

Mac's high-tech cradle for cars of the future

Hamilton Spectator

The McMaster Automotive Resource Centre is entirely empty and workers are still bustling about finishing the cavernous space a day before the official ribbon-cutting Thursday at the Hamilton Economic Summit.

It will be months before the equipment is moved in and research work is under way to create the hybrid and electric cars of the future in the Careport Centre on Longwood Road South. Yet the man in charge of the new 80,000-square-foot, \$26-million facility at the McMaster Innovation Park is already expecting to quickly run out of room.

"Once it's fully operational, this is going to be the most sophisticated facility in academia in North America," said Ali Emadi, director of MacAUTO, the largest concentration of automotive technology researchers in North America.

Fuel-economy standards are getting tougher and Emadi believes in the next decade all cars in North America will be electrified in some way.

That means a lot of companies are interested in research partnerships to develop more advanced, reliable and efficient hybrids and electric vehicles. Emadi says MacAUTO has already had to park projects because of a lack of space at the McMaster campus. He's anxious to be up and running at MARC but predicts further expansion will be necessary.

"There is so much interest from companies to work with us. We will hit the limit here very soon," Emadi said.

About 200 university engineers, chemists, mathematicians and social scientists are working on next-generation batteries, charging stations, powertrains and engines, better on-board electrical storage, more lightweight materials, better software to manage a car's systems and public policy for the auto sector.

McMaster aims to make Hamilton the centre of advanced automotive research in Canada.

"We're giving our world-class researchers a world-class building with globally unique equipment. What else would you want?" said a beaming Emadi, who was lured by the university from the Illinois Institute of Technology in Chicago in 2011.

MARC is located in the former Camco appliance warehouse on the west side of Longwood Road at Aberdeen. The property is now part of the McMaster Innovation Park.

A portion of the box-like steel structure has undergone a large renovation to add a second floor for software labs and control rooms. The ground floor has been wrapped in glass to add light.

The centre includes commercial garage space with multiple bays to receive vehicles for experiments and testing. The biggest can accommodate a transit bus.

There will be a solar canopy in the parking lot to do research on tying into the power grid and test rooms for batteries and powertrains.

Industry partners include auto-parts companies along with manufacturers Ford, Chrysler and GM. ArcelorMittal Dofasco is working with Mac researchers on lightweight automotive steel. All that work will lead to high-tech, high-paying jobs and keep more graduates working in the city, says Emadi.

"I think we're the only university in North America that can design and build an electric car from the ground up," he says, proudly showcasing a hybrid race car built by Mac students that goes from zero to 95 kilometres an hour in three seconds. It won first place for design in a recent GM competition.

"We do practical, meaningful and applied work," said Emadi. "We need to be relevant and deliver. I remind myself every day that my salary comes from the taxpayer."

McMaster president Patrick Deane says MARC's opening is gratifying.

"It will allow our researchers to undertake exciting new projects and share new knowledge with our students. In creating modern manufacturing jobs, the centre will benefit the broader community and will enable the development of cleaner, more efficient cars for drivers everywhere."

MARC is a cornerstone of MIP, together with the federal CANMET Materials Technology Laboratory and the Atrium. MIP is currently in early planning for a fourth building, called the Emerging Technology Centre.



The automotive industry is big business in Ontario. There were more vehicles, 2.1 million, produced in Ontario in 2011 than any other state or province in North America. The province is home to five top automakers and more than 300 parts manufacturers, which have invested \$10 billion in Ontario in the last six years. The sector provides more than 88,000 jobs.

But Steve Rodgers, president of the Canadian Automotive Parts Manufacturers' Association, says Canada is losing ground to other jurisdictions and has to focus its research on future fuel-efficiency standards.

"MARC is the ideal opportunity to do critical research in our ability to meet future industrial requirements."