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UW wins energy challenge

KELLY MCGREGOR - *IMPRINT STAFF*

Members of UW's Alternative Fuels Team left Detroit last week with smiles on their faces. The team placed first overall in General Motors and the US Department of Energy's "Challenge X: Crossover to Sustainable Mobility" engineering competition.

Students from 17 universities across North America participated in Challenge X, where teams had to re-engineer a GMC Equinox to minimize energy consumption, emissions and greenhouse gases while maintaining or exceeding the vehicle's utility and performance.

The competition focussed on modeling, simulation and testing of the vehicle powertrain and vehicle subsystems designed by each school. UW was the only team to implement a "series" fuel cell hybrid system in which the fuel cell directs energy to the powertrain of the vehicle.

GM University in Detroit hosted the competition, where the UW team impressed judges with their virtual advanced propulsion technology solution. The team's display included an interactive simulation of driving a vehicle running on their hybrid system. Users sat in a driver's seat positioned with a steering wheel and the full powertrain of the system was set up behind them. Because they were unable to transport the fuel cell to the competition in Detroit, live interactive feed from Waterloo was broadcast to those using the simulator.

Team captain Matt Stevens said fuel cells are the next step in automotive technology, "A fuel cell acts just like a battery, but you don't have to recharge it. You refill a fuel cell just like you fill the gas tank for a combustion engine. Using fuel cells in vehicles is over twice as efficient as combustion engines and the only emission into the atmosphere is water."

At this point, the cost of owning and operating a fuel cell powered vehicle is significantly more expensive than a combustion engine. Thanks to sponsors such as Natural Resources Canada and Hydrogenics Corporation, UWAFT was able to obtain a fuel cell large enough to power their operation, one of only four produced at this time.

Stevens' goal for the competition was to place amongst the top three universities. In addition to winning first overall, the team received awards in the areas of Outstanding Web Site, Outstanding Outreach, National Instruments Most Innovative Use of Virtual Instrumentation for Control Design and Simulation (third place), Best Control Strategy Presentation, Best Technical Presentation and Best Written Reports (third place), among others.

The team earned a total of $19,500 in prize money and were also given the keys to a donated GMC Equinox in order to complete the next steps of Challenge X.

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