

ElectroChem Inc.

A Technology Success Story

Radha Jalan, Ph.D.
President and CEO

ElectroChem Inc.

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Company History - Many “Firsts”

ElectroChem Inc.

ElectroChem has been in the field of fuel cells since 1967

1986 **ElectroChem** founded

1992 **First** to develop and sell a portable fuel cell system

1993 **First** to develop computerized test equipment

1995 **First** fuel cell company to be online :
www.fuelcell.com

2002 **First** to develop a test station for 5 independent cells testing

2005 Received **Massachusetts High Tech All Star Energy Award**

Company Perspective

ElectroChem Inc.

ElectroChem is a small-business, enabling company for fuel cell development and commercialization

Develop cutting edge technologies, as well as helping researchers by providing quality products

ElectroChem's Business Activities

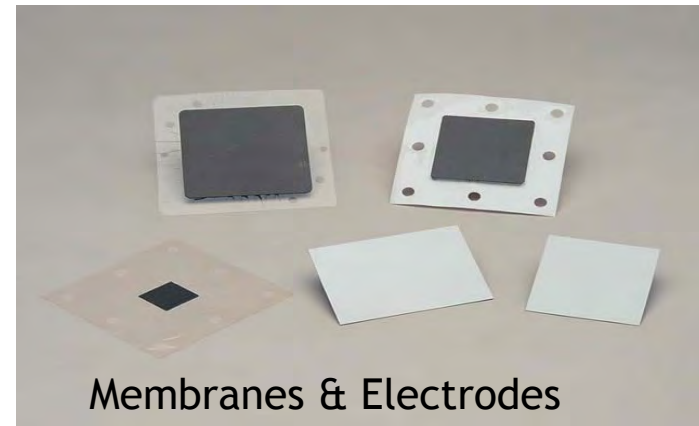
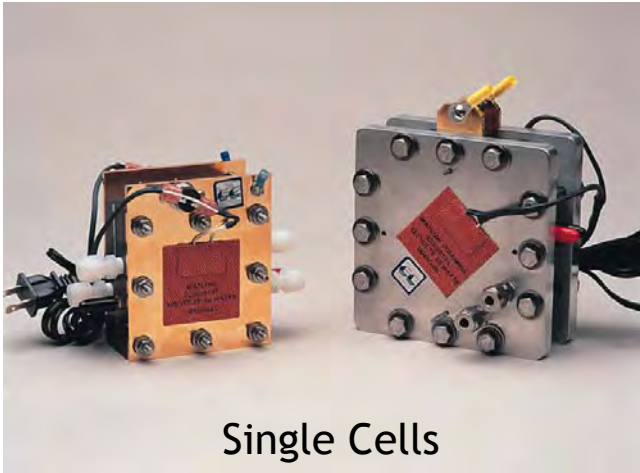
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Four General Areas:

- Products and Components for Fuel Cell Industry
- Test Equipment with State-of-the-Art Software
- ElectroChem's Research Work
- Hydrogen Generation and Fuel Cell Power Sources

ElectroChem Fuel Cell Products

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Broad Experience in Fuel Cell Design

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- Power - 1 W to 5000 W
- Size - 1cm² to 500 cm²
- Stack - 1 Cell to 86 Cells
- Fuel - H₂/O₂, H₂/Air and Methanol Compatible Stacks
- Cooling - Forced Air, Water, and Free-Convection

Over 2,000 Single Cells & Stacks Manufactured and Sold

Technical Development

ElectroChem Inc.

- Focused on developing simple solutions to create commercial product more reliable
- ECcell - an energy storage device, developed for providing reliable power and in many markets
- HHR - Home Hydrogen Refueling system

