

THE HAMILTON SPECTATOR

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Waterloo engineers put minds to clean car; Sole Canadians in GM- sponsored competition

Matt Stevens will one day drive on Canada's highways in a car that emits virtually nothing but water and heat. It will be a hydrogen fuel cell car.

There are prototypes of such cars now, but the technology is expensive and the cars have limited power. They can't travel far before needing to be refuelled, so the technology is not ready for the masses.

But Stevens, a 24-year-old chemical engineering master's student at the University of Waterloo, believes his generation will drive hydrogen fuel cell cars.

Stevens has reason to be confident. He's part of a University of Waterloo team that will help make that happen. It's the only Canadian school chosen for a North American clean-air car competition, the sponsors of the contest announced in Toronto this week.

Engineering students from 17 post-secondary schools, 16 in the U.S., are in the competition.

During the next three years, students in the Challenge X competition -- being sponsored by General Motors and the U.S. Department of Energy -- will develop clean-energy cars that are practical and economical.

Some teams will work with ethanol, while others will try bio-diesel. Some will work on electric cars that are hybrids, using a battery with some alternative fuel. The Waterloo team members will work on a hydrogen fuel cell vehicle they hope will have the range and power of today's cars. General Motors of Canada, the Hydrogenics Corporation and Natural Resources Canada are all supporting the UW team's efforts.

At the end of the first year, the students will receive a 2005 Chevrolet Equinox subcompact utility vehicle.

They'll strip out its engine and the internal guts.

They will rebuild the car's internal organs, such as the power train and drive shaft and other parts, making it into a vehicle fuelled primarily by a hydrogen fuel cell stack.

Hydrogenics Corporation, based in Mississauga, will work with the students in providing the hydrogen fuel cell technology.

About \$1.1 million worth of materials and expertise are being put into the project over the next three years by the sponsors. General Motors will even let the students in on its vehicle development process so they can learn about car building in the real world.

Vehicles will be judged on how well they run and whether they have the power to be commercially viable for consumers. Judges will also score the vehicles on how much air pollution is generated in producing the alternative fuel in the first place.

That's the challenge with hydrogen. The fuel cells produce nothing except water and heat, so they are the ultimate in clean-car technology.

Unfortunately, natural gas is seen as the most cost-efficient way of making the hydrogen and that's a fossil fuel. So the UW team will need a cleaner way of refuelling their hydrogen vehicle.

One possibility is to make the hydrogen from ethanol, which comes from renewable crops such as corn. There will be \$50,000 worth of prizes given to winners chosen in each of the three years of the competition.