FuelCell Energy
World Leader in Ultra-Clean Power

Versa Power Systems

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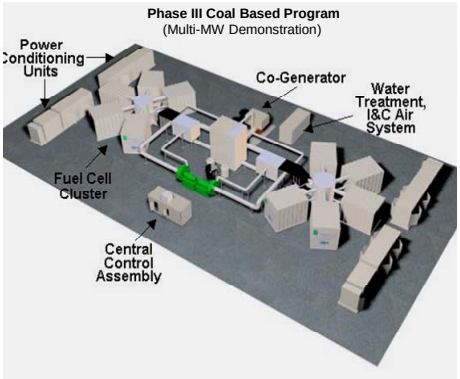
Dan Brdar
President and
Chief Executive Officer

Christopher R. Bentley
Executive Vice President
Gov't Operations
Strategic Mfg Dev

Bruce Ludemann
Senior Vice President,
Sales & Marketing

Joseph G. Mahler
Senior Vice President,
Treasurer, Corp Strategy

Jody Doyon
Program Manager
Vice President, Government Programs



Phase III SECA Coal-Based program deliverable will be to build and test a large scale, multi-MW SOFC/Hybrid power plant on Coal Syngas at a FutureGen site or other SECA site.

SECA COAL-BASED, MULTI-MW SOFC DEVELOPMENT

PROJECT PARTICIPANTS

FuelCell Energy, Inc. – Danbury, CT (Prime)
Versa Power Systems, Inc. – Golden, CO
Versa Power Systems, Ltd. – Calgary, CAN.
Gas Technology Institute - Des Plaines, IL
Worley Parsons, Inc – Reading, PA
Nexant, Inc – San Francisco, CA
SatCon Power Systems Inc. - Burlington, ON, CAN.

PROJECT DESCRIPTION

A. Objective – The overall objective of this three-phase program is to develop a cost-competitive, highly efficient, multi-MW solid oxide fuel cell (SOFC) power system using coal-derived synthesis gas with near zero emissions.

B. Relevancy – The Coal–Based SOFC power plant development project will focus on SOFC cell and stack size scale-up and optimization, stack manufacturing capacity development and MW class module engineering design and development. Power plant engineering and designs will be conducted for proof-of concept (POC) 10-15MW and baseline multi-MW (>100MWe) power plants to operate efficiently on coal syngas with near zero emissions. Power block and balance of plant cost reduction, performance enhancement and efficiency improvements will be required to achieve the program cost objectives. POC power plant demonstration will be conducted at FutureGen or other suitable SECA selected site. Successful development will provide low-cost, highly efficient multi-MW SOFC power plants that operate on coal syngas with near zero emissions to help reduce the nation's dependence on foreign fuel sources.

C. Project Summary –The program is organized in three phases according to schedule and technical objectives.

- Phase I of the program will focus on cell and stack development. This will include scale-up existing SOFC cell area and stack size (number of cells) and performance improvements. Preliminary engineering design and analysis for multi-MW power plant systems will also be conducted. The Phase I deliverable will be test demonstration of a SOFC stack building block unit that is representative of a MW class module on simulated coal syngas.
- Upon successful completion of Phase I and notice by DOE to continue, Phase II of the program will focus on modularization of the Phase I stack building block units into a MW-size module. Detailed design engineering and analysis for multi-MW power plant systems will also be conducted. The Phase II deliverable will be test demonstration of a MW-size representative SOFC stack module on simulated coal syngas.
- Upon successful completion of Phase II and notice by DOE to continue, Phase III of the program will focus on design and fabrication of a proof-of-concept multi-MW power plant including turbine for high efficiency and CO_2 separation for low emissions. The Phase III deliverable will be long-term testing of a multi-MW size power plant at FutureGen or other suitable SECA selected site.

D. Period of Performance – 10/01/06 – 9/30/2015