IC

Fuel Cell and Hydrogen Industry

04/05 CAPABILITIES GUIDE

Fuel Cells Canada
Piles à combustible Canada

National Research Council Canada
Conseil national de recherches Canada

Natural Resources Canada
Ressources naturelles Canada

Industry Canada
Industrie Canada

Canada's Fuel Cell and Hydrogen Industry

Capabilities Guide 04/05

This Capabilities Guide provides critical information on many of the key companies and organizations active in the Canada fuel cell and hydrogen industry. The information contained in this guide has been voluntarily provided to Fuel Cells Canada by participating corporations and organizations. If you are a Canadian company involved in the fuel cell and hydrogen industry, please contact Erin Bigelow at ebigelow@fuelcellscanada.ca to be profiled in the 05/06 Capabilities Guide.

Publication of the 2004 Capabilities Guide has been made possible in part through funding from Industry Canada and Natural Resources Canada.

Fuel Cells Canada thanks the provincial and federal governments for their continuing support to the Canadian fuel cell and hydrogen industry. We would especially like to acknowledge Industry Canada, Natural Resources Canada, Western Economic Diversification Canada and the Government of British Columbia for supporting our association.

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Company Profiles

Fuel Cells Canada℠
Accelerating Canada's World-Leading Fuel Cell and Hydrogen Industry

What is Fuel Cells Canada?

Fuel Cells Canada is a national non-profit industry association with the mission of accelerating Canada's world-leading fuel cell and hydrogen industry. We are the prime source of services and support to corporations, educational institutions and business alliances developing and promoting fuel cell technologies, products and services.

Fuel Cells Canada's Mandate Includes:

- Promoting the Canadian fuel cell industry in the global market;
- Enhancing the industry's profile with Canadian governments to encourage a national strategic approach to fuel cell industry development;
- Facilitating demonstration projects that allow fuel cell companies to test and perfect their pre-commercial fuel cell technologies;
- Promoting fuel cell, hydrogen and related technology and its economic and environmental benefits;
- Advancing communications, information sharing and networking between member companies;
- Facilitating the development of regulations, standards and codes that support the safe and widespread application of fuel cell and new fuel products and applications;
- Providing direction on skills development and course curricula at Canadian educational institutions.

Our Management Team

Louise Comeau – President and Chief Executive Officer
Phone: (604) 822-9849 Email: lcomeau@fuelcellscanada.ca

Christopher Curtis – Vice President
Phone: (604) 822-8061 Email: ccurtis@fuelcellscanada.ca

Erin Bigelow – Manager, Communications & Member Relations
Phone: (604) 822-9073 Email: ebigelow@fuelcellscanada.ca

Bruce Rothwell – Manager, Vehicle Program
Phone: (604) 827-5747 Email: brothwell@fuelcellscanada.ca

Alison Grigg – Manager, Hydrogen Highway
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Ry Smith – Manager, Hydrogen Village
Phone: (905) 467-8907 Email: rsmith@fuelcellscanada.ca

Lucette Kirbach – Executive Assistant
Phone: (604) 822-9178 Email: lkirbach@fuelcellscanada.ca

Membership Benefits

Fuel Cells Canada is a member-driven organization. The following are just some of the numerous benefits and opportunities offered through membership:

- Maximize marketing efforts through coordinated events and international conference attendance by FCC for member companies
- Gain access to FCC organized industry networking opportunities
- Benefit from proactive media relations for fuel cell and hydrogen industry
- Improve competitiveness by staying informed through monthly FCC Communiqué, and members-only website access
- Benefit from industry wide government communications efforts
- Participate actively in industry development through FCC Member Committees
    - Codes and Standards
    - Communications
    - Environmental Strategy
    - Government Relations
    - Training and Skills Development

Levels of Membership

Sponsoring Member	(leadership role with additional benefits)
Executive Member	(over 100 employees)
Member	(25 to 100 employees)
Associate Member	(under 25 employees, Universities)

For full details, please visit our website: www.fuelcellscanada.ca/benefits.html

Research Facility Opportunities

Fuel Cells Canada is located at the National Research Council's Institute for Fuel Cell Innovation in Vancouver, British Columbia. This close proximity further strengthens the partnership between Fuel Cells Canada and the Government of Canada.

NRC-IFCI Facility Information:

- International showcase for Canadian fuel cell technologies
- Platform for collaborative research
- Private Sector 'Hydrogen-Ready' Incubator Lab-space totaling 3500 sq. feet
- Interface between industry, government, and university researchers
- Skills development and training opportunities for young researchers and technicians

The NRC Institute for Fuel Cell Innovation currently at 3250 East Mall (UBC), Vancouver BC will be relocating within two years to a new site on Westbrook and Southwest Marine Drive close to TRIUMF.

The new facility will be purpose built to support fuel cell and hydrogen research. Provisions in the design are being made to accommodate industry demonstration projects and to continue to provide active research and development space for start-up companies.

For more information, please contact:

David Semczyszyn
National Research Council
Phone: (604) 221-3013
Email: david.semczyszyn@nrc.ca

Hydrogen-Ready Labs

Designed to assist early-stage start-up companies through prototyping and into early commercialization there are nine fuel cell and hydrogen laboratories ranging in size from 380 square feet to 510 feet. Low rental costs provide affordable facilities for early-stage companies.

Design Features:

- H2, Propane and CO sensors in all labs
- Flame detectors
- Card Access security 24 hours, 7 days
- 1 hour fire separation between labs
- Eyewash and shower stations provided
- Fire Alarm connected to City of Vancouver Fire Department
- Voice and data ports in all labs

Piping Runs Deliver the following gases:

- Nitrogen
- Oxygen
- Carbon Dioxide
- Hydrogen
- Methanol
- Natural Gas
- Dry Compressed Air
- Natural Gas Reformate

Electrical Supply:

- 110, 220, 600 Volt services available
- Class 1, Division 2 intrinsically safe fixtures installed throughout

For more information, please contact:

Chris Curtis
Fuel Cells Canada
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Email: ccurtis@fuelcellscanada.ca

Hydrogen-Ready Environmental Chamber

The Hydrogen-Ready Environmental Chamber (HEC) located at the NRC Institute for Fuel Cell Innovation in Vancouver, BC offers unique capabilities for fuel cell developers and system integrators. It is the only public facility of its kind in North America.

The HEC has the ability to subject test articles to extremes of temperature, altitude and humidity under various operating conditions. It will generate accurate, reliable and repeatable data for systems and subsystems under test. This data will be vital for both product development and certification activities. The facility complies with all applicable building, fire protection and operator health and safety codes, including the National Electric Code Class I, Division II requirements for providing a hydrogen-safe environment.

The chamber can accommodate vehicles up to 3400 kg GVW and is equipped with a chassis dynamometer capable of handling up to 187 kW at speeds up to 100 kph. Single stacks, balance of plant and fuel storage systems can also be tested to determine performance and evaluate potential for commercial product launch. The HEC allows clients to simulate a wide variety of environmental conditions at one location.

Chamber Specifications

Temperature: -60°C to 140°C (-76°F to 284°F); 2°C/minute (3.6°F/min) ramp rate
Humidity: 5 to 95% RH between –10°C and 65°C (14°F – 149°F)
Altitude: 3000m or 70 kPa absolute pressure (10,000ft or 10psia)
Heat rejection: 25kW at –60°C and 100kW at –40°C (85kBTU/hr at -76°F and 340kBTU/hr at –40°F)
Dynamometer: 187 kW (250Hp) max intermittent power; 100 kph (60mph) max speed
Dimensions: 3m (10ft) wide x 3m (10ft) high x 7.6m (25ft) long unobstructed space
Load Capacity: 3400 kg (7500lb) with a stress point capacity of 2MPa (300psi)

The HEC was implemented through a partnership between government and industry. The National Research Council Canada, Western Economic Diversification Canada and Fuel Cells Canada provided funding.

For more information please contact:

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Canadian Hydrogen and Fuel Cell Sector Profile 2004

(from the Canadian Hydrogen and Fuel Cell Sector Profile 2004 - Government of Canada, Fuel Cells Canada, PriceWaterhouseCoopers)

The full-scale commercialization of hydrogen and fuel cell technologies represents tremendous environmental and economic opportunities for Canada. Canada's current position as a global industry leader has been achieved, in a large part, through the high level of collaboration between government and industry. This longstanding partnership combines the technological breakthroughs achieved by Canadian companies and research facilities with the support of forward-looking government policies and programs. The ongoing relationships between government, industry and academia continue to be crucial for the demonstration, deployment and commercialization of new products as Canada makes the transition to a hydrogen economy.

Introduction

Canadian hydrogen and fuel cell leadership covers most types of fuel cell technologies, components, systems supply and integration, fuelling systems, fuel storage, and engineering and financial services. Our industry expertise and products play a major role in the pre-commercial activities in countries around the world. However, international competition is increasing as industry and governments in other jurisdictions become increasingly involved in focused demonstration projects.

Domestic support for the sector is growing. Government, industry and academia understand that Canada's leadership position cannot be taken for granted. As wide-spread commercialization approaches, it becomes increasingly important to assess and communicate the performance of the Canadian hydrogen and fuel cell sector.

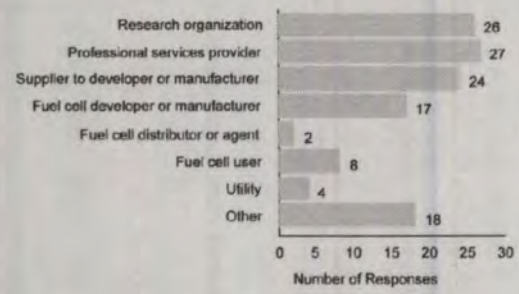
The Industry at a Glance

The 2004 Sector Profile shows strong growth in many key indicators for the period 2002–2003:

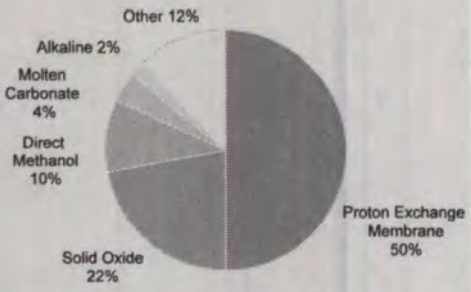
- Revenue has grown 40 percent from $134 million in 2002 to $188 million in 2003.
- R&D expenditures have increased 5 percent from $276 million in 2002 to $290 million in 2003.
- Employment has now reached 2,671, an increase of 40% from 2001.
- Participation in demonstration projects has increased by 232 percent to 262 in 2003 from 79 in 2002.
- Patent holdings are up by 34 percent to 581 in 2003.

Corporate profile

The number of companies involved in the sector has doubled within the past five years, with 42 organizations, or 51 percent of companies, reporting less than five years of hydrogen and fuel cell-related activities. Professional services firms, suppliers and research organizations make up a large portion of the industry. 17 organizations, or 13 percent or, are focused on fuel cell development and/or systems integration.



Half of the Canadian hydrogen and fuel cell sector is focused on proton exchange membrane (PEM) technology. PEM is considered one of the most versatile fuel cell technologies, with uses in both mobile and stationary applications. Solid oxide fuel cell (SOFC) technology, which is used mainly in stationary applications, was identified as the next most prominent area of technological focus.



Canadian hydrogen and fuel cell organizations are most active within Canada. However, Canadian companies are also active within the United States, Germany, Japan, and the UK. South America, India and China were also identified as areas of operations, suggesting that Canadian firms may be starting to access the lower cost manufacturing environments that will become increasingly important as the industry approaches commercialization. These results also suggest that Canadian industry may be becoming more involved in the evolving energy infrastructure of developing countries that represents a large market opportunity.

Market focus was split mainly between stationary and mobile applications and fuelling infrastructure, with only 15 percent of Canadian companies focused on portable market applications. Over the past five years, the number of Canadian companies associated with the hydrogen and fuel cell industry has doubled.

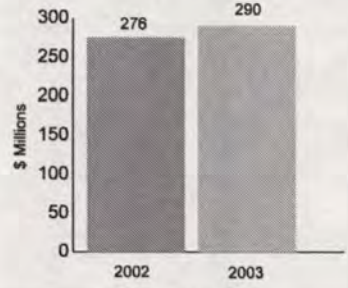
Revenues

During 2003, industry members reported a 40 percent increase in total revenue from hydrogen and fuel cell-related activities, from $134 million in 2002 to $188 million in 2003. Half of this revenue was reported as sales in Western Canada. The United States, Germany and Japan were also identified as significant markets for the Canadian industry.

Revenue derived from R&D contracts has stayed relatively constant, increasing only 10 percent, from $10.4 million in 2002 to $11.5 million in 2003. However, revenue from product sales has increased by 87 percent, from $77.8 million in 2002 to $145.1 million in 2003. Product sales now account for 77 percent of the total revenue—up from 58 percent in 2002. This is a clear indication that the sector is moving forward on the path towards commercialization.

Research and development

Total research and development expenditure on hydrogen and fuel cell activities increased 5 percent, from $276 million in 2002 to $290 million in 2003. This sustained, robust expenditure emphasizes the critical role that R&D plays in this industry—remaining constant at over $100,000 per employee per annum.



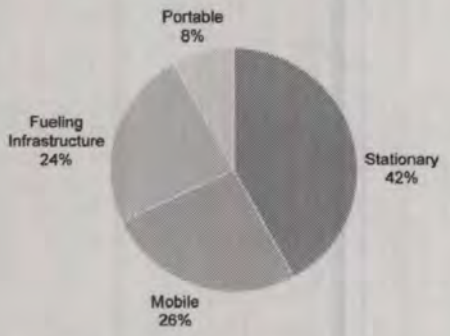
Patents

Innovation remains prevalent in the sector as evidenced by the rise in the total number of hydrogen and fuel cell-related patents reported by the industry, from 433 in 2002 to 581 in 2003.

Demonstration projects

In 2003 there was a 232 percent increase in the level of participation in demonstration projects—from 79 in 2002 to 262 in 2003. This trend towards more focused R&D associated with demonstration projects is a critical step towards commercialization of hydrogen and fuel cell products and the transition to a hydrogen economy. Increased participation in demonstration projects suggests a shift from pure research and development to more applied use of technology in hydrogen and fuel cell products.

Canadian pre-commercial and early-market stage hydrogen and fuel cell products are an integral part of many demonstration projects within Canada, and around the world. Approximately 70 percent of the demonstration projects involving Canadian organizations are taking place outside of Canada. This level of activity indicates the prominence of Canadian expertise, products and services in the global industry.