ElectroChem's Customers In Contract R&D

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MTO

MEMS



ElectroChem's Global Customers

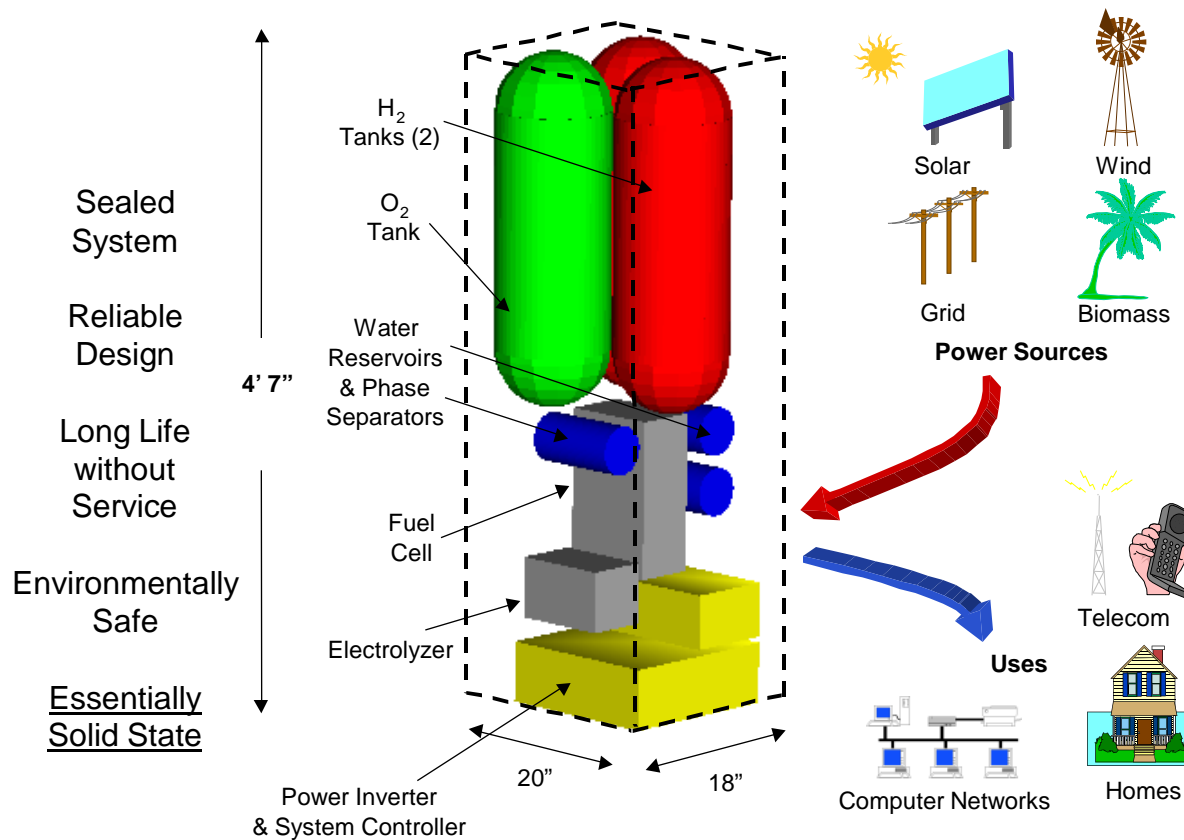
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ECcell™ - A Fuel Cell & Electrolyzer Energy Storage System

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ElectroChem's ECcell™ Power System



