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Dantherm AS and HTceramix SA announce successful integration of a Solid Oxide Fuel Cell (SOFC) stack into system producing net electricity and hot water

Proof of concept SOFC system successfully tested

Hannover, Germany, April 15, 2005 – Dantherm A/S, an established manufacturer of heat management systems traditionally serving its customers with innovative and customized solutions, and HTceramix SA (HTc), a leading company in SOFC stack commercialization, announced that they have concluded a partnership in 2004 for the development of complete SOFC systems. The technical collaboration has succeeded in the integration of an HTc stack into a Dantherm thermal management system, producing net electricity, hot water and air in stable conditions.

Solid oxide fuel cell systems are a promising technology for solving critical energy and environmental problems. Unlike polymer electrolyte fuel cells (PEM), SOFC systems operate at high temperature and use hydrogen and carbon monoxide as fuel. With simple reforming, they efficiently convert carbon based fuels such as natural gas and diesel into electricity and heat. They are ideally suited to provide residential homes with electricity and heat. Other applications include field available power and auxiliary power units for automobiles.

The prototype system demonstrated by Dantherm and HTc runs on a fuel mixture comparable to partial oxidation reformate. The system was operating under thermally autonomous conditions. The prototype system includes the thermal management, hot water and hot exhaust recuperators and an HTc stack.

“Dantherm strives to provide optimally fitted systems to their customers,” states Dantherm R&D director Jesper Themsen. “This integration is a key in following our customer’s interest for more efficient distributed heat and power management solutions. They believe that SOFC technology fits very well with their requirements and are willing to support the developments. This project has been realized without any government support and within less than a year of technical collaboration. We are very pleased with the results and believe that a pre-commercial product can be demonstrated within a few years.”

“The Dantherm system provides remarkable thermal capabilities and forms a base for accelerated development of end-user applications,“ says Michele Molinelli, Fuel Cell Engineer at HTc. “For

stacks up to 750 W, it uses less than 50 W for internal needs. This concept has the potential to achieve very high electrical efficiencies."

The SOFConnex™ based stack uses a unique approach for stacking ceramic fuel cells," states Olivier Bucheli, Managing Director, HTc. "The flexibility of its design allows HTc to translate the latest research results into products within weeks. This is necessary to master the challenges of cost and durability encountered in the fuel cell industry."

As next step, Dantherm and HTc will extend the system's capabilities to directly use natural gas, before scaling up the power. Currently, different reformer technologies are being evaluated in terms of performance and cost.

Dantherm A/S (www.dantherm.com) is a competent and reliable partner in innovative heat management solutions. Fulfilling specific costumer needs is in focus when competitive solutions are developed, manufactured, supplied and serviced by Dantherm. Dantherm started integrating fuel cell systems in 2002 and has now added a very important high temperature SOFC solution to the range of demonstration and pre-commercial products on the way to commercialization of fuel cell systems.

HTceramix SA (www.htceramix.ch) is a dynamic and rapidly progressing developer of high temperature electroceramic applications in the field of energy and gas conversion devices. At the heart of its development is the SOFConnex™ based stack which uses a unique approach for stacking ceramic fuel cells. In 2005, HTc started commercializing SOFC stacks to educational institutions and strategic partners.

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