Over the past few years, the federal government's involvement in demonstration activities has been mainly focused on the underlying technology and fuelling infrastructure, through programs like the Canadian Transportation Fuel Cell Alliance. Recently, the role of the public sector has been expanded to include more prominent end-user applications, primarily through the recently launched Hydrogen Early Adopters Program.

It is expected that the Canadian industry will take advantage of this and other programs to undertake more domestic demonstrations to increase visibility at home in projects such as the Hydrogen Highway, Vancouver Fuel Cell Vehicle Program and Hydrogen Village.

Employees

Employment in the sector now reaches 2,671 representing an increase of 49% since 2001.. Over the past year, consolidation and internal restructuring have reshaped the maturing industry, causing a slight decrease in the total number of employees involved in the hydrogen and fuel cell sector—from 2,863 in 2002 to 2,685 in 2003.

Of the total number of employees, 90 percent were based in Canada, and within Canada there was a two-to-one ratio between Western and Eastern Canada. Canadian companies also reported a significant number of employees in the United States (3 percent) and Germany (4 percent). While some companies reported activities in China, South America and India, there are presently no employees permanently stationed in these locations.

The average annual salary paid to hydrogen and fuel cell employees in Canada increased from $56,000 in 2002 to $60,000 in 2003. Extrapolating the $60,000 average salary for 2003 to the 2,430 employees in Canada, the industry can be seen to contribute $146 million in salaries to the national economy.

Summary

Over the past year, the Canadian hydrogen and fuel cell sector has achieved a new level of performance with strong growth in many key indicators. Revenue has grown 40 percent from $134 million in 2002 to $188 million in 2003. Research and development expenditures have increased 5 percent from $276 million in 2002 to $290 million in 2003. While R&D expenditures continue to gradually increase, heightened emphasis is being placed on generating revenue and containing costs. Employment has now reached 2,671 representing an increase of 48% since 2001.

Canadian organizations are benefiting from a world wide demand for Canadian hydrogen and fuel cell technology and expertise. A tangible measure of this is the increase of 232 percent in Canadian companies' participation in demonstration projects from 79 in 2002 to 262 in 2003. Organizations are seen to be building IP ownership through a 34 percent increase in patent holdings, as well as securing the financial support and strategic alliances needed to refine, demonstrate, produce and market products.

Following a strong year of growth in key indicators in 2003, the future of the Canadian fuel cell and hydrogen industry looks promising. Accelerated product development and progress towards commercialization will require continued partnership between industry, government and academia, as well as a reinforced commitment to collaboration between stakeholders in the years ahead.

Reference Information

Canadian Hydrogen and Fuel Cell Sector Profile 2004 – Government of Canada, Fuel Cells Canada, PriceWaterhouseCoopers.

Canadian Fuel Cell and Hydrogen Industry: Selected Capabilities

Fuel Cells Canada
Sponsoring Members in Bold

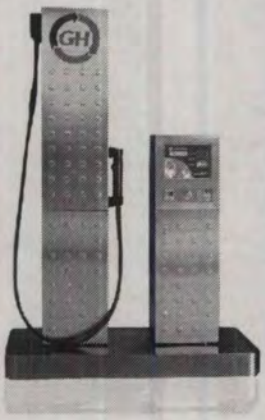
	Fuel Cells	Test/Sensor Equipment	Control Systems	Fueling and Systems	Integration	Components	Services	Storage	Fuel Cells Canada Member
Advanced Measurements Inc.		x							x
Agile Systems Inc.			x						
Alberta Research Council Inc.	x			x	x		x	x	x
Analytic Systems					x	x			
Angstrom Power Inc.	x				x				x
Armstrong Monitoring Corporation		x				x			
Astris Energi Inc.	x	x			x				x
Azure Dynamics Corporation			x		x				x
Ballard Power Systems Inc.	x		x		x	x			x
BC Hydro		x		x			x	x	x
Business Development Bank of Canada							x		x
BOC Gases				x	x			x	x
Canadian Trade Commissioner Service							x		
Centre for Automotive Materials and Manufacturing							x		x
CANMET Energy Technology Centre (NRCan)	x			x	x		x	x	
Cellex Power Products Inc.			x		x	x			x
Canadian Hydrogen Association				x			x	x	x
ChevronTexaco Technology Ventures LLC				x	x		x	x	x
Chrysalix Energy							x		x
Cimtex Industries Ltd.						x			
Conduit Ventures Ltd.							x		x
Dana Canada Corporation			x			x			
Deloitte							x		x
Delta-Q Technologies Corp.			x			x			
Dupont Canada Inc.	x		x		x	x			x
Dynetek Industries Ltd.								x	x
Enbridge Gas Distribution				x	x		x		x
Energy and Marine Branch (Industry Canada)							x		
Energy QBD Inc.							x		x
Energy Visions Inc.	x				x				
Ford Motor Company	x			x	x				x
Fuel Cell Technologies Ltd.	x		x						x
Fuel Cells Canada							x		x
FuelCell Energy Ltd.	x				x				x
FuelCon Systems Inc.									x
Fueling Technologies Inc.				x			x		x
FuelMaker Corporation				x				x	
General Hydrogen Corporation					x	x	x	x	x
Gowling Lafleur Henderson LLP		x					x		x
Greenlight Power Technologies			x		x				x
GrowthWorks Ltd.							x		x
Greater Vancouver Regional District							x		x
Heliocentris Energy Systems Inc.							x		x
HERA Hydrogen Storage Systems Inc.									x
HSBC Bank Canada							x		x
Hydrogen Highway							x		x
Hydrogen Research Institute	x			x			x	x	
Hydrogen Village		x					x		x
Hydrogenics Corporation	x				x	x			x
Hydro-Quebec Capitech Inc.							x		
Institute for Integrated Energy Systems (IESVic)							x		x
Inco Special Products				x					

	Fuel Cells	Test/Sensor Equipment	Control Systems	Fueling and Systems	Integration	Components	Services	Storage	Fuel Cells Canada Member
James Hoggan and Associates Inc.							x		x
Keen Engineering							x		x
Kinectrics Inc.					x		x		x
Kraus Global Inc.				x	x			x	
KPMG							x		x
LeapTran Technologies International Inc.						x			
MagPower Systems Inc.	x								
Marsh Canada Limited							x		x
McCarthy Tetrault LLP							x		x
Membrane Reactor Technologies			x			x	x		x
Methanex Corporation				x	x	x	x	x	x
National Bank Financial							x		x
Neodym Technologies		x				x			
Neutron Technologies									
NORAM Engineering and Constructors Ltd.				x	x		x	x	x
National Research Council Canada	x	x	x	x	x	x	x	x	x
Ontario Power Generation				x	x	x	x		x
Palcan Power Systems Inc.	x				x	x		x	x
Pathway Design & Manufacturing Inc.						x			x
PEM Engineers Inc.	x						x		x
PEM Technologies Inc.	x								x
Pivotal Power						x			
PowerDisc Development Corporation Ltd.	x			x					
PowerNova Technologies Corporation				x					
Powertech Labs Inc.		x	x	x	x	x		x	
Province of Ontario (MEDT)							x		
Praxair Inc.				x		x		x	
Precision H2 Inc.				x	x			x	
PriceWaterhouseCoopers LLP							x		x
QuestAir Technologies Inc.				x		x			x
Royal Military College of Canada	x		x			x	x		
Sacre-Davey Engineering									
Sarnia-Lambton Economic Partnership							x		x
SatCon Power Systems Canada			x		x				
Siemens Canada Limited	x			x			x		
SMC Pneumatics		x				x			x
SRE Controls Inc.			x						
Stuart Energy Systems Corporation				x					x
TD Securities Inc.							x		x
Technology Early Action Measures									
Tekion Solutions Inc.	x		x	x	x	x			x
Teleflex Canada			x	x	x	x		x	x
TISEC Inc.							x	x	
University College of the Fraser Valley							x		x
Universal Dynamics Limited							x		
University of Calgary	x					x	x		
Vancouver Fuel Cell Vehicle Program							x		x
Ventures West Management							x		x
Westaim Ambeon						x	x		
Westport Innovations				x	x	x			
Xantrex Technology Inc.			x			x			
Zetacon Corporation			x						

Products of a Fuel Cell and Hydrogen Economy

QuestAir H-6100 Hydrogen Purification System

Greenlight Power Technologies G-500 Series Test Station



General Hydrogen Hydrogen Dispenser

Ford Focus
Fuel Cell Vehicle

SunLine Transit Agency 'SunBus' equipped
with a Cummins Westport engine

Fuel Cell Technologies
5 kw Solid Oxide
Fuel Cell

Advanced Measurements Inc.

6205 - 10th Street SE
Calgary, AB T2H 2Z9
www.advmeas.com

Products

Fuel Cell Test Stations, Fuel Cell Testing Software

Description

Specializing in fuel cell testing, Advanced Measurements manufactures customized test systems to meet each customer's individual requirements. The test system measures fuel-cell characteristics such as voltages, current, humidity, temperature and gas flows into a fuel cell. The system also controls all aspects of the test environment.

Designing fuel cells that meet the unique power demands of automobiles and other applications requires a flexible test system that fuel cell developers can use to reduce their development cycle and shorten time to market. These being the two most critical factors for fuel cell developers, Advanced Measurements can offer a solution to its customers to assist them to commercialize their product.

Contact

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Advanced MEASUREMENTS

Agile Systems Inc.

575 Kumpf Drive
Waterloo, ON N2V 1K3
www.agile-systems.com

Products

Power Inverter for Alternative Energy

Description

Agile has applied its digital power expertise to the fuel cell marketplace integrating control and power management to produce the most advanced inverter technology. Digital processing, unlike analogue, allows our technology to be software rather than hardware driven. The result is a power management solution that is small, smart, connected and versatile. Agile's firmware-driven design, industry experience and integrated manufacturing approach set us apart.

Agile's industry experience includes:

- Advanced motor control
- Inter-module network communications
- Sine wave inverter designs from 100W to over 30 kW
- DC-DC conversion
- Advanced battery management
- Configurable display including state of charge
- Accessory DC power

Contact

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AGILE systems inc.
Innovation Through Digital Power

Alberta Research Council Inc.

250 Karl Clark Road
Edmonton, AB T6N 1E4
www.arc.ab.ca

Products

Power Generation, Transmission and Distribution

Description

The Alberta Research Council (ARC) develops and commercializes technologies to give customers a competitive advantage. A Canadian leader in innovation, ARC provides solutions globally to the energy, life sciences, agriculture, environment, forestry and manufacturing sectors. ARC works with more than 800 clients each year.

Applied expertise: ARC's Advanced Materials business unit develops and commercializes new materials, products, and processing technologies in ceramics, metals, and polymers and composites.

Fuel Cell R&D: ARC has worked in both Direct Methanol Fuel Cells (DMFC) and also in Solid Oxide Fuel Cells (SOFC). The Advanced Materials unit is developing the design and manufacturing process for a high surface area micro solid-oxide tubular fuel cell (m-SOFC). ARC has one issued patent and ten patent applications related to m-SOFC device fabrication, current collection, stack design and other design elements.

Staff, Facilities & Services: Twenty-five highly trained staff, including 13 scientists; extensive lab and engineering space to conduct materials processing, testing, and evaluation as well as thermal analysis; membrane characterization facilities, chemical processes lab, a ceramics lab, a gas membrane lab, an ambient room, a metallography room and environmental control chambers; access to venture management expertise including patent and intellectual property administration; and market intelligence.

Contacts

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ALBERTA RESEARCH COUNCIL

Alternate Energy Corporation

Unit 105 - 3325 North Service Road
Burlington, ON L7N 3G2
www.cleanwatts.com

Description

Founded in March 2000, AEC is a leading developer of cost-effective, environmentally responsive fuels and electric power solutions. The company's mission is to contribute to an environmentally sound, alternative energy future. The company is the patent holder for power recovery and fuel-cell-quality hydrogen production technologies for residential, commercial and industrial use.

Contact

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Email: sbrydon@cleanwatts.com

Analytic Systems (1993) LTD

207-12448-82ND Ave
Surrey, BC V3W 3E9
www.analyticsystems.com

Products

High quality power conversion products such as DC/DC converters, AC/DC power supplies and DC/AC inverters, AC-DC Battery Chargers, OEM custom solutions.

Description

Analytic Systems is the power conversion solution provider for the fuel cell industry. Pure Sine and Q'Sine Inverters and full range of DC to DC voltage converters. Develops OEM opportunities with customers such as Teleflex Canada, Telus, Soltek Solar, Kobelt Manufacturing, Solar Turbines, and Prime Mover Controls. Markets: Alternate Energy, Military, Industrial, RV, Marine, Telecommunications, Heavy Equipment, Solar Energy, Fleet Utility, RV and Auto/ Motorsports. Call for a free copy of the Case Study "Analytic Systems Powers NASA's Fuel Cell Lunar Rover".

Contact

Bill Walker
Business Development Manager
Phone: 1-800-668-3884
Fax: (604) 543-7354
Email: billw@analyticsystems.com

Angstrom Power Inc.

Suite 106, 980 W 1st Street
North Vancouver, BC V7P 3N4
www.angstrompower.com

Description

Angstrom Power Inc., is a Vancouver-based developer of micro-structured fuel cells targeting a variety of applications. Angstrom is applying micro-fabrication technology to create a fuel cell system using novel architecture and manufacturing techniques. Initial target applications include battery replacement and portable power.

Contact

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President and CEO
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Email: dconnor@angstrompower.com

ANGSTROM.

Armstrong Monitoring Corporation

215 Colonnade Rd. S
Ottawa, Ontario K2E 7K3
www.armstrongmonitoring.com

Products

Hazardous gas monitoring equipment including devices to detect CO, H2, CH4, NO2, SO2, Propane

Description

The Armstrong Monitoring Corporation, an Ottawa based, ISO-9001 Registered manufacturer of high quality gas sensing apparatus, prides itself in meeting the needs of the fuel cell and hydrogen industries.

In the twenty years since its inception, Armstrong has been involved in research, design and commercialization of innovative new technologies and products for a wide range of industries and applications. Armstrong's diverse product line features hazardous gas monitoring equipment ranging from simple, building block sensor elements and transmitters, to complete, integrated, turnkey systems.

Working in concert with Canada's leading research organizations, Armstrong brings together the science, technology and marketing, required in today's knowledge based economy, at home and around the world.

