



Technology Focus Area

SOLID OXIDE FUEL CELL DEVELOPMENT

FuelCell Energy, Inc. (FCE) has been pursuing development of high temperature fuel cells for over 30 years and is engaged in commercial deployment of its DFC™ products for distributed generation in the sub-MW to multi-MW size range based on its carbonate fuel cell technology. Under contract with the United States Department of Energy (DOE), FCE is also engaged in solid oxide fuel cell (SOFC) power plant development with operating temperatures between 700°C and 1000°C, as a future product option that will enhance FCE's high temperature fuel cell product portfolio.

Working through a cooperative agreement with the National Energy Technology Laboratory (NETL), FCE aims to develop a cost competitive, multi-MW coal-based Solid Oxide Fuel Cell (SOFC) Power Plant with near zero emissions. The objectives of this initiative include developing a MW class SOFC power unit and balance-of-plant system that operates on coal-based synthesis gas while sequestering over 90% of exhaust carbon dioxide. The program also seeks to optimize plant design and develop advanced SOFC technologies for higher efficiencies and reduced costs.

FCE uses SOFC cell and stack design provided by their technology partner, Versa Power Systems Inc (VPS) for all its SOFC programs. Other members of FCE's Coal-Based program team include the Gas Technology Institute (GTI), Pacific Northwest National Laboratory (PNNL), WorleyParsons Group, Inc., SatCon Power Systems, Inc., and Nexant, Inc.

The collaborative Solid State Energy Conversion Alliance (SECA) program was established to promote the development of environmentally friendly, cost competitive SOFC technology for a variety of energy needs, including, coal-fueled large central power generation stations. This project will prove that efficient and environmentally friendly fuel cell technology is the best way to reduce emissions from future coal fired central generation power plants. FuelCell Energy is applying its experience in coal gas systems, fuel cell hybrid power plants, and design and operation of megawatt-class fuel cell systems to advance the SECA objectives.

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