
U.S. Department of Energy Hydrogen Program

Manufacturing R&D and Market Transformation

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Merit Review and Peer Evaluation Meeting**

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Manufacturing R&D

Goal and Objectives

GOAL: Develop and demonstrate technologies and processes that will:

- **Reduce cost of components and systems for fuel cells, storage, and hydrogen production**
- **Grow domestic supplier base**

- Lower fuel cell manufacturing cost
 - \$30/kW Mobile
 - \$750/kW Stationary
- Reduce cost of carbon composite high pressure storage tanks
 - \$2/kW hr

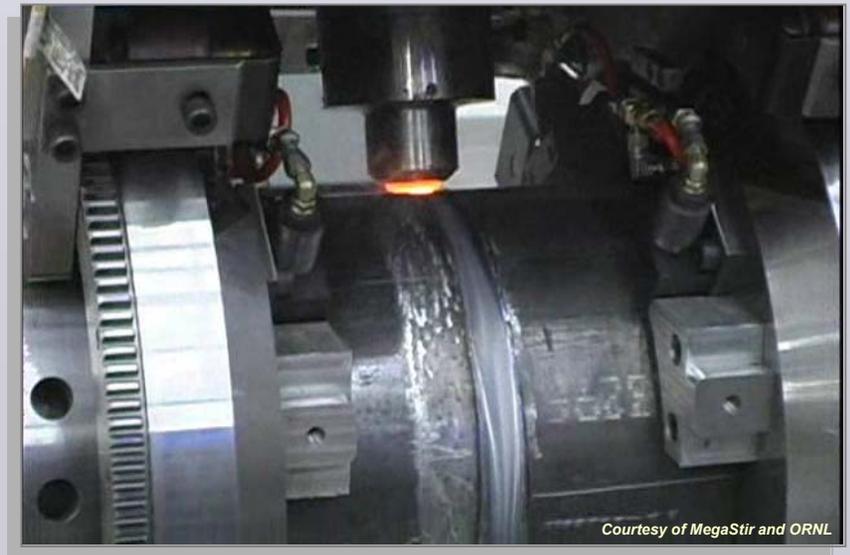




Manufacturing R&D Challenges

Challenges

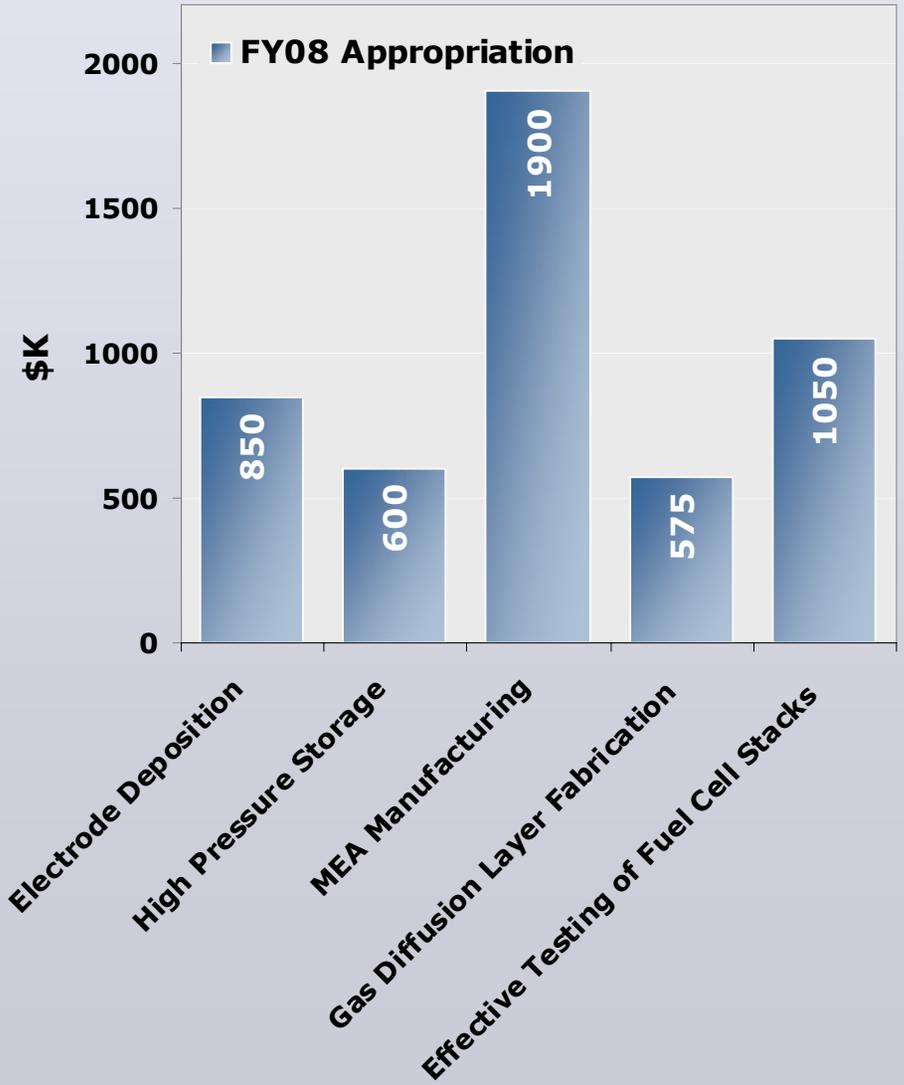
- Scaling up laboratory fabrication methods to low-cost, high-volume production
- Developing manufacturing processes that minimize total life cycle energy requirements and environmental effects
- Assisting in establishment of a domestic supplier network