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www.astris.ca

Products

Standard Products: E8 Portable Power Generator, E7 Power Generator, POWERSTACK™, LABCELL™ and QUICKCELL™ fuel cells, TL5 Test Load and TESTMASTER™ Fuel Cell Test Software.

Advanced Products: Alkaline Fuel Cell (AFC) power generators and systems up to 10 kW for stationary power (backup, UPS, etc.), portable and select transportation (golf car, other off-road, etc.).

Description

Astris Energi Inc. is a global leader in alkaline fuel cells and fuel cell systems. The company was founded in 1983, and has been a pioneer in the development of alkaline fuel cells. Focussed on delivering a low cost fuel cell solution that is based on low direct material cost (no platinum) and low operating cost (high efficiency). Astris' proprietary fuel cell technology is targeted at a variety of small power applications up to 10 kilowatts. These applications include portable and stationary generators, golf cars, neighbourhood electric vehicles, forklifts and boats. Management experience includes sophisticated laboratory and prototype development, assembly facilities, and over 21 years of applied research and commercial product development.

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ASTRIS ENERGI INC.

Azure Dynamics Corporation

3900 North Fraser Way
Burnaby, BC V5J 5H6
www.azuredynamics.com

Suite 400 - 350 Bay Street
Toronto, ON M5H 2S6

Products

Electric and hybrid electric vehicle powertrains including fuel cell compatible systems and controls.

Description

Azure Dynamics Corporation is an innovative company that has developed proprietary hybrid electric vehicle technology for retrofit and new vehicle powertrains in the light and medium duty commercial vehicle category. Azure's intellectual property combined with interchangeable, off-the-shelf components provides an affordable and effective solution for fleet managers in applications such as postal and courier delivery fleets as well as utility vehicles shuttle buses and taxis. Azure's proprietary adaptive control systems achieve optimal efficiency and vehicle performance while also making significant reductions in emissions and energy consumption.

The company is currently working with various partners and customers worldwide including Purolator Courier, Canada Post, London Taxis International, Leyland Product Development, Renault Trucks UK, and the United States Postal Service.

Contact

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AZURE DYNAMICS

Ballard Power Systems Inc.

4343 North Fraser Way
Burnaby, BC V5J 5J9
www.ballard.com

Products

Ballard is commercializing fuel cell engines for transportation applications and fuel cell systems for portable and stationary products.

Description

Ballard Power Systems is recognized as the world leader in developing, manufacturing and marketing zero-emission proton exchange membrane (PEM) fuel cells. Ballard's proprietary technology is enabling automobile, bus, electrical equipment, portable power and stationary product manufacturers to develop environmentally clean products for sale.

Ballard is partnering with strong, world-leading companies, including DaimlerChrysler, Ford, EBARA, ALSTOM and FirstEnergy, to commercialize Ballard® fuel cells. Ballard has supplied fuel cells to Honda, Nissan, Volkswagen, Yamaha, Cinergy and Coleman Powermate, among others.

Contact

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BALLARD®

BC Hydro

18th Floor – 333 Dunsmuir Street
Vancouver, BC V6B 5R3
www.bchydro.com

Products

Sale of electricity; hydrogen research and development services.

Description

BC Hydro's vision is to become North America's leading sustainable energy company. The Hydrogen and Fuel Cell Program assists the realisation of this vision by positioning the company as a leader in the development of a hydrogen economy in British Columbia. Specifically, the program is prudently positioning BC Hydro for the emerging hydrogen economy by:

- Exploring the hydrogen and fuel cell market;
- Forming key relationships with significant players in the market;
- Working with other proponents to stimulate the development of a hydrogen economy in B.C.; and
- "learning by doing";

all to ensure BC Hydro is well positioned to deal with the threat and/or opportunity this market is likely to represent.

Contact

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BC hydro

Business Development Bank of Canada

5 Place Ville Marie, Suite 400
Montreal, QC H3B 5E7
www.bdc.ca

Products

Equity and quasi-equity

Description

As the preferred partner for companies in the emerging sectors, BDC Investment Group meets the special needs of businesses at every stage of their development. BDC Investment Group provides flexible, innovative financial instruments designed for companies whose assets are primarily intangible. Venture capital and subordinated financing are the main strategic tools BDC offers businesses with solid growth potential.

Contact

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BDC

BOC Gases

575 Mountain Avenue
Murray Hill, NJ 07974
www.boc.com

Products

BOC is a leading supplier of industrial gases and related products and services throughout the world.

Description

BOC has experience supplying hydrogen via every available mode of distribution, including as liquid via tankers and as a gas via pipelines, tube trailers, and cylinders. BOC has experience with the application and/or development of various hydrogen production technologies, including large-scale steam/methane reforming, partial oxidation, methanol reforming, by-product hydrogen production, and small-scale electrolysis.

BOC serves a wide range of industries in the hydrogen market; covering such diverse markets as power generation, float glass, food, petrochemicals, refining, and steel. BOC is also a Sustaining Member of the National Hydrogen Association.

BOC is a leader in the safe handling, production, and distribution of high-pressure hydrogen. Our proven designs and experience demonstrate our commitment to safe and reliable delivery systems, as does the craftsmanship exhibited during construction. The stringent and exacting specifications BOC has used to install facilities like these in locations such as nuclear power plants, chemical plants, and steels mill are translated to supplying infrastructure to the growing hydrogen refueling market.

Contact

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BOC

Canadian Trade Commissioner Service

125 Sussex Drive
Ottawa, ON K1A 0G2
www.infoexport.gc.ca

Products

Services for Canadian and non-Canadian companies

Description

As part of International Trade Canada, the Trade Commissioner Service is a network of more than 800 trade officers working in Canadian embassies, high commissions and consulates located in 140 cities around the world and 100 officers working in 12 regional offices across Canada. The Trade Commissioner Service has a primary role of providing in-market assistance to Canadian companies in the development of their international business, including assessing export potential, identifying key foreign contacts, and providing relevant advice and market intelligence.

The Trade Commissioner Service also helps foreign companies do business with Canada by offering them assistance in sourcing from Canada, building their business with Canada and networking with Canada.

The Trade Commissioner Service's Science & Technology (S&T) program strengthens Canada's S&T capacity and promotes international business by gathering international S&T insights, facilitating the access of Canadian research institutions and firms to international R&D opportunities and contributing to Canada's S&T policy.

Contact

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THE CANADIAN TRADE COMMISSIONER SERVICE
LE SERVICE DES DÉLÉGUÉS COMMERCIAUX DU CANADA

Centre for Automotive Materials and Manufacturing

945 Princess Street
Kingston, Ontario K7L 5L9
www.cammauto.com

Description

The Centre for Automotive Materials and Manufacturing (CAMM) is Ontario's industry, university, and government partnership dedicated to providing leadership and a framework to transform university research and education into opportunities for the automotive sector.

Fuel cells are a major area of CAMM's research and development program, with applications including transportation, portable, and stationary systems. Our current university partners for fuel cell projects are Queen's University, the Royal Military College, and the University of Waterloo.

The focus of our industry driven and supported R&D program is to reduce the cost of manufacturing while increasing the durability and reliability of both PEM and solid oxide fuel cell components and systems. Capabilities include facilities for testing and evaluation of materials, components, and systems; CFD, reaction kinetics, finite element, and failure modeling; and product cost modeling and dynamic simulation of manufacturing systems.

Contact

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Executive Director
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CAMM Centre for Automotive Materials and Manufacturing

CANMET Energy Technology Centre, Natural Resources Canada (NRCan)

580 Booth Street, 13th Floor
Ottawa, ON K1A 0E4
www.nrcan.gc.ca/es/technologies_e.htm

Description

The CANMET Energy Technology Centre (CETC) is Canada's leading federal S&T organization that is developing and deploying energy efficient, alternative energy and advanced technologies. CETC's Hydrogen Economy and Transportation Energy program partners with industry and other federal and provincial agencies to develop and deploy new hydrogen and transportation technologies, such as: hydrogen production and storage systems, fuel cells, alternative fuels and advanced propulsion systems; emissions control technologies; energy efficient systems; and fuelling infrastructure technologies. The program supports R&D through cost-shared agreements, standards development, and technology transfer, both domestically and internationally.

Natural Resources Canada also manages the Canadian Transportation Fuel Cell Alliance (CTFCA), a $33 million, 7-year, demonstration program for hydrogen infrastructure. The CTFCA is partnering with the private sector and provinces to demonstrate and evaluate different hydrogen fuelling systems for fuel cell vehicles, establish safety standards and develop training and certification programs for the personnel who will maintain these systems. The CTFCA, through support to projects such as the Hydrogen Highway and Hydrogen Village, is enabling Canada to focus and showcase its world-leading fuel cell and hydrogen supply technologies.

Contact

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Natural Resources Canada | Ressources naturelles Canada

Cellex Power Products, Inc.

13155 Delf Place
Richmond, BC V6V 2A2
www.cellexpower.com

Products

Fuel Cell Power Units

Description

Based in Richmond, B.C., Cellex Power Products, Inc. is focused on developing and commercializing fuel cell power product solutions for Industrial Vehicles. Cellex's strategy is to develop the proprietary system and component technology required to integrate fuel cell stacks, hydrogen systems and other components into commercial products.

Contact

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Email: blill@cellexpower.com

CELLEXPOWER™
the new power

Canadian Hydrogen Association

5 King's College Road, Suite 116
Toronto, ON M5S 3G8
www.h2.ca

Description

The Canadian Hydrogen Association is a non-profit membership association composed of universities, research organizations, industry and small business.

Our objective is to promote the use and development of hydrogen energy, hydrogen energy systems and technologies and to develop the role of hydrogen energy for the purpose of improving the environment.

Contact

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ChevronTexaco Technology Ventures LLC

3901 Briarpark Drive
Houston, TX 77042, USA
www.chevrontexaco.com/technologyventures

Products

Fuel processing, hydrogen refueling, hydrogen storage, advanced batteries.

Description

ChevronTexaco Technology Ventures L.L.C., a subsidiary of ChevronTexaco, identifies, develops, and commercializes emerging technologies and new energy systems that have the potential to create economic value for the company. Technology Ventures advances innovation by managing a portfolio of carefully selected investments and internal competencies. This includes investments in hydrogen-related technologies, advanced energy storage technologies, renewables and nanotechnology. Their hydrogen activities include advanced fuel processing development as well as complete systems integration and design of hydrogen refueling stations. For more information regarding ChevronTexaco Technology Ventures' activities, please visit their website at www.chevrontexaco.com/technologyventures

Contact

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ChevronTexaco

Chrysalix Energy

Suite 200, 1682 West 7th Ave
Vancouver, BC V6J 4S6
www.chrysalix.com

Products

Chrysalix provides early-stage funding to new companies as well as management assistance, technological know-how, organized networking with industry players and experience in the management of intellectual property.

Description

Chrysalix Energy Limited Partnership is an early-stage venture capital firm focusing on fuel cell & related fueling technology companies and is a private equity joint venture between Ballard Power Systems, BASF Venture Capital, The BOC Group, The Boeing Company, Duke Energy, Mitsubishi Corporation and Shell Hydrogen. Operating independently, Chrysalix offers a unique value proposition to its clients throughout the business planning, start-up and operations phases of development. Chrysalix provides early-stage funding to new companies as well as management assistance, technological knowledge, organized networking with industry players and experience in the management of intellectual property.

Contact

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Chrysalix

Clean Energy Canada

Suite 200 - 3020 Old Ranch Parkway
Seal Beach, CA 90740 USA
www.cleanenergyfuels.com

Products

Hydrogen and Natural Gas Fueling Stations and Fleet Services.

Contact

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Clean Energy™

Cimtex Industries Ltd.

1-32912 Mission Way
Mission, BC V2V 5X9
www.cimtexindusties.com

Products

Machined and fabricated metal and plastic components

Description

Cimtex Industries is a full service ISO registered manufacturer of machined components and fabricated assemblies for the Aerospace, Telecommunications, Scientific and High Tech industries. These services include prototype design and development, machining, fabrication, assembly and testing of the final product in accordance with customer requirements.

Contact

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Email: cory@cimtexindustries.com

Cimtex Industries

Conduit Ventures Limited

Unit B, 2nd Floor,
Colonial Buildings
59-61 Hatton Garden
London EC1N 8LS
www.conduit-ventures.com

Description

CVL currently has capital available for investment provided by its founding investors (which include Shell Hydrogen, Mitsubishi Corporation and Johnson Matthey plc and Danfoss A/S). CVL is managed by a team headed by John Butt, a former Director of Global Mergers and Acquisitions at Schroder Salomon Smith Barney. CVL's ambition is to become a leading independent global provider of venture capital to different fuel cell and related hydrogen technologies. The Fund is expected to be established with resources of up to US $100 million. Conduit Ventures Limited (CVL) is the first European- based venture capital fund to focus purely upon fuel cells and related hydrogen technologies.

Contact

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CEO
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CONDUIT VENTURES LIMITED

Dana Canada Corporation
Long Manufacturing Thermal Products Division
Oakville Fuel Cell Support Centre

656 Kerr St.
Oakville, ON L6K 3E4
www.dana.com

Products

Fuel Cell balance of plant components and subsystems, especially heat exchangers and thermal management. Also, components and subsystems for hydrogen fuel processors.

Description

Dana Corporation produces automotive components and systems, and has committed 4 global Fuel Cell Support Centres to develop component products for the emerging fuel cell industry. The Long Manufacturing Thermal Products Division in Oakville is leveraging its automotive heat exchanger design and manufacturing capabilities to produce new products for fuel cell applications with particular competency in thermal design, system modeling, prototyping and high volume manufacturing. Products include aluminum and stainless steel heat exchangers, variable speed pumps and fans for low parasitic energy loss PEM balance of plant system operation. Welding and brazing technologies are used for high temperature fuel processor and SOFC components.

Contact

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Deloitte

2800 – 1055 Dunsmuir Street
Vancouver, BC V7X 1P4
www.deloitte.ca

Products

Deloitte & Touche provides full range of accounting services including: Assurance & Advisory, Tax, Financial Advisory and Consulting

Description

Deloitte & Touche is one of Canada's leading professional services firms, providing a full range of assurance and advisory, financial advisory, tax and consulting services through more than 6,600 people in more than 46 locations across the country.

Contact

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Deloitte.

Delta-Q Technologies Corp.

