CUTRIC FUNDING ADVANCES LOW-CARBON FLEET TECHNOLOGY

Waterloo (February 28, 2019) - The Canadian Urban Transit Research and Innovation Consortium (CUTRIC) has announced important funding for an innovative collaboration between industry, university and government to develop new ground-breaking hydrogen fuel cell technology. “This funding will integrate and develop zero-emission Hydrogen Fuel Cell technologies, advancing low and zero carbon solutions for urban mobility, one of CUTRIC’s key pillars,” says Josipa Petrunic, CUTRIC’s Executive Director and CEO.

This Development of Low-Cost, High Performing and Durable Polymer Electrolyte Membrane (PEM) Fuel Cells Project is starting Phase I and has a total value of $1,898,432.00 CAD (with all costs incorporated) with CUTRIC funding 25% of the cost.

This CUTRIC-led project has been made possible through partnership between the University of Waterloo with Xiangou Li as Principal Investigator; the University of Western Ontario; Ballard Power Systems Inc.; and, StarPower ON Systems Inc. and co-funded by the Natural Sciences and Engineering Research Council of Canada (NSERC).

“NSERC’s Research Partnerships support collaborations that allow new scientific evidence to be applied to a broad range of new applications,” states Marc Fortin, Vice-President, Research Partnerships, Natural Sciences and Engineering Research Council of Canada. “This research will play a key role in Canada’s commitment to tackling climate change and will allow Ballard Power Systems to maintain a leadership position in an increasingly competitive and important area of clean energy technology.”

“We at Ballard Power Systems are excited to be part of this Canadian funded project working with world class fuel cell researchers, Dr. Li, Dr. Sun, and their teams at the University of Waterloo and Western University,” said Alan Young, Principal Research Engineer at Ballard. “This project focuses on key areas required by the fuel cell industry, and the new class of catalyst materials to be developed has significant promise to provide the technology needed to propel us forward to the next generation of fuel cell products.”

Over the next four years, this project will develop world-class research in next generation fuel cell technologies for transit and automobile applications. With vehicle emissions having the highest environmental impact and health hazard in cities, this study focuses on zero-emission fuel cell technology for urban transit vehicles that can be used in: hydrogen fuel-cell power/propulsion systems; battery electric power/propulsion systems with fuel cell as ranger extenders; and, electric power/propulsion systems with battery-fuel cell electric hybrids. The research focuses on PEM (Polymer Electrolyte Membrane) fuel cell technology and the technical challenges involving cost and durability under variable load operations.

“We are very pleased to collaborate with CUTRIC along with partners in academia, government, and industry on this project which will allow us to develop next generation fuel cell technology to maintain Canada’s leadership in the clean energy technology arena. In addition, it will support training for 14 graduate students, postdoctoral fellows, research associates, and summer interns with skills that are in high demand,” says Xianguo Li, professor, mechanical engineering, University of Waterloo.

“The key outcome associated with the project is expected to be the development of low-cost, high performing, and durable fuel cells with a high power density capability,” says Petrunic. “This technology will form the basis for future generation cost-effective and durable PEM fuel cell technology that can be deployed for both automobile and transit applications.”

“The adoption of fuel cell-powered transportation for vehicles, buses and trains in Ontario and across Canada, will contribute to meeting national and global climate change targets,” says Petrunic.

“In addition, this project will contribute to skilled job creation in the field of hydrogen mobility innovation and put Canada on the global map of hydrogen fuel cell technology,” closes Petrunic. “The Governments of Ontario and Canada are working together with the project partners demonstrating leadership in technology innovation and ensuring a skilled workforce is ready for future opportunities.”

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About the Canadian Urban Transit Research & Innovation Consortium
CUTRIC is a member-based innovation consortium that partners stakeholders in industry, transit and academia to develop the next-generation of low-carbon smart mobility technologies. Its mandate is to drive forward innovation in transportation across Canada, create jobs by doing so, and lead to significant GHG reductions.

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BACKGROUNDER:

Development of Low-Cost, High Performing and Durable Polymer Electrolyte Membrane (PEM) Fuel Cells (Phase I)

- Fuel cell electric propulsion is a zero-emission propulsion system for use in urban transit vehicles, including public transit buses, passenger vehicles, and hydrogen fuelled fuel cell powered commuter trains.
- Fuel cells operate on hydrogen, which is a clean fuel with zero carbon content, and its reaction product is water.
- Hydrogen can be produced through the electrolysis of water using renewable energy, such as solar, wind, hydro, geothermal, tidal/wave energy, and biofuels, or other energy sources, such as nuclear. As such, the adoption of fuel cell-powered transportation (including fuel cell vehicles, buses and trains) in Ontario, as well as across Canada.
- The current fuel cell technology is required to have better performance and durability, and lower cost before its widespread commercial application can be realized.
- This project will develop highly active and stable catalysts and catalyst supports, the associated catalyst inks, and optimal design and novel low-cost fabrication of advanced catalyst layers and MEAs (membrane-electrode assemblies) for PEM (polymer electrolyte membrane) fuel cells with improved performance and durability and lower cost for practical applications.

- The funding program has the objective to:
    - Make Canada a global leader in low-carbon smart mobility technologies across heavy-duty and light-duty platforms, including advanced transit, transportation, and integrated mobility applications
    - Support the commercialization of technologies through industry-led collaborative research, development, demonstration and integration (RDD & I) projects that bring innovative design to Canada's low-carbon smart mobility eco-system.