Manufacturing R&D Budget

FY2008 Budget = \$4,900K



- ### Manufacturing Solicitation Awards
- Selected in March —
- Projects will focus on:**
- Novel fabrication methods for MEAs (*General Motors*)
 - Low cost GDL manufacturing (*Ballard Power Systems*)
 - MEA and stack assembly processes (*Rensselaer Polytechnic Institute, W. L. Gore & Associates*)
 - Reduce costs for stack conditioning and leak testing (*UltraCell*)
 - Lower costs for processed to make high pressure carbon composite tanks (*Quantum Technologies*)



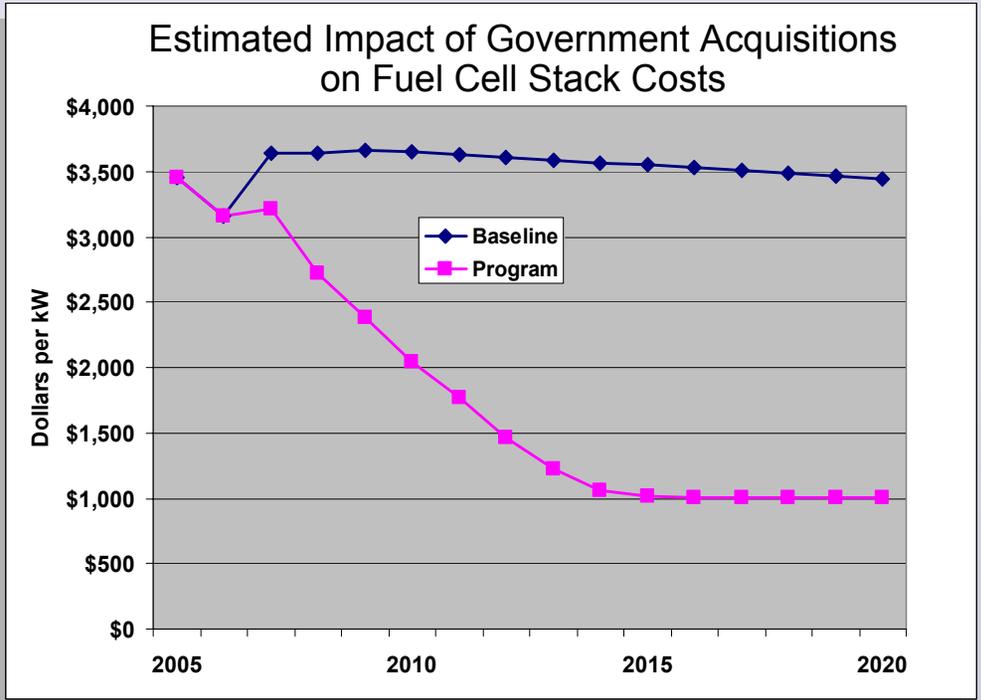
Market Transformation



Market Transformation Goal and Objectives

GOAL: Eliminate non-technical barriers to facilitate the commercialization of hydrogen and fuel cell technologies

- Assist Federal agencies in promoting fuel cell use across the U.S. government to meet the requirements of:
 - EPACK 2005 Sec. 782 and 783
 - Executive Order 13423
- Increase volume of fuel cells to achieve economies of scale
- Support national infrastructure and domestic supplier base development
- Improve user confidence in fuel cell reliability by collecting operations data



Source: David Greene, ORNL; K.G. Duleep, Energy and Environmental Analysis, Inc.



Market Transformation 2008 Progress & Future Plans

On-going Projects

- **Defense Logistics Agency:** 90+ fuel cell forklifts at 4 sites
- **Federal Aviation Administration:** Backup power for communications towers at 20–30 sites
- **US Postal Service:** 3 fuel cell vehicles for mail delivery in New York, California, and Washington, D.C.

New Projects

- **DOE:** Fuel cell data center at Germantown facility
- **National Science Foundation:** Water electrolyzer for use in Antarctica
- **National Park Service:**
 - Hydrogen ICE bus for VIP tours of downtown Washington, D.C.
 - Hydrogen ICE buses at Hawaii Volcanoes National Park
 - Yellowstone National Park high visibility fuel cell demonstration
- **US Air Force:** Hydrogen ICE bus at Hickam Air Force Base, Hawaii



Photo courtesy of ReliOn



Photo courtesy of Hydrogenics



For More Information

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