

THE FUEL CELL CORRIDOR™

Global Center of the Fuel Cell Industry

Top 5 Fuel Cell States: Why Local Policies Mean Green Growth

Jun 21st, 2011



Discussion Areas

- **Ohio Fuel Cell Initiative**
- **Ohio Fuel Cell Coalition**
- **Accomplishments**
- **Ohio Successes**

Ohio's Fuel Cell Initiative

- Announced on 5/9/02
- Part of Ohio Third Frontier Initiative
- \$85 million investment to date
- Core focus areas:
 - 1) Expand the state's research capabilities;
 - 2) Participate in demonstration projects; and
 - 3) Expand the fuel cell industry in Ohio

OHIO'S FUEL CELL INITIATIVE

Strategy

- Supply Chain
- R&D Strengths
- Work Force
- Fuel Cell Roadmap
- Cache

Public Support

- Third Frontier
- Advanced Manufacturing Programs
- Federal Programs
- Economic Development Programs
- Company Attraction
- Point Person

- Ohio Fuel Cell Coalition
- **Ohio Congressional Delegation**
- **Ohio Administrative and
Legislative Support**

Recent Investments

Ohio Third Frontier Fuel Cell Winners - 2010

- Energy Technologies – \$1,000,000
- Lockheed Martin MS2 - \$1,000,000
- NexTech Materials - \$1,490,000
- Rolls-Royce Fuel Cell Systems - \$999,770

Recent Investments

Ohio Third Frontier Fuel Cell Winners - 2011

- American Trim – \$994,263
- Battelle Memorial Institute - \$1,000,000
- Lockheed Martin MS2 - \$1,000,000
- Rolls-Royce Fuel Cell Systems - \$999,875

Ohio Fuel Cell Coalition

- **Mission**

- The Ohio Fuel Cell Coalition is a united group of industry, academic, and government leaders working collectively to strengthen Ohio's fuel cell industry and to accelerate the transformation of industry to **global leadership in fuel cell technology and applications**

- **Activities**

- Networking and Collaboration
- Education
- Marketing and Communications
- Advocacy

Ohio Fuel Cell Coalition

- More than 80 members consisting of companies, universities, government entities, and non-profits/other
 - 21 member board representing all stakeholders
- Annual Ohio Fuel Cell Symposium
 - Networking, exhibitors, technical posters
 - Over 200 attendees each year
- www.fuelcellcorridor.com
 - Member and industry news
 - Advocacy, information sources

Ohio is competitively advantaged to participate in the fuel cell/hydrogen economy growth, and developing this industry is critical to Ohio interests:

- Builds on Ohio's manufacturing infrastructure and can help reverse the decline in manufacturing jobs
- Returns Ohio as the driver in a critical segment of industry, and acts as economic lever for additional technology development
- Creates high skill/high income jobs

Ohio Competitive Advantages - - support for industry growth

- **Technical support**
 - University R&D/collaboration
 - Research entities –OSU, Battelle, Case
 - Federal labs– NASA GRC, Air Force Research Lab
 - Community and Technical Colleges, Hocking College Advanced Energy Institute, Stark State College,
 - Industrial manufacturing and advanced materials expertise
- **Business support**
 - EMTEC, EWI, Team NEO, TechColumbus, ODOD, NorTech
 - Ohio Fuel Cell Coalition
- **Financial support**
 - Third Frontier Fuel Cell initiative
 - Strategic and supply chain partners
- **Central logistics and manufacturing location**
 - Within 500 miles of 60% of US markets
 - Proximity to auto manufacturers; access to entire state manufacturing sector



Ohio Named One of the Five Fuel Cell States in the Country

- **Ohio is one of the top five fuel cell states two years in a row**, according to the latest report published in June 2011 by Fuel Cells 2000, a nonprofit outreach organization. The report, titled "State of the States: Fuel Cells in America" outlines Ohio's aggressive and innovative focus on business attraction and business development as well as the state's strategies for building its fuel cell supply chain and world-class manufacturing base as reasons for the top ranking.

FUEL CELL APPLICATIONS

Stationary (Power Generation)

- Sierra Nevada Brewery Installed 1.2 MW **Fuel Cell Energy** fuel cells, for electricity & heating at its plant
Saving **\$400,000/yr** in electricity costs
- Coca Cola Installed **UTC** fuel cells at its bottling facility (to provide **35%** of all its electricity)
Eliminating **2,635 tons of CO₂** , **4 tons of NO₂**
- Adobe Systems Installed 1.2 MW **UTC** fuel cells to power its computer servers
- FirstEnergy Installed 1 MW **Ballard** fuel cell Eastlake, Ohio
- Rolls Royce 1-2 MW SOFC Fuel Cell

Military applications

- TMI/Lockheed Martin Gen Sets
- Battelle Gen Sets
- ETI Gen Sets

Transportation

- Automobiles (eg: **Honda-Clarity**, **GM-Equinox**, **Toyota**, **Hyundai**, **Mercedes** ...All in 2015)
- Buses (**UTC**)
- Fork Lifts (**Crown**)

OHIO'S TOP SUCCESSES

- Crown Equipment (New Bremen)
- American Trim (Lima)
- Energy Technologies Inc. (Mansfield)
- Honda (Marysville)

- TMI (Cleveland)
- Rolls Royce (North Canton)
- NASA Glenn (Cleveland)
- Stark State College (North Canton)
- Wellman Products/UTC (Medina)
- Lockheed Martin (Akron)
- GrafTech International (Parma)
- Ballard/First Energy (Eastlake)

- Battelle (Columbus)
- NexTech Materials (Lewis Center)
- Hocking College Advanced Energy Institute (Logan)

Ohio's Fuel Cell Industry



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