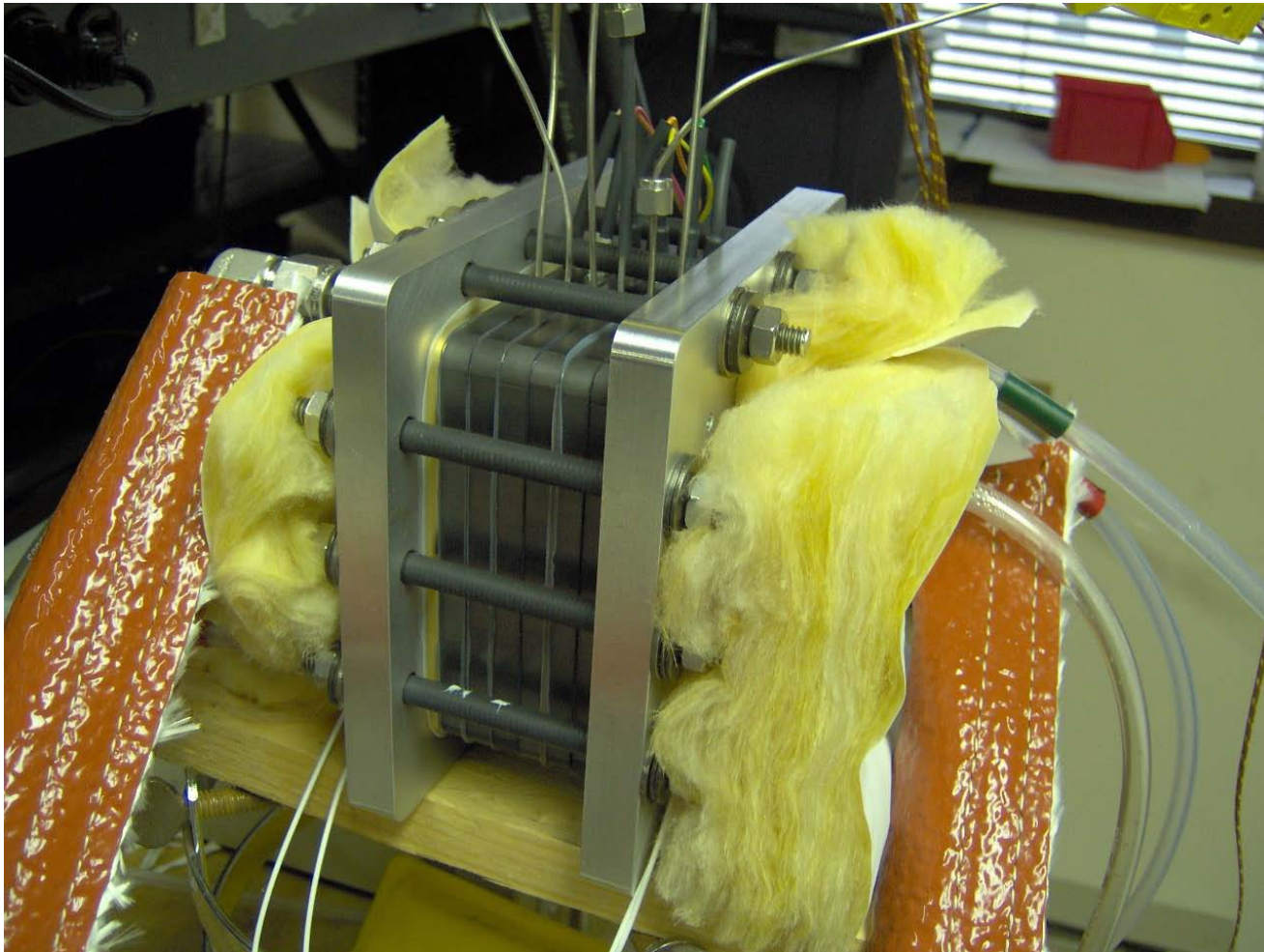
Integrated Flow Field (IFF) Fuel Cell - Benefits from Success

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- 100% Reactant Gas Utilization
 - Reducing the cost and weight penalty
 - System Simplification - Higher Reliability

