IV.J.8 Solid Oxide Fuel Cell System Development for Auxiliary Power in Heavy-Duty Vehicle Applications (New Project)

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Subcontractors:
Volvo Trucks North America
PACCAR
Electricore, Inc.

Objectives

- Design and develop a solid oxide fuel cell (SOFC) auxiliary power unit (APU) system that will increase fuel efficiency and overall system efficiency of Class 8 long haul trucks.
- System and subsystem shock and vibration limits will be studied and recommendations made in the final report, which will address methods of isolation of the APU system to these parameters.

Technical Barriers

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

- D. Fuel Cell Power System Benchmarking

Approach

Delphi Automotive Systems, LLC (Delphi) has teamed with heavy-duty truck original equipment manufacturers (OEMs) PACCAR Incorporated (PACCAR) and Volvo Trucks North America (VTNA) to define system-level requirements and develop an SOFC-based APU. The Delphi team bas enlisted Electricore, Inc. to serve as administrative manager for the project.

The proposed project will first define system-level requirements, then will design and implement an optimized system architecture for an SOFC APU. The APU will be operated to demonstrate and validate that the APU meets system-level goals. The primary focus will be on APUs in the range of 3-5 kW average/5-10 kW peak for truck idling reduction. Fuels utilized will be derived from either propane or low-sulfur diesel fuel, depending on the application. The targeted and expected costs for the SOFC APU are $l,500/kW in 2006 and $400/kW in 2010.