Unit 3, 5250 Grimmer Street
Burnaby, BC V5H 2H2
www.delta-q.com

Products

High efficiency AC-DC power supplies and battery chargers. QuiQ™HF/PFC Battery Chargers are currently being sold in volumes to leading OEMs in the recreational and industrial electric drive vehicle industry. Advanced power conversion and power management products currently under development include motor controllers and DC-DC converters. Proprietary battery charging algorithms have been developed for fuel cell/battery hybrid systems.

Description

Delta-Q Technologies is a leading advanced power conversion company using power electronics design and digital control to deliver high efficiency solutions with exceptional price/performance metrics. Delta-Q will become a leader in the conversion, control and monitoring of power in today's high volume electric drive vehicle industry and will then leverage this leadership position to exploit emerging opportunities for power electronics in automotive fuel cell vehicles, 42V vehicle systems, grid-tied hydrogen infrastructure solutions and other markets where advanced power electronics are required.

Contact

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DuPont Canada Inc.

P.O. Box 2200, Streetsville
Mississauga, ON L5M 2H3
www.dupont.ca

Products

Fuel Cell Flow Field Plates, Nafion® Membranes and Solutions, Membrane Electrode Assemblies for PEM Fuel Cells, Membrane Electrode Assemblies for Direct Methanol Fuel Cells.

Description

With a history of success that dates back to the 1800s, DuPont Canada has become an innovative, science-based company with well-defined strengths and a solid, blue chip reputation. Today, in our drive to deliver rapid, sustainable growth in stakeholder value, we continue to build on the strength of our core values, people, technology, market positions, and close ties with the global DuPont company.

DuPont Canada is a global supplier of flow field plates for fuel cells. Technology research and development activities are conducted at our Research and Business Development Centre at Kingston, Ontario.

Nafion® membranes and solutions, as well as membrane electrode assemblies for PEM fuel cells and direct methanol fuel cells, are available through E.I. duPont de Nemours and Company Ltd.

DuPont Fuel Cells technologies. Powering the future of energy today.

Contact

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Flow Field Plates Marketing Manager
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Dynetek Industries Ltd.

4410 – 46 Avenue SE
Calgary, AB T2B 3N7
www.dynetek.com

Products

Advanced Lightweight Fuel Storage Systems®

Description

Dynetek Industries Ltd. designs, produces and markets one of the lightest and most advanced fuel storage and refueling systems for many compressed gases. Dynetek has extensive knowledge in composite cylinder and systems design and is recognized around the world as the solution-of-choice to the alternative fuel vehicle sector. Dynetek also serves the industrial gas and energy sectors in the bulk transport and storage of compressed gases. Dynetek works with its customers to provide the most practical and innovative solutions.

Contact

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Dynetek Industries Ltd.

Enbridge Gas Distribution

500 Consumers Road
North York, ON M2J 1P8
www.cgc.enbridge.com

Products

Natural Gas Distributor

Description

Enbridge Gas Distribution is Canada's largest natural gas distributor and one of the fastest growing natural gas companies in North America, serving 1.5 million residential, commercial, and industrial customers.

For more than 150 years Enbridge Gas Distribution has been involved in natural gas storage and distribution – providing its customers with safe, economical and reliable products to make their homes and businesses comfortable.

Enbridge Gas Distribution is part of the Enbridge family of companies, which has business segments in Energy Transportation, Energy Distribution, and Energy Services and is owned by Enbridge Inc.

Enbridge inc. common shares trade on the Toronto stock Exchange in Canada under the symbol "ENB" and on the NASDAQ National Market in the U.S. under the symbol "ENBR".

Contact

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ENBRIDGE

Energy QBD Inc.

67 Mowat Avenue, Suite 147
Toronto, ON M6K 3E3
www.energyqbd.com

Products

Market and Product Development, Consulting, Infrastructure Services

Description

Development of sustainable, distributed energy; turning great ideas in great companies by connecting technology to users to bring innovative energy solutions to market.

Contact

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EnergyQBD

Energy & Marine Branch – Industry Canada

2000 – 300 West Georgia Street
Vancouver, BC V6E 6E1
http://strategis.ic.gc.ca/electrical

Description

Industry Canada's Energy and Marine Branch is presently engaged in a number of activities related to the development of many alternative energy technologies - including hydrogen and fuel cells. These activities include: demonstrating pilot and large-scale technology projects, which includes support through Technology Partnerships Canada's Hydrogen Early Adopters Program; increasing access to investment capital and promoting international strategic partnerships; addressing technical barriers to distributed generation; and, facilitating commercialization roadmaps.

The Energy and Marine Branch is developing policies and programs to enhance the economic climate for the growth of the Canadian hydrogen and fuel cell industry and linking opportunities with already established industries. Industry Canada and Natural Resources Canada also co-chair the Hydrogen and Fuel Cell Committee (H2FCC), the focal point for coordination of federal efforts among departments engaged in this sector. As the source of advice for all federal activities related to the Hydrogen Economy, the H2FCC seeks to develop a coordinated approach to hydrogen and fuel cell sector development.

Contact

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Industry Canada Industrie Canada

Energy Visions Inc.

43 Fairmeadow Avenue
Toronto, ON M2P 1W8
www.energyvi.com

Products

Direct Methanol Fuel Cells,
Nickel-Zinc batteries,
Hybrid battery/Fuel Cell Systems

Description

Energy Vision's mission is to develop and commercialize innovative, cost-effective, environmentally friendly portable power systems. EVI's DMFC technology is based on using a flowing electrolyte technology that has shown up to a 30% efficiency and voltage improvement over PEM DMFC systems. EVI is a developer of rechargeable batteries, notably the Nickel-Zinc battery, which offers a 50% voltage advantage over Ni-Cad batteries with no memory effect. EVI's philosophy is that hybrid battery/fuel cell power systems are the most cost-effective method of circumventing performance limitations of existing fuel cell technology and the economic realities of the marketplace. EVI is developing All-Electric Hybrid battery/fuel cell devices for a variety of applications.

Contact

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Ford Motor Company

15050 Commerce Drive North,
Dearborn, Michigan 48120
www.ford.com

Products

Fuel Cell Vehicles

Description

At Ford Motor Company, we care about preserving the environment for future generations and are dedicated to environmental solutions. Sustainable Mobility Technologies, the research and development arm; concentrates on fuel cell and other advanced electric power trains. Ford's fuel cell engine is powered by hydrogen, which produces zero emissions. Adding absolutely nothing but water vapor to the atmosphere.

Contact

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Fuel Cell Technologies Ltd.

20 Binnington Court
Kingston, ON K7M 8S3
www.fct.ca

Products

- Solid oxide fuel cell (SOFC) power systems in the 1-50 kilowatt (kW) range for residential, industrial, small commercial, and remote area applications;
- Aluminum-oxygen (Al/O_2) power systems for unmanned underwater vehicles, diver heating systems, and both prime and backup power for remote locations.

Description

FCT is a leading developer of fuel cell power systems. The company's core business is production of SOFC products in the 1 to 50 kW range to provide both electricity and heat for stationary applications such as homes, small commercial enterprises, remote locations, and for industrial applications. The capacity to co-generate electricity and heat at high temperatures results in system efficiency of approximately 90%. FCT's 5 kW unit began field demonstrations in 2003. FCT has commissioned its manufacturing facility, and is building capacity for second-generation systems, which will enter service in 2004/2005. Since its incorporation in 1994, FCT's research and production facilities have been located in Kingston, Ontario. Fuel Cell Technologies Ltd. is a wholly owned subsidiary of the publicly traded Fuel Cell Technologies Corporation.

Contact

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FUEL CELL
TECHNOLOGIES LTD.

Fuel Cells Canada

National Research Council Institute for Fuel Cell Innovation
3250 East Mall
Vancouver, BC V6T 1W5
www.fuelcellscanada.ca

Description

Fuel Cells Canada is a national, non-profit industry association. Our mission is to accelerate the development of Canada's world-leading fuel cell and hydrogen industry. We are the prime source of services and support to Canadian corporations, educational institutions and business alliances promoting, developing, demonstrating, and deploying fuel cell and related products and services in Canada.

Fuel Cells Canada's mandate includes:

- Promoting the Canadian fuel cell industry globally;
- Enhancing the industry's profile with Canadian governments to encourage a national strategic approach to fuel cell industry development;
- Facilitating demonstration projects that allow fuel cell companies to test and perfect their pre-commercial fuel cell technologies;
- Promoting fuel cell technology and its economic and environmental benefits;
- Advancing communications, information sharing and networking between member companies;
- Facilitating the development of regulations, standards and codes that support the safe and widespread application of fuel cell products;
- Providing direction on skills development and course curricula at Canadian educational institutions.

Contact

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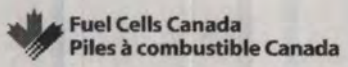

FuelCell Energy, Ltd.

4908 – 52nd Street SE
Calgary, AB T2B 3R2
www.fce.com

Products

Generators; Solid Oxide Fuel Cells (SOFC).

Description

FuelCell Energy is a world leader in the commercialization of solid oxide fuel cell (SOFC) technology with a focus on residential cogeneration, auxiliary power for automotive applications and small scale industrial uses.

FuelCell Energy is also the world's leading manufacturer & distributor of thermoelectric generators for remote power applications.

Contact

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FuelCell Energy

FuelCon Systems Inc.

3250 East Mall, Vancouver
BC, Canada V6T 1W5
www.fuelcon.com

Products

Fully automated test stations for cell, stack, reformer, balance of plant components and fuel cell system testing. Our test stations are used as fuel cell development and diagnostic tools through to manufacturing and end-of-line testing for PEM, DMFC, SOFC and MCFC.

Company Description

FuelCon is a leading supplier of testing equipment to the fuel cell industry with offices on Europe, North America and Asia. We are recognized for our broad technical knowledge, our quality engineering and innovation, our system safety and our independence from fuel cell developers. With close to 14 years experience in the test business, FuelCon has installed over 200 test rigs to premium customers in the chemical, stack developer, systems integrator, automotive and aviation industries. Our systems are also used by leading fuel cell research institutes. Through our Evaluator equipment series, we can meet all your testing needs:

Evaluator C – single cell to small stack testing for PEM and DMFC up to 600A.
Evaluator S – stack testing for PEM, DMFC and SOFC from 5 to 150 kW.
Evaluator R – customized test systems for reformers and balance of plant components.

Contact

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FuelCon

Fueling Technologies Inc.

23 - 131 Citation Drive
Concord, ON L4K 2R3
www.fuelingtech.com

Products

Hydrogen fuel dispensing systems

Description

Fueling Technologies Inc. (FTI) is a world leader in hydrogen dispensing system design and manufacture. FTI's capabilities include:

- An ISO 9001 certified company;
- CE certified hydrogen dispensers;
- 20+ years of experience in alternative fuel dispensing systems, to private and public sector customers around the world;
- Filling 350 bar vehicles (up to 440 bar pressures);
- Proprietary electronics that provide fast fill, and highly accurate hydrogen natural gas blending.

Example hydrogen fueling projects include:

USA/Canada: SunLine Transit, Arizona Public Service, PowerTech/BC Hydro, and the California Fuel Cell Partnership
Japan: Japan's first mobile fueling stations, used by Toyota and Nissan
Europe: The City of Malmo, Sweden

Contact

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FTI Fueling Technologies Inc.

FuelMaker Corporation

70 Worcester Road
Toronto, ON M9W 5X2
www.fuelmaker.com

Products

Hydrogen drying, purification, and compression to 5000 psi. Complete fueling systems for fleets of up to 50 vehicles. Natural gas compression for reformer feed.

Description

FuelMaker has over 15 years experience in high pressure gaseous fueling systems around the world. It custom engineers the following hydrogen systems:

- Fast-fill or time-fill fleet fueling systems for electrolytic hydrogen (examples include Honda demonstration station in Los Angeles and Stuart Energy PFAs).
- Fast-fill or time-fill fleet fueling systems for reformer based hydrogen (systems under development with GTI).
- High pressure hydrogen compression and storage for stationary power/fuel cell applications.
- Natural gas compression systems for pressurized reformer feed.
- Natural gas high pressure storage systems for reformer back-up in stationary power/fuel cell applications.

Contact

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FuelMaker

General Hydrogen Corporation

13120 Vanier Place
Richmond, BC V6V 2J2
www.generalhydrogen.com

Description

General Hydrogen develops fuel cell systems and fueling infrastructure for industrial and commercial applications. The Company's key markets include:

- battery replacement systems and engines for lift trucks and other industrial vehicles
- engines for aviation ground support vehicles
- auxiliary power units for long-haul trucks
- mobile power generators
- stationary backup power.

The Company's core technologies include:

- fuel cell Hydricity™Packs: self-contained, intelligent fuel cell systems capable of generating 1 – 50 kW continuous power
- fuel cell Hydricity Engines: complete, flexible fuel cell systems for direct integration into OEM products
- hydrogen dispensing systems: simple, convenient, highly automated systems for fueling vehicles and equipment using pressurized hydrogen gas
- network control systems for managing vehicle, fuel cell and fueling data.

The Company's strategic investors include:

- Air Products and Chemicals Inc.: world's largest and safest hydrogen supplier
- General Motors: world's largest automobile company.

Contact

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GH General Hydrogen

Gowling Lafleur Henderson LLP

2300 – 1055 Dunsmuir Street
P.O. Box 49122
Vancouver, BC V7X 1J1
www.gowlings.com

Description

For more than 100 years, we have provided clients with a broad range of legal and intellectual property agency services. Today, as one of Canada's largest national law firms, Gowlings has offices across Canada - Vancouver, Montreal, Ottawa, Toronto, Hamilton, Waterloo Region, and Calgary - and abroad in Moscow.

Gowlings has an internationally recognized high-tech practice group that comprises both intellectual property and business law professionals. This group is very active serving clients in the fuel cell industry, and provides a wide range of legal services, from the protection and exploitation of technology by patents and licensing, to corporate finance, international trade, and corporate/ commercial law.

Contact

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GOWLINGS

Greenlight Power Technologies

Unit C, 4242 Phillips Ave.
Burnaby, BC V5A 2X2
www.greenlightpower.com

Products

Automated industrial grade test stations for fuel cell stacks, fuel cell components, fuel reformers, electrolyzers and fuel cell systems. Fuel cell diagnostic equipment. Fuel cell testing services.

