# V.G.1 International Stationary Fuel Cell Demonstration

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Subcontractor: E-Tek, Somerset, NJ

Project Start Date: May 1, 2007 Project End Date: April 30, 2009

## **Objectives**

- Achieve projected total system cost of < \$750/kW in production volumes.
- Increase electrical efficiency to 35% with improvements identified to achieve 40% - and overall system efficiency of 85%.
- Achieve system durability of 40,000 hours.
- Develop modular and scaleable system design concepts.
- Develop combined heat and power (CHP) hydraulics concepts.

#### **Technical Barriers**

This project addresses the following technical barriers from the Fuel Cells section of the Hydrogen, Fuel Cells and Infrastructure Technologies Program Multi-Year Research, Development and Demonstration Plan:

- (A) Durability
- (B) Cost
- (C) Performance

## **Technical Targets**

This project is directed at using high-temperature proton exchange membrane (PEM) fuel cell membrane technology (polybenzimidazole) in an integrated, stationary fuel cell application, operating on reformate to meet the DOE 2011 targets for fuel cells.

This project is not yet started so the current 2007 status is "to be determined (TBD)".

TABLE 1. Progress Towards Meeting Technical Targets for Fuel Cells

Characteristic	Units	2011	Project 2007 Status
Electrical energy efficiency @ rated power	%	40	TBD
Combined Heat and Power (CHP) energy efficiency @ rated power	%	80	TBD
Cost	\$ / kW <sub>e</sub>	750	TBD
Durability @ <10% rated power degradation	Hours	40,000	TBD
Noise	dB(A)	<55 @ 10 m	TBD

### **Approach**

Our approach to developing a fuel cell system capable of meeting the DOE technical targets is to identify the best application, assemble and leverage the expertise of an international consortium of technology partners, design, build, test, and operate three systems for six months.

Plug Power will act as the lead for the DOE portion of the program and Vaillant will act as the lead for the European Union (EU) (see Figure 1).

#### **Accomplishments**

This project has not yet started.

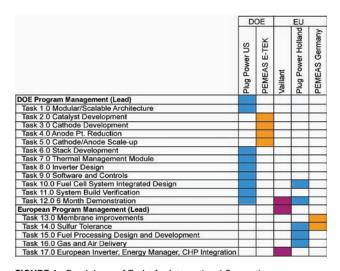


FIGURE 1. Breakdown of Tasks for International Consortium