChrysler is good about providing its employees a very well-rounded background," Edwards said. "What I hope to do is eventually return to engine design. Now that I've gained further manufacturing experience, I could possibly lead a larger group of people on another design project. I may also continue my studies at Oakland and pursue a doctorate."

For more information on the award-winning BMW Mini Cooper S 1.6 liter supercharged engine, visit the **Ward's Auto World** Web site.

SUMMARY
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