Description

Greenlight Power Technologies, a division of Hydrogenics Corporation, is a leading global supplier of testing and diagnostic equipment and testing services to the fuel cell industry. The FCATS product line of test stations is a recognized industry standard for testing PEM stacks ranging from 0-120 kW. Greenlight has also developed test stations for solid oxide and molten carbonate fuel cells. The Company has supplied over 350 test stations to nearly every major fuel cell program in Asia, Europe and North America including leading fuel cell stack developers, component developers, system integrators and research organizations. Greenlight has satellite customer support offices in Germany and Japan.

Contact

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GREENLIGHT
power technologies

GrowthWorks Ltd.

2600 – 1055 West Georgia Street
Vancouver, BC V6E 3R5
www.growthworks.ca

Products

GrowthWorks has five funds under management:
1) Working Opportunity Fund
2) GrowthWorks WV Canadian Fund
3) GrowthWorks Access Fund
4) Pacific Venture Fund

Description

GrowthWorks (www.growthworks.ca) is a recognized leader in venture capital fund management with proven expertise in raising and investing capital. Managing several funds, including the Working Opportunity Fund and GrowthWorks WV Funds, with a combined $700 million in assets under management across Canada, GrowthWorks has substantial capital resources and expertise. GrowthWorks has a team of skilled and knowledgeable investment professionals with a combined 200 years of experience. The Investment Team has a proven track record of identifying, structuring and making investments in the fastest growing sectors of the economy, primarily in information technology, life sciences, advanced manufacturing and early stage investing.

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GROWTHWORKS
Venture Capital • Experience • Connections

Greater Vancouver Regional District

4300 Kingsway
Burnaby, B.C. V6H 4G8
www.gvrd.bc.ca

Description

The GVRD is a federation of 21 municipalities and one unincorporated area that provides regional services to the Vancouver urban region.

Contact

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Greater Vancouver Regional District

Heliocentris Energy Systems Inc.

3250 East Mall
Vancouver, BC V6T 1W5
www.heliocentris.com

Products

Fuel cell systems, lesson books, multi-media CD-Roms, videos and posters.

Description

Heliocentris Energy Systems develops and distributes fuel cell systems for education, training and outreach. With worldwide distribution in over 20 countries, Heliocentris is recognized as a world leader in this area.

Heliocentris is also active in course and curriculum development, including content development of "An Introduction to our Hydrogen and Fuel Cell Future", a short course put together by Fuel Cell Canada in 2003.

In 2004, Heliocentris established a partnership with Ballard Power Systems to distribute the Nexa® Fuel Cell Power Module and the AirGen™ Fuel Cell Generator to educational institutions in Europe and North America.

Contact

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HERA Hydrogen Storage Systems Inc.

577 Le Breton
Longueuil, QC J4G 1R9
www.herahydrogen.com

Products

Hydrogen storage systems, thermal hydrogen compressors and other products based on metal hydrides.

Description

HERA develops hydrogen storage materials and systems for use in fuel cell, internal combustion engine and other hydrogen applications. Hydrides store hydrogen in a solid form enabling low pressure and high volumetric energy density for the compact provisioning of hydrogen energy in portable, stationary, mobile, military and other power applications.

With the recent acquisition of the business of Ergenics Inc. in the United Sates, HERA's portfolio also includes systems which use the technology of hydrides for other applications such as thermal hydrogen compression and heating/ cooling.

HERA is also continuing a strong R&D effort in advanced storage materials in order to deliver the storage solutions required for the wide deployment of the new Hydrogen Economy.

Contact

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HERA™
Hydrogen Storage Systems

HSBC Bank Canada

885 West Georgia Street
Vancouver, BC V6C 3G1
www.hsbc.ca

Products

Full range of Commercial Financial Services including: deposit services, treasury, cash management, electronic banking, asset management, term and operating credits, import and export financing, equipment leasing and investment capital financing. Full range of Personal Financial Services including deposit services, personal lending including mortgages, private banking, mutual funds, Internet and telephone banking, full service and self-directed brokerage, trust services, property and casualty insurance services.

Description

HSBC Bank Canada is an indirectly-held, wholly-owned subsidiary of HSBC Holdings plc, which is headquartered in London, England. It is the largest international bank and seventh largest bank overall in Canada with 160 offices. HSBC Bank Canada is a principal member of the HSBC Group, which has more than 6,500 offices in 78 countries and territories and is one of the world's largest banking and financial services organizations.

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HSBC

YOUR WORLD OF FINANCIAL SERVICES

Hydrogen Highway™

Fuel Cells Canada
3250 East Mall
Vancouver, BC V6T 1W5

Description

The BC Hydrogen Highway is a coordinated demonstration and deployment program focused along a corridor between Vancouver and Whistler, and including North Vancouver, the University of British Columbia, Surrey, Vancouver International Airport and Victoria.

The objective of this project is to bring suppliers, end-users and host communities together to design, build, operate, test and evaluate hydrogen fueling infrastructure in time for, and building on, the 2010 Winter Olympic and Paralympic Games. In this way it will be a means to demonstrate hydrogen and fuel cell technologies to the world.

The project will demonstrate unique and varied ways of generating and providing hydrogen, influenced by the values and objectives of the community in which the station is located.

The fueling infrastructure will be designed to support a variety of applications, including fuel cell vehicles that are part of the Vancouver Fuel Cell Vehicle Program, hydrogen internal combustion vehicles, stationary power, back-up power, micro fuel cell and mobile applications.

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HYDROGEN HIGHWAY

Hydrogen Research Institute

Université du Québec à Trois-Rivières
3351 des Forges
Trois-Rivières, QC G9A 5H7
www.irh.uqtr.ca

Products

R&D

Description

The Hydrogen Research Institute (HRI) is an R&D unit of the Université du Québec à Trois-Rivières, Quebec, Canada. The research interests of the HRI are diverse and extend from the fundamental to the applied. Collaboration with industry and the training of graduate students and qualified personnel is a constant preoccupation. The R&D activities of the HRI are essentially focused on the following domains: storage, safety, transportation, production and uses of hydrogen, mainly fuel cells and internal combustion engine. The HRI has developed lasting partnerships with governmental agencies and the industries. The HRI responds to the diverse interests and goals of its partners in identifying and solving problems, as well as providing the expertise and facilities to evaluate new technologies.

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Hydrogen Village

Unit 201A - 2070 Hadwen Road
Mississauga, ON

Description

The Hydrogen Village, H2V, is a public/private partnership developed to accelerate and sustain the application and commercialization of hydrogen and fuel cell products and services.

The first Hydrogen Village is located in the Greater Toronto Area (GTA) and began its operations in 2004. The partnership consists of 38 companies and organizations that represent early technology adopters, technology providers and an industry supply chain.

The Hydrogen Village will demonstrate and deploy various hydrogen production, storage and delivery techniques as well as applications of hydrogen such as fuel cells for stationary, transportation (mobile) and portable applications.

The H2V is planned as a template for other municipalities and regions in Canada and globally that are committed to the development of a hydrogen and fuel cell infrastructure.

Objectives:

- To accelerate the growth of Canada's fuel cell and hydrogen industry by deploying fuel cell and hydrogen technologies and products in early adopter markets in discrete geographic regions (Villages).
- To apply these technologies to reduce urban air pollution, reduce greenhouse gas emissions, and increase energy security.
- To design a Hydrogen Village template that is replicable at other Villages across Canada and globally.
- To use the Hydrogen Village to inform, educate and promote hydrogen and fuel cell technologies to the public and other stakeholders.
- To create a process for building and linking Villages to create a hydrogen and fuel cell infrastructure.
- To create employment and economic growth in Canada's hydrogen and fuel cell sector.

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HYDROGEN Village

Hydrogenics Corporation

5985 McLaughlin Road
Mississauga, ON L5R 1B8
www.hydrogenics.com

Products

PEM fuel cell power modules for transportation, stationary, and portable applications; PEM electrolyzer modules and refueling systems; Seal-in-Place stack sealing technology; fuel cell test systems and services (see Greenlight Power)

Description

Hydrogenics is a leader in the design and manufacture of fuel cell power systems and power modules ranging from 2 kW to 60 kW, and demonstration-ready hydrogen refueling systems. Greenlight Power Technologies, a wholly-owned subsidiary of Hydrogenics, is dedicated to fuel cell test products and services. The Company has chosen a commercialization path that first develops premium power products for early technology adopters. Through the implementation of a sustainable business plan based on an integrated technology portfolio, Hydrogenics is working with key partners and clients including General Motors, John Deere, NRCan, and the Canadian and U.S militaries. The Company also has operations in Japan, Germany and the U.S.

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HYDROGENICS
CORPORATION

Hydro-Québec CapiTech Inc.

75 René-Lévesque Blvd. West 22nd Floor
Montréal, QC H2Z 1A4
www.hqcapitech.com

Products

Hydro-Québec CapiTech is the wholly owned venture capital arm of Hydro-Québec. CapiTech invests with strategic intent in companies offering energy-related products and services that can create demand for, and increase the performance of Hydro-Québec's business units. The delivery of superior financial returns are an important part of our investment criteria.

Description

CapiTech has already invested directly and indirectly in more than 5 fuel cell companies and related enabling technologies. CapiTech is always on the lookout for investment opportunities in that sector.

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CapiTech
A subsidiary of Hydro-Québec

Institute for Integrated Energy Systems (IESVic)

University of Victoria
P.O. Box 3055 STNCSC
Victoria, BC V8W 3P6
www.iesvic.uvic.ca

Description

The Institute for Integrated Energy Systems at the University of Victoria (IESVic) promotes feasible paths to sustainable energy systems by developing new technologies and perspectives to overcome barriers to the widespread adoption of sustainable energy. Founded in 1989, IESVic is a multi-disciplinary centre conducting original research to develop key technologies for sustainable energy systems and actively promotes the development of sensible, clean energy alternatives. Our specific areas of expertise are:

- Fuel cells: design and novel architectures, diagnostics, computational fuel cell engineering, microscale transport and microfluidics, micro-bio fuel cells
- Hydrogen Systems: cryogenics, magnetic refrigeration, hydrogen storage, biohydrogen production
- Energy Systems: fuel cell/hydrogen/renewable energy systems integration, energy systems modelling, techno-economic analysis, fuel cell powered bicycles and light vehicles

IESVic research laboratories include fuel cell testing and diagnostics, laser-based measurement techniques, computational modelling tools, a dynamometer, a FC powered scooter, and a test bed integrating renewable energy, electrolysis and fuel cells, an active magnetic refrigeration test bed, hydrogen storage facilities, and characterization of hydrogen synthesizing enzymes. IESVic research is conducted in collaboration with leading Canadian and international industrial partners.

Contact

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IESVic
integrated energy systems

Inco Special Products

2101, Hadwen Road
Sheridan Park
Mississauga, ON L5K 2L3
www.incosp.com

Products

Nickel Products for Fuel Cells including:

- Filamentary powders for sintered electrodes for MCFC
- Nickel oxides for SOFC
- Nickel foams for a variety of fuel cell applications

Description

Inco Special Products is a business unit of Inco Limited, the Western world's largest nickel mining company. Inco Special Products produces a range of fine, pure, nickel powders, nickel oxides and nickel foam products that are used for a variety of roles in Fuel Cells. Inco Special Products has production facilities in Europe, Canada and the USA for these products and works closely with customers (leading producers of Fuel Cells world-wide) developing tailored products for individual needs.

Contact

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inco special products

James Hoggan and Associates Inc.

Suite 1500 – 1900 West Georgia Street
Vancouver, B.C. V6G 2Z6
www.hoggan.com

Products

A full range of public and investor relations services including media relations, public relations and investor relations strategy development, crisis communications, IPOs, annual and quarterly reports, investor presentations, audience perception research and media and presentation coaching.

Description

One of Canada's leading public and investor relations firms with specific expertise in the hydrogen and fuel cell sector. Clients include Ballard Power Systems, Stuart Energy Systems, QuestAir Technologies Inc. and Fuel Cells Canada. JHA has the industry experience necessary to develop and implement successful communications programs for long-term public and investor relations initiatives and short-term issues facing clients. JHA has affiliations with independent public relations firms in 60 locations worldwide.

Contact

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JAMES HOGGAN + ASSOCIATES INC.

Keen Engineering Co. Ltd.

116-930 West First Street,
North Vancouver, BC V7P 3N4
www.keeneng.com

Products

We provide consulting services for the design of all related building infrastructure for safe gas labs for fuel cell testing and implementation.

Description

Keen Engineering is an international professional consulting engineering firm staffed with over 250 dedicated design professionals with offices across Canada.

The growth of fuel cell applications and the proper facilities for R & D and manufacturing are new and challenging tasks. Keen has assembled a team to respond to the needs of the Fuel Cell industries. Our Fuel Cell Team's lead electrical and mechanical engineers have one of the largest portfolios of fuel cell support facilities in Canada.

Our experience in the design of the following:

- electrical systems
- communication systems
- life safety systems such as gas detection and flame detection systems
- fuel cells connection to the grids
- distribution of different gases including hydrogen, methane, propane, co, co^2, N^2 at specific pressure
- tank farms for storing different gases

The Fuel Cell Group members have done over 150 small to large projects for the fuel cell support facilities. The experience that they contribute to their team is unparalleled in the world. As well, our Sustainable Building Services Group have invested much time in modelling the energy consumption of buildings and alternative options for reducing energy use. Together the Fuel Cell and Sustainable Building Groups provide leading edge experience in the design of the support facilities for fuel cell technology.

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Keen ENGINEERING

Kinectrics Inc.

800 Kipling Ave
Toronto, ON M8Z 6C4
www.kinectrics.com

Products

Kinectrics provides engineering services and facilities to develop, engineer, test, assembly and commercialize fuel cell technologies including balance of plants systems

Description

Kinectrics provides innovative technical services to clients worldwide in the design, development and commercialization of fuel cell systems, with a special focus on plant balance for stationary and residential applications.

Kinectrics offers complete testing facilities for solid oxide fuel cell components and stacks. At its Toronto facility and in partnership with Siemens Westinghouse, Kinectrics is currently providing services for the engineering, development, construction and operation of a pre-commercial 250kWe SOFC combined heat and power plant. In addition, the company has successfully teamed with Ballard, Fuel Cell Technologies Inc. and other key players in the fuel cell industry.

A broad-based engineering firm, Kinectrics also offers comprehensive fuel cell related technical and consulting services in the areas of hydrogen, distributed generation, and other energy efficient technologies.

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KINECTRICS

Kraus Global Inc.

25 Paquin Road
Winnipeg, MB R2J 3V9
www.krausglobal.com

Products

Kraus Global Inc. is a designer and manufacturer of transportation refueling systems for the alternative fuels industry, providing integrated refueling station solutions for compressed natural gas (CNG), propane (LPG) and compressed hydrogen fuels.