Successful Testing of Passive Fuel Cell Stack

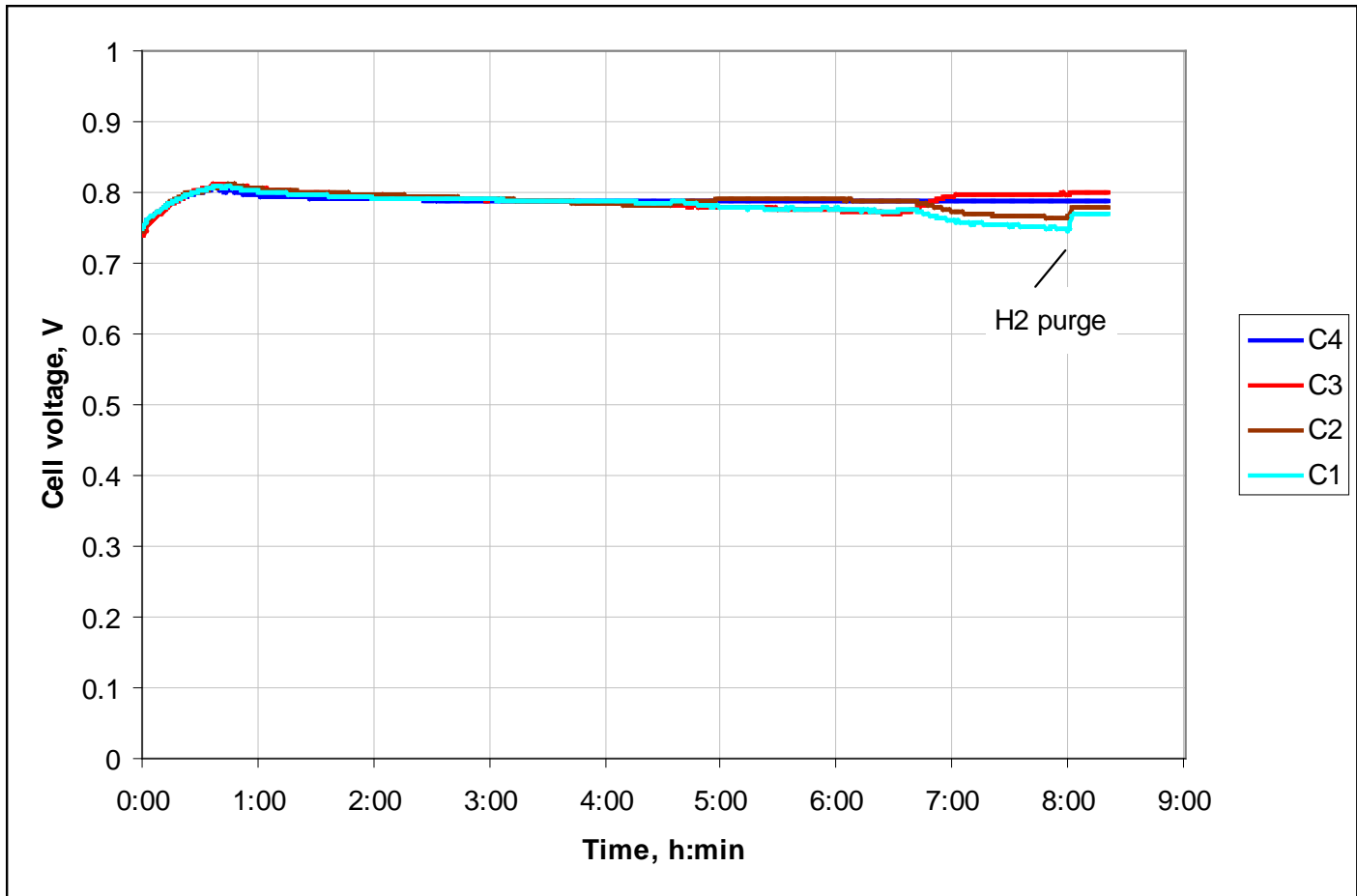
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H₂ and O₂ Passive Stack Performance

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(65 degrees C, 30 psig)



