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The Commercialization of PEM Fuel Cells At International Fuel Cells

195 Governor's Highway
South Windsor, CT 06074

Murdo J. Smith
860-727-2269 smithmu@ifc.utc.com

In January 1998, International Fuel Cells (IFC) initiated a highly aggressive program to commercialize PEM fuel cell power plants. The program is initially focused on the development and demonstration of a fully-integrated, 50 kW gasoline fueled power plant for transportation applications. Presently, IFC has arrangements with several automobile manufactures to deliver major power plant subsystems and complete power plants over the next 12 months. Also, as part of the overall verification test process, IFC will deliver to the U.S. Department of Energy a 50 kW equivalent gasoline fuel processing unit and a 50 kW power plant for evaluation testing at their Argonne National Laboratory.

This initial effort, although presently aimed at transportation, forms the basis of IFC's overall strategy to commercialize PEM fuel cell power plants for a broad base of applications including on-site power generation as well as small-scale portable systems.

Figure 1 provides a schematic of the transportation fuel cell power plant. The power plant operates at ambient pressure. The major subsystems include the gasoline Fuel Processing System, the Power Subsystem and the Balance of Plant. The Balance of Plant includes the Thermal Management Subsystem, the Air and Water Subsystems and the Controller and associated electrical equipment. Although focused on gasoline operation, the fuel processing system will utilize fuel flexible reforming technology that can be modified to accommodate fuels such as methanol, ethanol and natural gas.

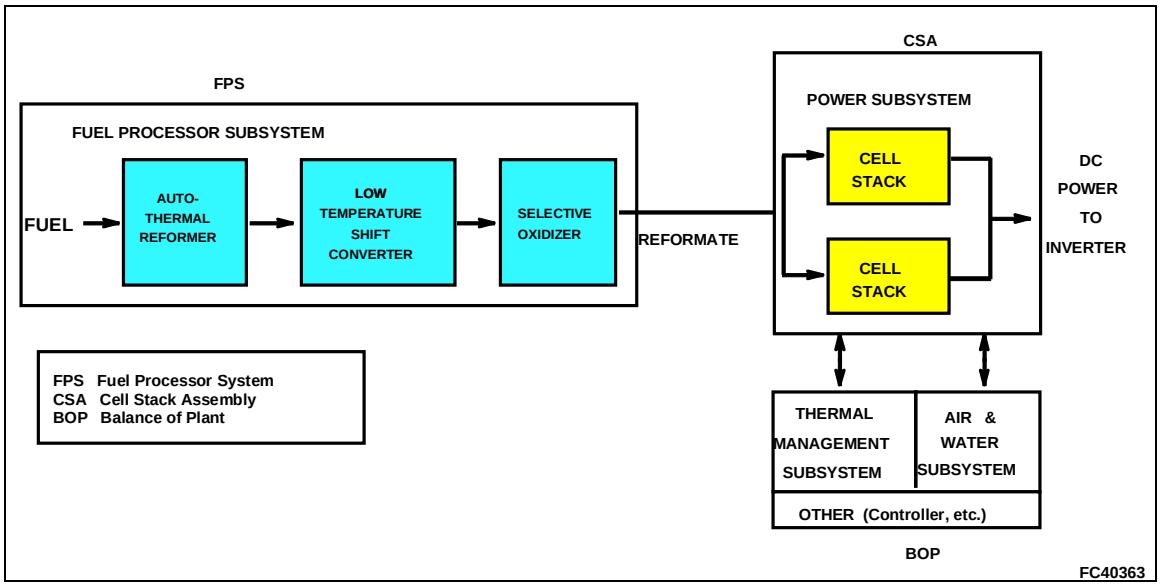

Figure 1. *– Power Plant Schematic*

The 50 kW Power Subsystem is comprised of two 25 kW PEM ambient pressure Cell Stack Assemblies (CSA).

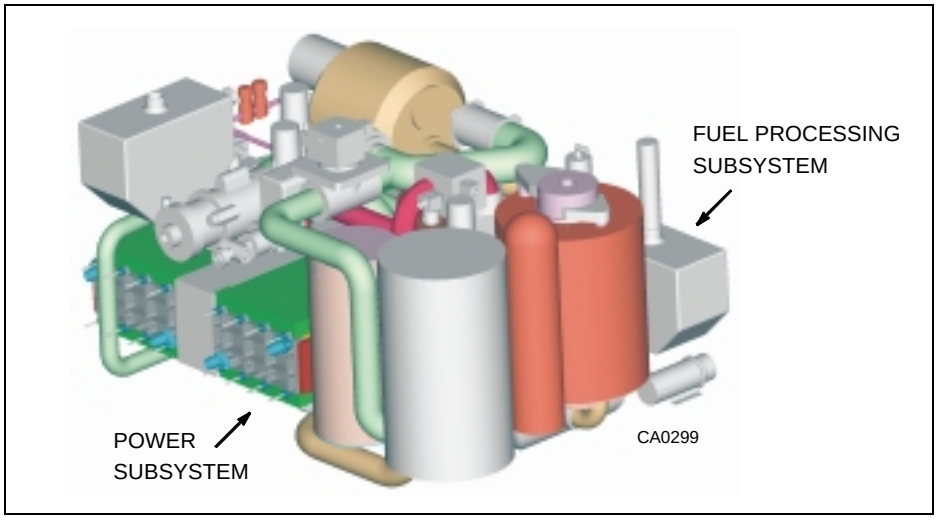

Figure 2. *– Conceptual 50 kW PEM Power Plant*

Figure 2 is a conceptual drawing of the fully integrated 50 kW power plant. As shown, the major gasoline processing system components are close-coupled on the right hand side of the picture. The power subsystem, along with the thermal management and air supply systems are shown on the left-hand side.

This presentation will discuss the status of this program.