Description

As fuel cells lead the new wave of change in the transportation industry, Kraus Global is leading the way in the development of the required refueling technologies. Kraus Global has now introduced the world's first line of contemporary "retail-style" compressed hydrogen dispensers for fuel cell vehicle fueling applications. These "second generation" dispensers feature a 350 bar (5,000 psi) filling pressure and high flow rates, packaged in an attractive forecourt-style cabinet. Based on technologies used in hundreds of Kraus CNG dispensers successfully operating around the world, these dispensers are designed to look, feel and operate like conventional gasoline dispensers, paving the way for the acceptance of hydrogen as the fuel of the future.

Contact

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KPMG LLP

777 Dunsmuir Street
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Vancouver, BC V7Y 1K3
www.kpmg.ca

Products

KPMG provides assurance, tax, and financial advisory services.

Description

KPMG's Fuel Cell practice includes a multidisciplinary team of professionals who work exclusively with clients in this industry. Our services are designed to help Fuel Cell companies meet their business challenges.

KPMG is the global network of professional services firms whose aim is to turn understanding of information, industries, and business trends into value. With nearly 100,000 people worldwide, KPMG member firms provide assurance, tax, and financial advisory services from more than 750 cities in 150 countries.

Contact

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LeapTran Technologies International Inc.

808-6707 Elbow Dr. SW
Calgary, AB T2V 0E5
www.leaptran.com

Products

Fuel cell testing key components, fuel cell manufactures equipments and materials, outsourcing activities for fuel cell developers, and business and product development consulting service

Description

Providing cost effective, high quality components, materials, and manufacture equipments. LeapTran's expertise includes:

- DC-DC converter (100W-10 kW, efficiency > 95%)
- DC-AC converter
- Mass flow controller/meter
- Solenoid control valve
- Furnaces (sintering, heat treatment, tunnel, environmental controlled, batch type, lab type, up to 1700^{0}C)
- Tape casting machines (lab type, pilot type, manufacture type)
- Screen printing (lab type, pilot type)
- Ball mills and attrition mills
- ZrO_2, Al_2O_3, rare earth metals and oxides, precious metals and compounds, other inorganic oxides

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MagPower Systems Inc.

Suite 340 – 6165 Highway 17
Delta, BC V4K 5B8
www.magpowersystems.com

Products

The Magnesium-Air Fuel Cell (MAPC) is a primary, secondary, emergency and standby alternative power source. *MagPower* has successfully manufactured the fuel cells that will be used in its portable system as well as in other applications that have been licensed worldwide.

Description

MagPower Systems Inc. has developed a powerful, reliable and environmentally friendly non-toxic alternative power source that generates electricity through a combination of magnesium, oxygen and a saltwater electrolyte in conjunction with MagPower's Hydrogen Inhibitors. The MAPC technology has never reached the commercial stage due to its limiting power output caused by hydrogen generation. MagPower has solved this problem and has patents on its Intellectual Property; the Hydrogen Inhibitors. The MAPC's advanced cell design includes being environmentally benign, infinite shelf life, does not consume fossil fuels and can be scaled to produce large primary and secondary power systems. The MAPC is encased in a lightweight injected mould polymer manufactured and distributed through licensing agreements worldwide.

Contact

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Mag POWER Systems Inc.

Marsh Canada Limited

800 - 550 Burrard Street
Vancouver, BC V6C 2K1
www.marsh.com

Products

Marsh is proud to have been appointed the general insurance broker for Fuel Cells Canada. We look forward to providing general insurance and employee benefit services to the fuel cells industry.

Description

Marsh is the world's leading risk and insurance services firm. Our one overriding mission is to create and deliver risk solutions and services that make our clients more successful. More than 35,000 colleagues serve clients in over 100 countries from more than 400 owned-and-operated offices.

Marsh Canada Ltd. is a subsidiary of Marsh & McLennan Companies, Inc. (MMC), a global professional services firm with annual revenues exceeding $10 billion. In addition to Marsh, MMC is the parent company of Putnam Investments, one of the largest investment management companies in the United States; Mercer Consulting Group, a major global provider of consulting services; and MMC Capital, a global private-equity firm.

Contact

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MARSH

McCarthy Tétrault LLP

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www.mccarthy.ca

Products

Legal Services

Description

With offices in every major Canadian financial and business centre, McCarthy Tétrault LLP is Canada's largest law firm. We have the business-oriented approach to service that our clients require and boast the largest national technology practice in Canada. Since 2000, the Canadian Legal Lexpert Directory, Canada's qualitative legal directory, has ranked McCarthy Tétrault as the strongest technology practice in Canada. Our lawyers and patent agents provide our fuel cell clients with expert advice in a full range of legal areas, including intellectual property, patents, licensing, joint ventures, strategic alliances, corporate finance, mergers and acquisitions, employment, litigation, finance and taxation. Our experience in the fuel cells industry is broad, having provided legal services to companies, venture capitalists and investment banks involved in fostering the hydrogen economy. We are also proud of the role we played in the creation of Fuel Cells Canada and of our continued strong support of the organization as a member and provider of legal services.

Our lawyers are based in Vancouver, Calgary, London, Toronto, Ottawa, Montréal and Québec. We also have an international presence with offices in New York and London. Recognized by Chambers Global as the only Canadian firm in its list of "Top 10 North American Law Firms" and named "Best Canadian Business Law Firm of the Year", McCarthy Tétrault has earned its reputation as Canada's premier law firm.

Contact

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McCarthy Tétrault
mccarthy.ca

Membrane Reactor Technologies Ltd.

BC Research Complex
3650 Wesbrook Mall
Vancouver, BC V6S 2L2
www.membranereactor.com

Products

Hydrogen Production Units based on reforming of conventional and renewable hydrocarbons in a proprietary membrane reactor producing pure hydrogen in a single step. Membrane purifiers for extracting hydrogen from a wide range of stream compositions.

Description

Membrane Reactor Technologies Ltd. is a privately owned, Vancouver-based technology firm focused on the development and commercialization of reactor systems and hydrogen permeable membranes. With application of its patented Fluidized Bed Membrane Reactor (FBMR) technology to hydrocarbon reforming, the company is poised to become a competitive supplier of small to medium scale, pure hydrogen production units for the industrial hydrogen market and the emerging hydrogen economy, as well as membrane separators for hydrogen recovery and purification.

Contact

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Methanex Corporation

1800 Waterfront Centre
200 Burrard Street
Vancouver, BC V6C 3M1
www.methanex.com

Products

Methanol

Description

Methanex is the world's leading producer and marketer of methanol. Globally, Methanex produces more than two million tonnes of hydrogen per year which in turn is used to produce methanol for countless industrial and consumer markets.

Looking to the future, Methanex is interested in supplying methanol for use in various fuel cell markets including:

- Direct Methanol Fuel Cells (DMFC)
- Methanol as a direct fuel for Solid Oxide Fuel Cell (SOFC) applications
- Methanol as a fuel for hydrogen production systems

In these markets Methanex is offering solutions to fuel supply and infrastructure challenges. In DMFC markets Methanex is supporting early introduction of electronics and transportation products by developing packaged methanol distribution systems. In SOFC markets methanol will be supplied as a fuel for combined heat and power systems. Growth in fuel cell markets will also drive widespread demand for hydrogen production and distribution systems. Methanol is an excellent source of hydrogen for these systems as it is easy to distribute and easy to convert to hydrogen.

Methanol based fuel systems provide economic and practical solutions to the challenge of supplying fuels for widespread adoption of fuel cell products. Methanex looks forward to continuing its leadership role as a supplier of fuels to the fuel cell industry.

Contact

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METHANEX
A Responsible Care® Company

National Bank Financial

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Toronto, ON M5H 3T9
www.nbfinancial.com

666 Burrard Street, Suite 3300
Vancouver, BC V6C 2X8

Description

National Bank Financial (NBF) is a full-service, fully-integrated investment dealer with approximately 3,000 employees. Our investment banking and institutional sales offices are located in Canada, U.S., Britain, and Switzerland.

NBF's Energy Technology team is comprised of scientific, engineering and financial experts who have a specialized understanding of the sector. This understanding serves as a critical bridge between our industry clients and investor contacts.

Our services to industry participants include private placements of equity, initial public offerings, follow-on offerings, credit and debt products, and mergers and acquisitions advisory services.

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NATIONAL BANK FINANCIAL

Neodym Technologies

711 – 675 W. Hastings Street
Vancouver, BC V6B 1N2
www.neosafe.com

Products

Janus™
PowerKnowz™
KnowzNet™
AutoKnowz™

Single and multiple combustible gas detection devices for hydrogen, methane, propane, and methanol

Description

Neodym specializes in developing low cost integrated solutions for OEM's detecting both hazardous and combustible gases.

Contact

Bill McDonald
Market Development
Phone: (604) 685-1185
Fax: (604) 685-3764
Email: wjm@neodymsystems.com

NEODYM
Innovative Technologies

Neutron Technologies Inc.

1503 Cliveden Avenue
Delta, BC V3M 6P7
www.neutrontechnologies.com

Products

With an established supplier network, Neutron provides our customers with the products necessary to complete their projects, while offering value added services for these products including training and certified repair services.

Description

Neutron Technologies is a full service integrator of automation systems and components. We help customers in the New Energy and Manufacturing industries with PLC's, pneumatics, full-service electrical, maintenance, process piping, custom automation, prototyping, panel building, design, programming, value engineering and project management including conceptualization, design/ review and audit.

Neutron helps businesses build, maintain and improve their manufacturing, balance of plant and test systems. Our 24/7 availability and full service platform allows us to complete projects with greater efficiency and effectiveness than our competition; resulting in lower costs and greater satisfaction for our customers.

Contact

Ryan D. Benn
Business Consultant
Phone: 604 524-6965
Fax: 604 524-6974

NORAM Engineering and Constructors Ltd.

200 Granville Street, Suite 400
Vancouver, BC V6C 1S4
www.noram-eng.com

Products

Systems integration for industrial and utility scale power projects; design of chemical and electrical systems; supply of prototype and pilot plant systems; supply of specialized balance-of-plant components including hydrogen generation and delivery systems.

Description

NORAM specializes in the development, commercialization and supply of electrochemical processes. The privately owned company is known for its vision, innovation, and quick response. It is a major shareholder of BC Research, a technology incubator, located at the University of British Columbia.

NORAM is a multi-disciplined firm experienced in the design and operation of electrochemical plants with loads between 5 and 200 MW.

Expertise includes plant modeling, handling of hazardous chemicals, materials of construction, storage and pumping systems, material and heat balance, heat exchangers, flow batteries, shunt currents and grounding of electrolytes, power rectifiers, inverters, power quality and grid-connection.

NORAM is focused on stationary power applications for fuel cells.

The firm is evaluating opportunities where hydrogen is produced as a byproduct in existing electrochemical processes. NORAM also contributed to the development of a Fluidized Bed Membrane Reactor (FBMR) technology, which converts natural gas into high-purity hydrogen, on demand.

Contact

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NORAM
Engineering and Constructors Ltd

National Research Council Canada

3250 East Mall
Vancouver, BC V6T 1W5
http://ifci-iipc.nrc-cnrc.gc.ca

Description

The National Research Council's Institute for Fuel Cell Innovation is working in partnership with industry, university and government stakeholders to build fuel cell technology clusters across Canada and to support the innovation needs of Canadian fuel cell companies through:

- Research and Development: strategic research aimed at advancing fuel cell science and technology and facilitating the commercialization of fuel cells
- People: a multidisciplinary team of over 60 researchers, all focused on fuel cell research, provide advice and expertise to stakeholders
- State-of-the-art facilities: hydrogen-ready labs and environmental chamber, MEA characterization and fabrication facility, fuel cell test stations and specialized equipment to support the NRC research program as well as the needs of Canadian fuel cell companies
- Partnership: research collaboration, people exchange and large-scale strategic initiatives and demonstration projects
- Technology Acceleration: lab and office space to support emerging fuel cell companies
- NRC-Fuel Cell Program: headquarters of a horizontal program designed to leverage NRC expertise and facilities across Canada

Research is focused on five strategic areas of critical importance to Canada's fuel cell industry:

- Polymer Electrolyte Membrane Fuel Cells (PEMFC)
- Solid Oxide Fuel Cells (SOFC)
- Prototyping, Integration and Evaluation
- Microtechnology and Sensing
- Modelling

The Institute is also home to the Mining Wear Resistant Materials Consortium, an international group of industry giants in the mining and energy sector that work with NRC to discover ways to lower costs associated with wear and tear of machinery and equipment.

Contact

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Communications Officer
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NRC · CNRC

Ontario Power Generation

700 University Avenue, H18 B04
Toronto, ON M5G 1X6
www.opg.com

Products

OPG is committed to fostering sustainable technologies and works in alliances with others to advance the commercialization of emerging market technologies. OPG is participating with Siemens Westinghouse, the government of Canada, Kinectrics Inc. and the US Department of Energy in the development of the 250 kW Solid Oxide Fuel Cell (SOFC) design. The pre-commercial unit is currently in the commissioning stages in Ontario.

Description

Ontario Power Generation ("OPG") is one of the largest generators of electricity in North America with a balanced portfolio of nuclear, hydroelectric, fossil and renewable generation assets. OPG sells the electricity that it generates into the markets administered by the Independent Electricity Market Operator (the "IMO"). Wholesale customers acquire its electricity output for use or sale within Ontario or into interconnected markets. OPG's stations offer dispatch flexibility of base load, intermediate and peak capacity and are diversified by fuel type and technology. OPG is a low-cost generator in its regional market area.

Contact

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Email: mark.tinkler@opg.com

ONTARIOPOWER GENERATION

Palcan Power Systems Inc.

8658 Commerce Court
Burnaby, BC V5A 4N6
www.palcan.com

Products

Rare Earth Metal Hydride Hydrogen Storage Canisters; Polymer Exchange Membrane Fuel Cell stacks; and the Palpac™ Power Systems.

Description

The Company is a leading developer and manufacturer of metal hydride hydrogen storage products and proton exchange membrane (PEM) fuel cell systems under 5 kilowatts. The Company's proprietary and patent pending technologies form the core of the PalPac™ Power Products. A unique and integrated fuel cell power system aimed directly at low output applications where batteries and smaller internal combustion engines (ICE) are the power source. These include stationary, marine, military and portable power applications. The Company's manufacturing, research and development facilities are located in Burnaby, British Columbia and Jiaxing, China.