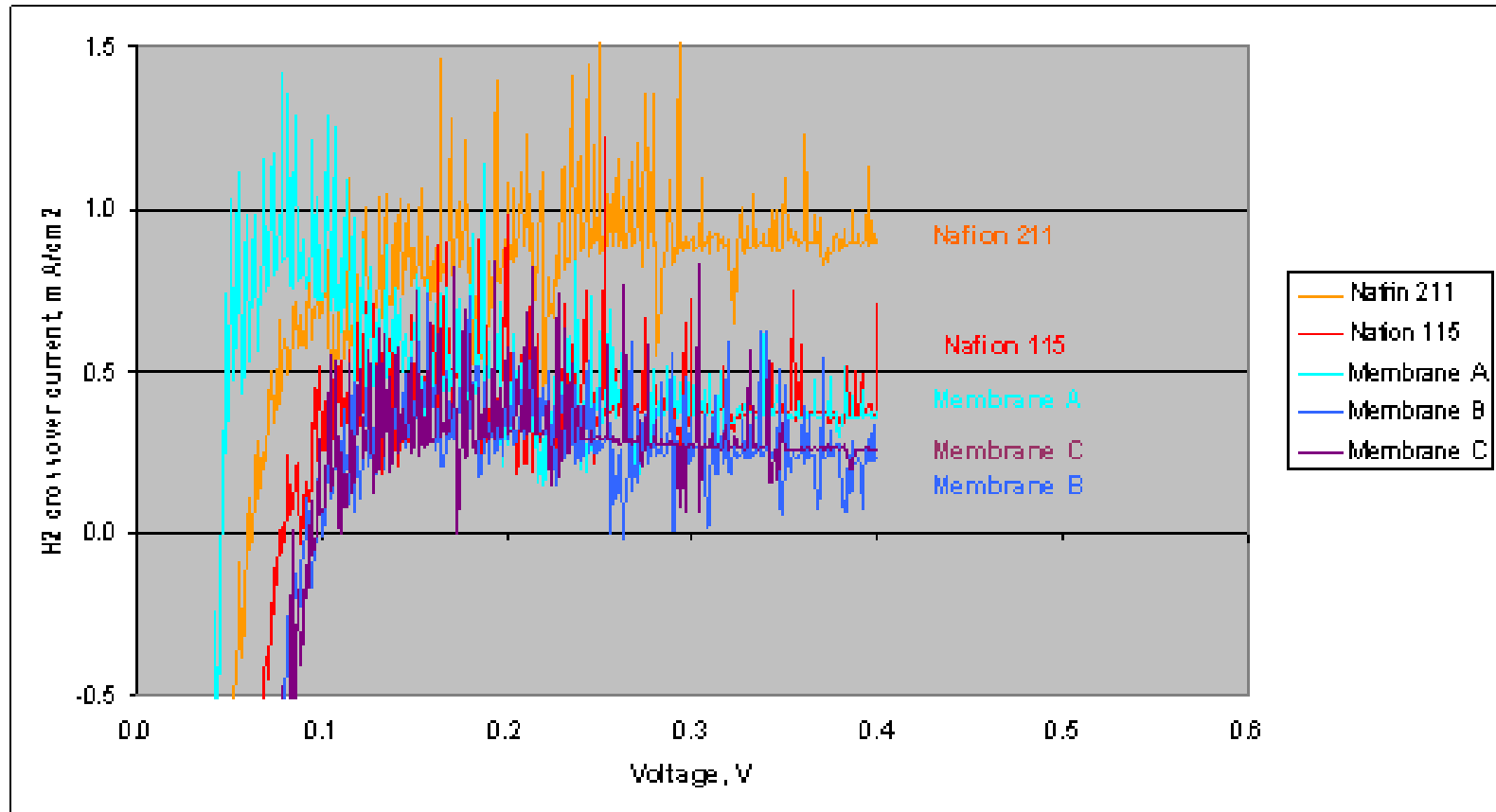
The Need for Cost and Weight Reduction - Technology Advancement

Developed advanced NanoComposite Polymer Electrolyte Membranes to reduce hydrogen crossover losses in PEM electrolyzers for high pressure operation

- Reduced 50% of the hydrogen crossover rate
- Maintained good proton conductivity of the composite membranes

Reducing Hydrogen Crossover of Nanocomposite Membranes

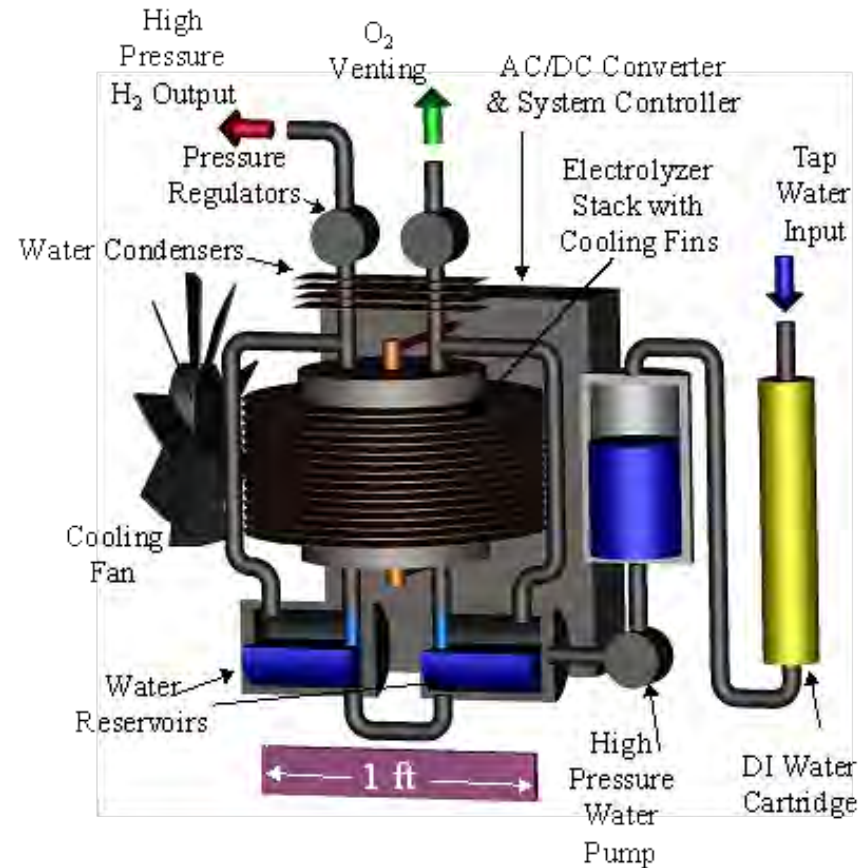
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The Need for Technologies in a New Market

