



Fuel Cell
Research Centre

Overview

31 August 2004

Background

The Centre for Automotive Materials and Manufacturing (CAMM) at Queen's University initiated a multi-university, industry-driven research program for fuel cells which is now established as an independent research centre...

Queen's-RMC Fuel Cell Research Centre (FCRC)

...a framework for complementing principal investigator research with collaborative, multidisciplinary research teams in partnership with industry.

What FCRC is

The Queen's-RMC Fuel Cell Research Centre (FCRC) is Canada's leading university-based research and development organization in partnership with industry dedicated to advancing the knowledge base for addressing the key technology challenges to the adoption of fuel cell applications.

Why the Fuel Cell Research Centre

- Organically initiated by Queen's and RMC community of interest
- University-based research is best suited to address the scientific challenges and the highly qualified personnel requirements of the fuel cell industry
- RMC has a long history in fuel cell R&D and is the site of the NSERC Industrial Research Chair in Fuel Processing for Fuel Cells
- Opportunity for technology transfer from RMC defence-based research in fuel cells and fuel processing to commercial sector
- Queen's has a long history of R&D collaboration with DuPont
- Strategic commitment to fuel cells by Queen's University, including new Tier I Canada Research Chair in Fuel Cells
- SWITCH, Kingston's Alternative Energy Cluster is active promoter of FCRC
- Kingston identified as fuel cell cluster in recent surveys of fuel cell activities in Ontario

FCRC Objectives

To build a successful and sustainable multi-university, multidisciplinary centre providing the framework to

- conduct knowledge base research to support the fuel cell industry
- educate and train highly qualified people for the fuel cell industry
- provide economic benefit to Canada

About the Fuel Cell Research Centre

- More than 30 researchers affiliated with FCRC
- Over 3000 sq.ft. and expanding
- Director: Floyd Tuler
- Research Director: Brant Peppley
- Interim-Advisory Board with representatives from
 - E.I. du Pont Canada Company
 - Fuel Cells Canada
 - Fuel Cell Technologies, Inc.
 - Hydrogenics Corporation
 - National Research Council
 - Ontario Ministry of Economic Development and Trade
 - Queen's University
 - Royal Military College of Canada

FCRC Research Program

Objective: to improve performance, reliability, and durability while reducing the cost of fuel cell components and systems through innovations in materials, design, and manufacturing processes.

- fuel processing, hydrogen production and storage
- advanced modeling and design analysis tools
- manufacturing processes and production economics
- materials and component performance, reliability, durability

Current Collaborations

Affiliated Institutions

- Queen's University
- Royal Military College
- University of Waterloo
- McMaster University
- University of Windsor

Industrial Partners

- E.I. du Pont Canada Company
- Fuel Cell Technologies, Inc.
- QuestAir Industries
- DaimlerChrysler
- Kingston Process Metallurgy
- Long-Dana Corporation

FCRC Research: Funding and Impacts

Over the past two and a half years, \$8.45 million committed to fuel cell research projects by CAMM, industrial partners, and government agencies

Total Investments

- CAMM: \$1.30 million cash, \$150 thousand lab renovations
- Industry: \$1.11 million cash (\$1.18 million in-kind)
- Government and other: \$1.23 million cash
- CFI/OIT: \$3.48 million cash (Suppliers: \$720 thousand in-kind)

Impacts

- Four patents filed
- Three FCRC researchers hired by industrial partner
- New test methods developed for reliability and durability testing of flow field plates
- Economic modeling driving manufacturing process development

What next for FCRC...

Build on base already established

- Continue developing Canada-wide collaborative partnerships
 - Formalize consortium with universities
 - Increase industrial partnerships
 - Collaborate with NRC, NRCan, Fuel Cells Canada
 - Open facilities to academic researchers
- Exploit leveraged funding research opportunities
 - Ontario Ministry of Economic Development and Trade
 - Ontario Centres of Excellence
 - NSERC (CRDs, Strategic Grants, Discovery Grants)

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Learn more at www.fcrc.ca