Palcan is a publicly traded Company trading on the TSX Venture Exchange under the symbol "PC".

Contact

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Email: Daniel@palcan.com

Palcan

Pathway Design & Manufacturing Inc.

111 – 7400 MacPherson Ave.
Burnaby, BC V5J 5B6
www.pathwaydesign.com

Products

Custom design, engineering and tooling services, prototyping, research and development, and volume manufacturing.

Description

Pathway is an ISO-certified custom supplier of design and manufacturing services to the alternative energy industry. Pathway's professional staff of engineers and industrial designers has extensive experience in working collaboratively with the engineering departments of alternative energy companies, and offers particular expertise in design modifications to enhance manufacturability and reduce per part costs.

With a full service machine shop in-house, Pathway also offers tooling, prototyping and production machining services. For R&D and volume manufacturing, Pathway offers injection molding, fabrication and assembly services, together with an extensive quality control department certified to the ISO 9000-2000 standard.

Pathway's designers and process engineers have a thorough knowledge of plastics materials and processing, from utility grade plastics through to advanced engineering materials, including glass-filled resins.

For more information on Pathway's capabilities and services please visit our website.

Contact

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PEM Engineers Inc.

6216 Mackenzie Street
Vancouver, BC, V6N 1H5

Products

PEM Engineers Inc. provides engineering consulting services to industry and government in support of PEM fuel cell systems and stacks development.

Description

David Watkins and Clarence Chow, former long-term directors of Ballard's Advanced Systems and Transportation Programs, have joined forces to form the consulting company. Their combined experience totals more than 31 years in PEM fuel cell stacks and systems for transportation and stationary application. PEM Engineers Inc. provides consulting services, including conducting studies for government and industry; proposal review for government and industry; due diligence for investors and developers; assisting start-ups in planning and initiating development programs; and prototype trouble-shooting for developers.

Contact

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Email: DavidSWatkins@aol.com

PEM Technologies Inc.

110-13700 Mayfield Place
Richmond, BC V6V 2E4
www.pem.ca

Products

High efficiency H2/O2 Proton Exchange Membrane Fuel Cells in the 100W to 5kW power output range for selective portable, stationary, and low speed vehicle applications.

Description

We are a private Canadian company specializing in H2/O2 proprietary fuel cell stacks and systems and non-fluoro based polymer membrane research and development. We have world-class competencies in polymer chemistry and the development of non-fluoro based ion-exchange polymer, membranes and MEAs.

Contact

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Pivotal Power

150 Bluewater Road
Bedford, NS B4B 1G9
www.pivotalpower.com

Products

Power electronics engineering: uninterruptible power supplies, inverters, converters, battery management systems, static frequency chargers, embedded power supplies.

Description

Pivotal Power has an objective to be the power electronics supplier of choice to the fuel cell industry with inverter and converter products in the range of 100W to 30 kW. Pivotal Power's 20-year history, reputation for customer support and capabilities with design, development and manufacturing make it an excellent partner to fuel cell companies seeking custom solutions to their power electronics needs.

Contact

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President & CEO
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Email: c.shimoon@pivotalpower.com

PowerDisc Development Corporation Ltd.

Unit 5 - 45770 Railway Ave.
Chilliwack, BC V2P 1L3
www.powerdisc.ca

Products

PowerDisc's product line will consist of a variety of PowerDisc engines ranging from 1-100+ kW, PEM fuel cell stacks and hybrid propulsion systems.

Description

Power Disc is a research and development company focused on the development and commercialization of PowerDisc engines, proprietary PEM fuel cell stacks and hybrid propulsion systems utilizing the PowerDisc engine. The company is working closely with the National Research Council of Canada under the National Fuel Cell Program and several complimenting companies to develop its products.

Contact

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PowerDisc™
DEVELOPMENT CORPORATION LTD.

PowerNova Technologies Corporation

Suite 680, 1285 West Broadway Avenue
Vancouver, B.C. V6H 3X8
www.powernova.com

Description

PowerNova has developed a range of catalytic compounds originally discovered in Russia and specifically designed to produce alpha-olefins and hydrogen using liquid hydrocarbons as the source media.

Alpha-olefins are used in the petrochemical industry and are currently produced by "cracking" liquid hydrocarbons (alkanes) obtained from crude oil. The technology is in the research and development stage and is based on a "Metallocene Pincer Catalyst" which has only one stage that is most efficient at 150-200 °C.

Hydrogen gas is a bi-product of the reaction, demand for which is expected in increase as hydrogen powered fuel cells gain in prominence. Current hydrogen production methods (electrolysis and steam reforming) are expensive and produce harmful CO_2 (unless the electricity used is generated from renewable sources) as compared to the PowerNova's technology which is expected to be both cheaper (due to low temperatures and single stage reaction) and without harmful bi-products.

Contact

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Email: stuartlew@powernova.com

PowerNova
Technologies Corporation

Powertech Labs Inc.

12388 – 88 Avenue
Surrey, BC V3W 7R7
www.powertechlabs.com

Products

Testing and certification of high pressure hydrogen components; design and construction of hydrogen fill stations.

Description

Powertech Labs is recognized worldwide as an authority on high pressure hydrogen fuel systems for vehicles and fill stations. Powertech test reports are accepted by most regulatory agencies, including KHK (Japan), TUV (Germany), Transport Canada, DRIRE (France), etc. In addition to the first 350 bar (5,000 psi) hydrogen station in Canada, Powertech introduced the world's first 700 bar (10,000 psi) hydrogen fill station in November 2002. Powertech has also pioneered the use of lightweight high pressure transportation units for moving large volumes of compressed hydrogen, and has constructed a mobile 700 bar hydrogen filling station using this technology.

Contact

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Director, Gas Systems Engineering
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Fax: (604) 590 6659

Province of Ontario - The Ministry of Economic Development and Trade

8th Floor, Hearst Block
900 Bay Street
Toronto, ON M7A 2E1
www.ontariocanada.com

Description

The goal of the Ministry of Economic Development and Trade is straightforward: to promote economic growth.

Faced with an increasingly competitive global marketplace, we aim to accomplish this by creating a culture of innovation, promoting investment and expanding exports to world markets.

We act as a catalyst for innovation through:

- research and development funding partnerships;
- advisory services to help small and medium-sized enterprises grow;
- programs to encourage young people to explore careers in science and technology or start their own business.

We promote investment in the province by:

- marketing Ontario to the world as a preferred business location;
- helping our regional economies plan and invest for strategic growth;
- investing in our greatest resource – our people – through strategic skills development partnerships.

We encourage trade development by:

- helping Ontario exporters increase their international market opportunities;
- providing export education, counseling and market intelligence;
- showcasing Ontario's products and services abroad.

Contact

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Senior Advisor, Sector Competitiveness Branch
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Ontario

Praxair, Inc.

1 City Center Drive, Suite 1200
Mississauga, ON L5B 1M2
www.praxair.com

Products

Praxair, Inc. ("Praxair") is a leading supplier of hydrogen and hydrogen supply systems in North America.

Description

Praxair offers an unmatched combination of commitment and capability to hydrogen users. Praxair's complete range of supply options including cylinders, high-pressure bulk gas delivery, liquid hydrogen delivery, on site production and pipeline supply are designed to provide you the most economical, flexible, reliable, and safe supply available.

Contact

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Product Manager – Atmospherics
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Email: wolfgang_laser@praxair.com

PrecisionH2 Inc.

4141 Sherbrooke Ouest, Suite 550
Montréal, QC H3Z 1B9
www.precisionh2.com

Products

CarbonSaver – Distributed Energy Systems

Description

PH2 is developing non-thermal fuel processor technology for on-site hydrogen production in distributed Natural Gas applications. During the decomposition of methane in the CarbonSaver, the carbon in the methane is captured in a solid form for later use. Low operating temperature and rapid start, load following features when integrated with fuel cell installations, make the PrecisionH2 technology a leading approach to the distributed supply of hydrogen. In a new R&D collaboration, PH2 will begin developing larger units for roadside hydrogen fueling systems from a Natural Gas feed. In this process carbon black will also be captured for use instead of released as CO_2 or other GHG's.

Contact

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Email: danfletcher@precisionh2.com

PricewaterhouseCoopers LLP

250 Howe Street, Suite 700
Vancouver, BC V6C 3S7
www.pwcglobal.com

Products

Professional services to assist growing and mature companies build value, manage risk and improve performance.

Description

PricewaterhouseCoopers understands and supports the fuel cell industry in Canada and around the world. Our Alternative Energy network of professional staff, drawn from 125,000 people in 142 countries, has a firm grasp of the issues facing companies in the industry as it evolves towards commercialization. We are continually expanding our knowledge and client base with the goal of being the pre-eminent advisor to the industry in local, national and global markets.

Relevant Publications:

"Fuel Cells - The Opportunity for Canada",
June 2002 with Fuel Cells Canada

"Canadian Fuel Cell Commercialization Roadmap",
April 2003 with Industry Canada and Fuel Cells

Contact

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PRICEWATERHOUSECOOPERS

QuestAir Technologies Inc.

6961 Russell Avenue
Burnaby, BC V5J 4R8
www.questairinc.com

Products

- Hydrogen purification technology for stationary and automotive PEM fuel cell systems, and for reformer-based hydrogen fueling systems.
- Industrial system's for the purification of hydrogen, helium and methane.

Description

QuestAir Technologies, Inc. has developed proprietary gas purification technology that is being applied to several large existing and emerging world markets, including industrial hydrogen production and stationary and automotive fuel cells.

QuestAir's proprietary fast-cycle pressure swing adsorption ("PSA") technology allows the developers of fuel cell systems to increase the efficiency of their products, and offers a compact, cost effective gas purification solution to QuestAir's industrial customers and developers of hydrogen fueling infrastructure. QuestAir's strategic partners include Shell Hydrogen, Ballard Power Systems and The BOC Group.

Contact

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QuestAir

Royal Military College of Canada

Department of Chemistry and Chemical Engineering
PO Box 17000, Stn Forces
Kingston, ON K7K7B4.

Products

We are a research group consisting of 15 scientists, engineers and technicians. We offer our services to industry and government organizations with which we presently have several contracts.

Description

RMC played an important role in much of the early fuel cell work in Canada, in that we provided the scientific expertise and liaison with Ballard for the Department of Defense (the sole supporter of Ballard in their first few years of fuel cell work). Today the group has expertise in all areas of fuel cell systems and is carrying out research and development on the following, membrane reformers, reforming catalysts, polymer electrolyte membranes, MEA's, DMFC's, fuel cell component testing and modeling of all components that make up a fuel cell power system.

Contact

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Sacré-Davey Engineering

315 Mountain Highway
North Vancouver, BC V7J 2K7
www.sacre-davey.com

Products

Process Specialist and Technologies Integrator for Natural Gas and Hydrogen Systems with respect to: delivery, distribution, purification, compression, re-circulation and storage, with expertise in Design Safety Reviews and HAZOP Assessment.

Description

Sacré-Davey Engineering (SDE) is a technology and engineering firm based in North Vancouver, Canada. Founded in 1986, SDE employs between 20 - 25 employees and has completed projects in North America and Asia. As Systems Integration Specialists, SDE delivers solutions to match:

- Process requirements
- Operating philosophies,
- Safety and HAZOP
- Integration to Existing Facilities
- Energy needs,
- Equipment lifecycle.

Employing a seasoned team of process, mechanical, electrical and structural engineers and designers, our typical services include complete system design and construction supervision; Engineering, Procurement, Construction Management (EPCM) and Engineer, Procure, Construct (EPC or Turnkey).

Contact
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President
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Sacré-Davey ENGINEERING

Sarnia-Lambton Economic Partnership

265 Front Street, North, Suite 107
Sarnia, ON N7T 7X1
www.sarnialambton.on.ca

Products

Business services – site selection, relocation, growth, start-up.

Description

Sarnia-Lambton, Ontario, is aggressively pursuing opportunities to enhance the development of Canada's fuel cell and hydrogen industry. The region is Eastern Canada's key center of research, development and product commercialization for the petrochemical, refining and energy sectors; with a unique cluster of continually evolving support firms, infrastructure and skills. The community is building on this knowledge cluster to become Ontario's leader in the development of alternative energy technologies.

Contact

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SARNIA·LAMBTON
Economic Partnership

SatCon Power Systems Canada

835 Harrington Crt.
Burlington, ON L7N 3P3
www.satcon.com

Products

Power Converters for Alternative Energy Applications, Rectifiers, Rotary UPS, Static Switches, Servo Motors, Industrial Inverters, Frequency Converters, Lab Shakers & Amplifiers

Description

Three-phase Power Conditioning Systems available as grid connected, standalone or both. Incorporates optional integration of energy storage and other energy sources, static disconnect switches, for un-interruptible power to critical loads for total system integration and power quality. Inverters certified to UL1741 from 25kW to multi MW.

Contact

Vince Scaini
Product Line Manager
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SATCON
Power Systems

Siemens Canada Limited

2185 Derry Road West
Mississauga, ON L5N 7A6
www.pgd.siemens.ca

Products

Power Generation, Transmission and Distribution

Description

Siemens and Westinghouse belong to the pioneers of fuel cell technology. Activities in the Siemens corporate research labs started back in 1962. In 1984, a 100kW alkaline fuel cell developed by Siemens was successfully tested in a submarine. Today, Siemens continues to be one of the leading companies in fuel cell research, development and manufacturing of our SOFC technology. With SOFC demonstration projects well under way in Canada and elsewhere in the world, Siemens Solid Oxide Fuel Cell technology holds a leading position

Contact

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V.P. Executive Account Management
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Email: peter.schurmann@siemens.com

SIEMENS

SMC Pneumatics

730 Eaton Way, Unit 2
Delta, BC V3M 6J9
www.smcpneumatics.ca

Products

Solenoid Valves, Flow Control, Fittings, Tubing, Pumps, Teflon Products, Electro-Pneumatic Regulators, Switches, Pneumatic Cylinders, Sensors, Automation Solutions, Engineering Support

Description

SMC is an industry leader that has committed itself to aiding and participating in the development of fuel cell applications. Our cutting edge products and extensive R&D structure allow SMC to continually provide collaborative solutions designed to improve fuel cell systems, fuel cell manufacturing automation systems and related test equipment.

With branch offices established in 39 countries and 230 cities, SMC is poised to service a global market both efficiently and effectively.