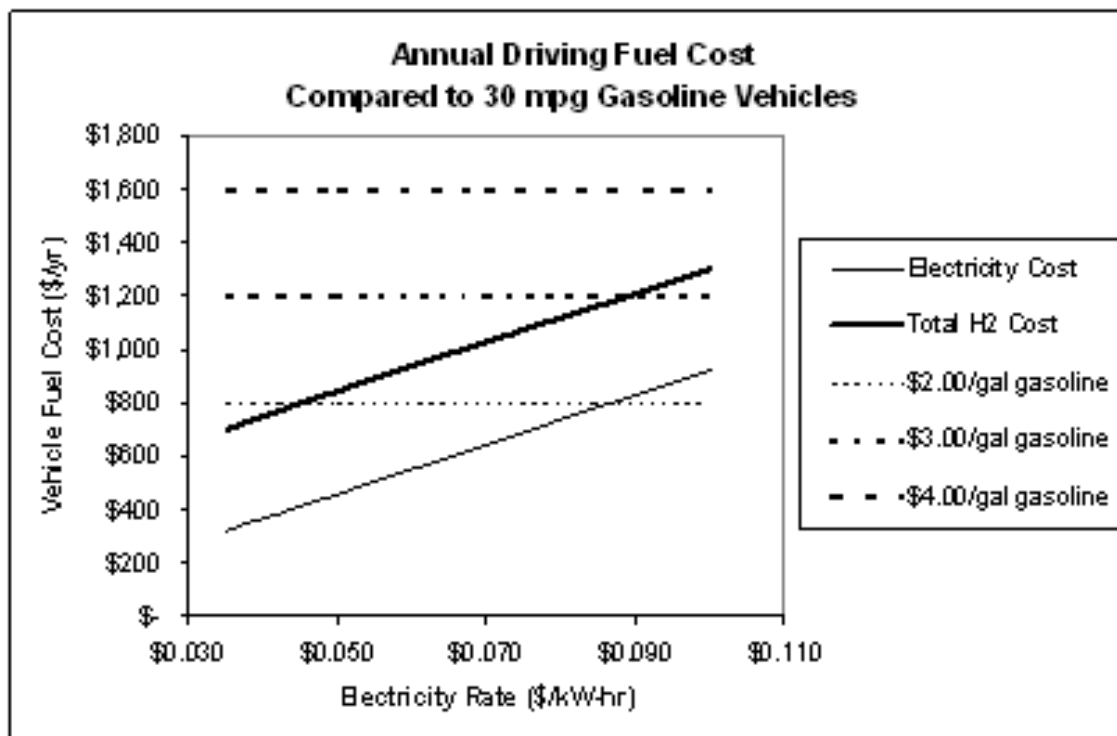
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EPRI-funded
development of a
highly efficient,
low cost Home
Hydrogen
Refueler (HHR)



HHR - Competitive Cost Structure

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The true cost comparison for the typical vehicle owner is his annual fuel costs, which the HHR makes significantly lower under most pricing scenarios. Annual costs are compared with a gasoline vehicle having a mileage of 30 mpg.

ElectroChem Needs

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- Strategic relationships
- System integration and integrators
- Additional funding for prototype development (HHR, ECcell energy storage)
- Continue developing new products for other researchers
 - catalyst coated membrane (CCM)
 - microporous carbon layer (MPL)
 - electrolyzer MEA

Contact Information

ElectroChem Inc.

Radha Jalan, Ph.D.
President and CEO
ElectroChem, Inc.

Ph: 1.781.938.5300

Fx: 1.781.935.6966

rjalan@fuelcell.com