

GE Energy receives DOE contract to develop hybrid power system

US-based GE Energy has been selected by the Department of Energy to develop a highly efficient, multi-MWe, hybrid power system based on a solid oxide fuel cell operating on coal. Under the 10-year, three-phase, \$83m DOE agreement, GE Hybrid Power Generation Systems will design and demonstrate an integrated gasification fuel cell (IGFC) system that incorporates a hybrid SOFC/gas turbine as the primary power generation unit.

The program has three primary objectives:

- Develop a design for a 100 MWe IGFC power plant.
- Design and demonstrate a proof-of-concept (POC) system.
- Resolve obstacles associated with the development of SOFCs, and develop and demonstrate an SOFC building block stack for multi-MWe system applications.

Another key objective is to achieve greater than 50% total system efficiency from coal; a typical conventional pulverized coal-fired power plant operates at about 35% efficiency.

Phase I of the development program, a three-year effort scheduled to begin this October, will focus on system design of the IGFC power plant, IGFC and POC system cost analyses, and SOFC technology advancement. Phase II will further advance the design of the IGFC and POC systems, and will extend through 2010. Phase III, beginning in the fifth year of the program, will culminate in the demonstration of the POC system at an integrated gasification combined cycle (IGCC) power plant.

The development team also includes GE Energy units in Greenville and Schenectady, the GE Global Research Center in Niskayuna, the University of South Carolina in Columbia, and Pacific Northwest National Laboratory.

The latest fuel cell technology program continues GE's ongoing fuel cell development work with the DOE. Since 2001, GE has been part of the DOE's three-phase Solid State Energy Conversion Alliance (SECA) program, and is nearing the successful conclusion of Phase I with the demonstration of a 5 kWe SOFC prototype (*see also page 7*).

Contact: GE Hybrid Power Generation Systems, Torrance, California, USA. Tel: +1 310 538 7200, www.gepower.com/research/seca/sofc_research.htm

Ballard fuel cells for General Hydrogen, Cellex forklift trucks

In Canada, Ballard Power Systems has signed an equipment supply agreement to deliver 27 of its 4.8 kWe Mk 902 fuel cells to fellow BC-based firm Cellex Power Products. The fuel cells will be integrated into the latter's power units for its upcoming beta trials in electric lift trucks used in high-throughput distribution centers [*FCB, September*]. Ballard has also signed a supply agreement with nearby General Hydrogen to deliver more than 100 Mark 9 SSL™ fuel cells, ranging in power output from 4.8 to 21.1 kWe, for integration into the latter's power units, currently available for early commercial sales in the lift truck market.

Ballard expected to begin delivering the Cellex units in the third quarter; the agreement expires in Q3 next year. If the beta field trials are successful, Ballard and Cellex intend to negotiate a follow-on supply agreement to support higher volumes in 2007 and beyond.

The deliveries to General Hydrogen are expected to begin in the fourth quarter of 2005, with the supply agreement running through next year's fourth quarter. Following anticipated commercial sales in 2006, Ballard and General Hydrogen have the option to negotiate a follow-on supply agreement to support higher volumes in 2007 and beyond.

The two orders follow the award earlier this year of funding from Technology Partnerships Canada for Cellex and General Hydrogen to develop hydrogen PEM fuel cell technology for lift trucks and industrial vehicles [*FCB, July*].

Contact: Ballard Power Systems Inc, Burnaby, BC, Canada. Tel: +1 604 454 0900, www.ballard.com

Or contact: Cellex Power Products Inc, Richmond, BC, Canada. Tel: +1 604 270 4300, www.cellexpower.com

Or contact: General Hydrogen (Canada) Corporation, Richmond, BC, Canada. Tel: +1 604 303 0050, www.generalhydrogen.com

Siemens restarts SOFC cogen system in Italy

The Pennsylvania-based Stationary Fuel Cells division of Siemens Power Generation has successfully restarted its CHP100, a 100 kWe SOFC cogeneration system, in Turin, Italy. The system is

IN BRIEF

Proposed fuel cell test meets local opposition

A proposal backed by the US Environmental Protection Agency and the Department of Energy to test an experimental SOFC close to the small community of Rimini in Montana has met with opposition from some local residents.

The plan calls for a 3.5 kWe SOFC operating on reformed methanol to be housed, along with 2000 gallons of methanol, in a building within 500 yards of housing. The 'refrigerator-sized' fuel cell, of unknown provenance, was to have powered pumping and filtration equipment as part of a major EPA-led operation to clean up abandoned mines. The operation would have provided an opportunity for project contractor MSE Technology Applications, the EPA and DOE to test the reliability and efficiency of the experimental fuel cell in a real-world 'remote' application and, in particular, to assess the effects of high elevation and cold temperatures.

However, the fact that the fuel cell has not previously been tested outside the lab has provoked protests from some residents concerned over unknown hazard levels and the proximity of the test site to housing, and angered at being used as 'guinea pigs'. They have called for a halt to proceedings until further information has been provided, and point out that the filtration system could instead be connected to the local electricity supply. An MSE spokesman promised to meet with residents to discuss their concerns, and said that the proposed fuel cell installation would not go ahead without their full backing.

Report updates details of power generation installations worldwide

Fuel Cells 2000 has released a comprehensive update to its free online Worldwide Fuel Cell Installations chart, with details of more than 2000 fuel cells providing on-site or backup power in some 26 countries at locations ranging from breweries to military bases and hotels.

The additions expand the chart to 65 pages, including a significant number of new European and Asian listings. The data include fuel cell manufacturer, location, fuel cell size, fuel type, operating information and pictures, where available. Additions or corrections will be welcomed.

Fuel cells have proved to be a viable technology for stationary and backup applications but, despite this, power generation systems tend to be overlooked in favor of transport applications, according to Jennifer Gangi, program director at Fuel Cells 2000. 'We hope that our examination of fuel cells in the real world will help policymakers, the public and potential customers gain a better appreciation of the versatility and advantages of fuel cells,' she says.

Contact: Jennifer Gangi, Fuel Cells 2000, Washington, DC, USA. Tel: +1 202 785 4222, Email: jennifer@fuelcells.org, www.fuelcells.org/info/charts/FCInstallationChart.pdf