SMC is continually expanding its product line in order to meet the requests of our customers as we strive to provide outstanding products coupled with unsurpassed service.

Contact

Brian Davis
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SRE Controls Inc.

440 Phillip Street
Waterloo, ON N2L 5R9
www.srecontrols.com

Products

Power Electronics, microprocessor based control systems, controllers, converters, inverters and chargers.

Description

SRE Controls is a 10-year-old company in the business of supplying Power Electronic controllers and associated devices to industry. The company also is a major supplier of controllers for Industrial Electric Vehicles (IEV's). Our major served market is throughout North America with limited sales elsewhere.

SRE designs, manufactures, markets and sells power electronic motor controllers for traction motor control, life and pump motor control and steering control. We serve the IEV market which encompasses forklift trucks, AGV's, ground support equipment, scissors and booms, personnel and burden carriers, tractors and lawn and garden equipment. All these market areas benefit from the environmental pressure to reduce emissions from the use of hydrocarbon fuels. They grow with economy plus an additional growth factor due to the swing from Internal Combustion (IC) engines to electric.

The company is active in designs, prototyping and early stage manufacturing for on-road EV's and fuel cell applications, where we design for engine control as well as for vehicle traction and auxiliaries.

Contact

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SRE CONTROLS

Stuart Energy Systems Corporation

5101 Orbitor Drive
Mississauga, ON L4W 4V1
www.stuartenergy.com

Products

Stuart Energy is the world-leading supplier of hydrogen energy stations sold under the Stuart Energy Station (SES) brand. The SES is the world's first multipurpose hydrogen infrastructure product portfolio that uses electricity and water to create hydrogen that can be deployed as an industrial gas, a transportation fuel or as distributed electricity. The SES product portfolio consists of five standard modules: Hydrogen Generation, Compression, Storage, Fuel Dispenser and Power Modules that can be configured to individual customer requirements. Different combinations of modules yield SES products used in a variety of applications.

Description

Stuart Energy has over fifty years experience in electrolytic hydrogen generation with an unparalleled safety and reliability record.

The SES Hydrogen Generation Module uses proprietary Vandenborre IMET® cell stack technology that produces hydrogen on-site and on-demand at two standard pressures 10 bar or 25 bar higher pressures can be achieved using the SES Compressor Module, which raises the hydrogen pressure to 400 bar. The company's product development plans include increasing this pressure to 750 bar. From the Compressor Module the hydrogen is stored in the SES Storage Module in either high-pressure carbon steel or carbon-fibre composite cylinders. The SES Dispenser Module can deliver hydrogen as well as a blend of hydrogen and natural gas. The hydrogen is dispensed at two pressures 250 bar or 350 bar. Finally for power applications the SES Power Module uses a hydrogen powered internal combustion engine (ICE) generator to deliver up to 125kW of power. Additional modules can be added in 125kW increments.

Stuart Energy has important partnerships or projects with other global leaders such as Cheung Kong Infrastructure Holdings Ltd, Ford Motor Company, Toyota Motor Sales USA and Shell Hydrogen. Stuart Energy is also the title-holder of over a 100 patents, including the most recent patent giving Stuart Energy exclusive rights to develop and market "smart" on-site on-demand Hydrogen Energy Stations.

Contact

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stuart energy

TD Securities Inc.

700 West Georgia Street, Suite 660
Vancouver, BC V7Y 1B6
www.tdsecurities.com

Products

TD Securities provides a wide range of capital market products and services to corporate, government and institutional clients in five key business areas of finance: Investment Banking, Private Equity, Institutional Equities, Debt Capital Markets and Foreign Exchange

Description

Our Investment Banking group provides financial advisory services in Equity and Debt Financing, Mergers & Acquisitions, Divestitures and Risk Management. Our capital-raising services include placements of common equity, preferred shares, private equity and private debt securities, and bank debt including syndications and bridge financings.

Our Energy Technology Group consists of 8 investment banking and equity research professionals based in Vancouver, Calgary, Toronto and New York and has been involved in raising over $590million in private and public equity for Energy Technology companies in the past 24 months

Contact

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TD Securities

Technology Early Action Measures

580 Booth St., 13th Floor
Ottawa, ON K1A 0E4
www.team.gc.ca

Products

The Government of Canada's Climate Change Action Fund supports the demonstration and deployment of innovative technologies that reduce greenhouse gas emissions, while sustaining economic and social development in Canada and internationally.

Description

TEAM funds projects through existing Canadian governmental technology programs and builds on existing long-term, sustained government investments in technology research and development. Through the resulting investment partnerships, the federal government, private sector and other collaborators are contributing to early action on greenhouse gas reductions with significant environmental co-benefits and economic growth. Since 1998, TEAM has provided $16 million to 13 hydrogen and fuel cell related projects.

Contact

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Tekion Solutions Inc.

8602 Commerce Court
Burnaby, BC V5A 4N6
www.tekion.com

Products

Formic Acid Fuel Cells to power devices ranging from sensors to mobile phones.

Description

Tekion is creating energy solutions (direct liquid fuel cells in the milliwatts to kilowatts range) designed to enhance your "Freedom through Mobility" by taking you *off the grid.*

Contact

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Teleflex Canada

3831 No. 6 Road
Richmond, BC V6V 1P6
www.teleflexcanada.com

Products

Teleflex Canada seeks to be a leader in balance of plant component design and manufacturing for the fuel cell industry. We are currently looking to partner with fuel cell development companies to help them meet their balance of plant requirements.

Description

Teleflex Canada's core competencies have evolved over the last 27 years in BC to the point where we are one of the few Western Canadian manufacturing companies that can produce engineered, high volume, precision machined products that meet the strictest quality demands. With the goal of being the fuel cell industry's leader in supplying balance of plant components, we feel we are perfectly positioned to achieve this goal. Our team of expert engineers, manufacturing capacity and experience, established relationships with major OEM's (including automotive), and the financial backing of our large and successful parent corporation (Teleflex Inc., $2b/yr) puts us in a position of strength for the fuel cell market.

Contact

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Business Development
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Email: mmccall@teleflex.bc.ca

Teleflex
Teleflex Canada

TISEC Inc.

2113 St. Regis, Suite 250
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www.tisec.com

Products

Sourcebook for Hydrogen Applications, Safety and Reliability Studies, Code Compliance

Description

TISEC Inc. supports the hydrogen industry by providing reference material and engineering services to ensure the safe implementation and deployment of hydrogen systems. It's SourceBook for Hydrogen Applications has become an essential reference on safety aspects of hydrogen systems. TISEC also publishes other reference materials on hydrogen. TISEC engineers provide engineering consultation on designs of systems, facilities and products involving hydrogen to ensure compliance with local, national and international codes and standards.

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University College of the Fraser Valley

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www.ucfv.ca

Products

Applied research in alternative energy solutions, commercialization of technology, customized training in trades & technology, new technology promotion.

Description

The University College of the Fraser Valley is the major adult educational resource for the communities of the Fraser Valley. UCFV is a comprehensive educational institution, offering bachelor's and associate degree programs, academic and applied diplomas and certificates, trades training and continuing education.

Fuel Cell technology is an important focus for our applied research in alternative energy solutions. We offer a wide array of applied research expertise in partnership with government and the business community.

Our on-site Industrial Technology advisor with the NRC IRAP program is available to assist companies in undertaking research and appraising new or existing technologies. In addition the ITA plays a key role in fostering extensive interaction between our academic and business communities.

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UCFV
UNIVERSITY COLLEGE of the FRASER VALLEY

Universal Dynamics Limited

100 - 13700 International Place
Richmond, BC V6V 2X8
www.udgroup.com

Products

Quality and productivity improvement solutions to support fuel cell related companies through engineered packages, control and production management software, hardware and technical support.

Description

Universal Dynamics' diversified team reduces "time to market" with cost effective outsourced engineering and software development services to fuel cell related companies. Universal Dynamics' proven record of success extends from plant facility power and hydrogen distribution infrastructure through testing and data acquisition/analysis software systems to custom development of automated manufacturing machinery. Our support role accelerates development by allowing key staff to concentrate on growing their core expertise as companies evolve from R&D through prototyping to manufacturing. Our hands on approach allows customers to focus on their high priority development activities and be confident that essential background services and support functions are addressed.

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University of Calgary

Dept. of Chemistry
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Calgary, AB T2N 1N4
http://www.chem.ucalgary.ca/groups/birss/research.html

Products

Development of new catalysts for fuel cell applications and overcoming degradation of fuel cell performance.

Description

The fuel cell research in the Birss group at the University of Calgary focuses on several different areas. In one branch, we are working on novel sol-gel derived methods to form thin films composed of nanometer sized metallic particles to serve as catalysts for hydrogen or methanol fuel oxidation in proton exchange membrane (PEM) fuel cells.

Another project, partly funded by Ballard Power Systems, involves the development of new low cost cathode materials, again using sol-gel processing techniques, for the reduction of oxygen in PEM fuel cells. Research is also directed towards high temperature solid oxide fuel cells (SOFCs) and is funded by NSERC, NRC, AERI and Global Thermoelectric Inc. Reliable electrochemical methods are being developed using 3-electrode techniques in order to establish the kinetics and mechanisms of the fuel oxidation and oxygen reduction reactions.

As well, a deeper understanding of the causes of the degradation of performance of SOFCs is being obtained, with emphasis on anode and cathode poisoning and thermal cycling effects, and methods are being sought to minimize these problems. Further, *in situ* FTIR spectroscopy is being employed, in collaboration with Dr. Ron Kydd's group, to establish the mechanism and identify surface intermediates during the oxidation of fuels under SOFC conditions.

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Vancouver Fuel Cell Vehicle Program

Fuel Cells Canada
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Vancouver, BC V6T 1W5

Description

The Vancouver Fuel Cell Vehicle Program (VFCVP) is putting fuel cell vehicles and hydrogen refueling systems to work in real-world applications. The VFCVP is a three year $5.8 million joint initiative between the Government of Canada, Fuel Cells Canada, Ford Motor Company, and the Government of BC.

The project will operate and evaluate four Ford Focus fuel cell vehicles in 'real world' conditions in British Columbia's Lower Mainland, and is the first demonstration of fuel cell vehicles in Canada. The Ford Focus is a third-generation hybrid-electric vehicle that uses Canadian-made Ballard Mark 902 series fuel cell engines and Dynetek 5,000 psi compressed hydrogen tanks. These cars will be among the first to drive the Hydrogen Highway™.

The VFCVP is a significant step toward establishing a sustainable, zero-emission based transportation system in Canada that will help reduce pollution and greenhouse gases. This demonstration will provide valuable information on performance, durability and reliability that can be applied toward the evolution of fuel cell vehicles to the commercial marketplace in the transition to the hydrogen economy.

This demonstration project is also helping facilitate international codes and standards development and other activities critical to preparing the market for a clean-energy future.

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Ventures West Management Inc.

Suite 280 - 1285 West Pender Street
Vancouver, BC V6E 4B1
www.ventureswest.com

Products

Ventures West provides equity capital for early stage technology companies.

Description

Ventures West has a distinguished track record of funding some of Canada's leading technology companies. In the fuel cell sector, Ventures West's was a lead investor in Ballard Power, Polyfuel, Angstrom Power, QuestAir, Cellex, Statpower (sold to Xantrex), Inverpower (sold to Satcon), and Greenlight Power (sold to Hydrogenics). Ventures West today has over $400 million under management with offices in Vancouver, Toronto and Ottawa. We continue to actively pursue early stage investments in the fuel cell sector.

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VENTURES WEST

Westport Innovations Inc.

1700 West 75th Ave.
Vancouver, BC V6P 6G2
www.westport.com

Products

Westport Innovations Inc. is the leading developer of gaseous fuel engine technologies including fuel and combustion systems incorporating injectors, compressors, pumps and electronic controls.

Description

Westport develops, manufacturers and sells a wide range of engines for commercial transportation applications such as trucks and buses through Cummins Westport Inc., its joint venture with Cummins Inc. Technology development alliances are in place with a number of other leading engine manufacturers, including Ford, MAN, Isuzu, and BMW to develop engines operating cleaner-burning fuels such as natural gas, hydrogen/natural gas blends (HCNG) and pure hydrogen. Fuel and combustion systems for these engines utilize proprietary components including injectors, compressors, pumps and electronic controls.

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Westport
INNOVATIONS INC.

Westaim Ambeon

10102 – 114th Street
Fort Saskatchewan, AB T8L 3W4
www.westaimambeon.com

Products

Thermal spray powders for abradable seals and wear resistance; conductive filler materials for EMI shielding applications; engineered honeycomb parts for abradable seals and structural components.

Description

Westaim Ambeon is a leader in composite material technologies for advanced power generation and electronic applications. A new catalyst materials group within the division is aiming to apply its capabilities in composite materials to assist in achieving the required material breakthroughs for the fuel cell industry in components like fuel reformers, membrane electrode assemblies and SOFC anodes.

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Xantrex Technology Inc.

8999 Nelson Way
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www.xantrex.com

Products

Advanced power electronic equipment including DC to AC inverters and Fuel Cell control systems. Power levels from below 1 kilowatt to over 1 megawatt for grid-connected and stand-alone applications.

Description

Xantrex develops, manufacturers, markets, and supports leading advanced power electronic and control products for the Distributed Power, Mobile Power, and Programmable Power markets. Xantrex has extensive product and project development experience in the area of power conversion and system control for Fuel Cell applications. We work with Fuel Cell OEM customers in partnership to achieve optimal system solutions for their specific applications.

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xantrex
Smart Choice for Power

Zetacon Corporation

10-7050 Telford Way
Mississauga, ON L5S 1V7
www.zetacon.com

Products

The Z2000 generic power platform enables engineering teams to quickly meet their specific power system requirements in areas such as AC inverters, battery chargers, electrolysis power supplies, etc.

Description

The high energy density Z2000 power platform, combined with the expertise of our applications engineering staff, can be configured to become any of a power converter, inverter, generator, sensor-less motor controller, etc. With rapid prototyping and quick ramp-up to volume production, the Z2000 allows our customers to take advantage of advanced high performance power technology in their end products without a large investment in in-house power electronics infrastructure while maintaining full implementation and control of any proprietary algorithms. The Z2000 can be fully configured, using only the hardware and software actually required for each application. This allows our customers to best balance cost and functionality for success in their end products.

Contact

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ZETACON
Power Technology in Control

Pictures

Front Cover (Left to Right): 1. Stuart Energy SES Fueling Station 2. GEM Neighbourhood Vehicle