

Press Release

**Deutsche Telekom Subsidiary
PASM
Power & Air Condition Solution
Management GmbH & Co. KG**

**FutureE
Fuel Cell Solutions GmbH**

Mettmann/Munich/Nuertingen
February 2010

Deutsche Telekom/ PASM puts fuel cell system from FutureE into service to provide backup power and more

Combination of backup power and smart grid operation with minute reserve and peak power shaving reduces CO₂ emissions – Fuel cell system with portable 19” rack mounts minimizes operating and maintenance expenses – Electrical efficiency above 50 % enhances performance and cost-effectiveness

Mettmann/Munich/Nuertingen – Power & Air Condition Solution Management GmbH & Co. KG (PASM), a fully-owned subsidiary of Deutsche Telekom (DTAG), provides energy-based products to DTAG group divisions essential for running their individual core processes. Already since 2008, PASM has been providing **100% of Deutsche Telekom AG’s power requirements in Germany from renewable energy sources**. As an important feature of PASM’s initiative to provide sustainable energy for the DTAG group, PASM is now putting into service the latest technology in the field of scalable fuel cell systems to backup one of its network nodes. The project is part of the German National Innovation Program for Hydrogen and Fuel Cell Technology (NIP). Within this project, PASM has developed its own ideas regarding innovative requirements for advanced fuel cell systems. In addition to providing a backup in the case of failure in the network of the power supply company, the installed fuel cell system technology also provides minute reserve and peak power shaving services.

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With the potential to implement such smart grid solutions at several thousand network nodes in Germany, there is a significant contribution opportunity for a smart grid with reduced CO₂ emissions.

The newly installed fuel cell system is based on the Jupiter product family by FutureE Fuel Cell Solutions GmbH (FutureE) from Germany. The system uses Proton Exchange Membrane (PEM) fuel cells. With hydrogen (H₂) produced from renewables, these fuel cells produce direct current (DC) free of CO₂ and with no emissions. The configuration installed in Mettmann uses seven plug-in fuel cell units, each of them providing an output of 2 kW, totaling to a maximum of 14 kW.

The installed system was officially handed over to PASM by Mark-Uwe Osswald, Managing Director of FutureE. The transfer took place in Mettmann, a Telekom site located in North Rhine-Westphalia. Before going into service in the next few days, the new fuel cell system has successfully proved its capabilities in several test runs. It also passed the demanding DTAG type approval procedure with flying colors.

FutureE has been chosen as fuel cell system supplier to PASM within this evaluation project comprising several locations. Further project partners and suppliers are Strabag Property and Facility Services (Strabag-PFS), which is responsible for planning and operation, as well as the German Zentrum für Sonnenenergie und Wasserstofftechnik (ZSW, Center for Solar Energy and Hydrogen Research), being responsible for scientific research, monitoring and evaluation. The Weiterbildungszentrum für Brennstoffzellen e. V. (WBZU, Fuel Cell Education and Training Center Ulm) is in charge of education and training, while the Transferstelle Bingen (TSB) is contributing the connection into a virtual power plant enabling a minute reserve service.

With the beginning of the evaluation phase in Mettmann, PASM is examining the possibility of applying this new system in several of the other nodes, numbering around 8,000, within its network. The resulting “virtual fuel cell-based power plant” is bound to secure, primarily, the operation of all Telekom sites connected to it (energy reserve). In addition, it will alleviate congestion for the electricity grid during peak load times, thus avoiding the involvement of CO₂-emitting peak load generators (minutes reserve). Furthermore, the coverage of local peak loads will lower the necessary supply of power reserves within the electric grid and, as a result, reduce the provision and procurement fees (peak power shaving). “We are very proud of

the first successful implementation within this ambitious and challenging project”, Osswald states with great pleasure.

The process carried out by PASM to create a “virtual fuel cell-based power plant” is supported within the framework of the German National Innovation Program for Hydrogen and Fuel Cell Technology (NIP). The promotional funding amounts to 48 per cent of the total project costs. NIP was put into action by the Federal Government of Germany in 2006 in order to accelerate considerably and decisively the market maturity of products and applications within the technological sector of hydrogen and fuel cell applications. The program will run up to 2016. The budget frame amounts to EUR 1.4 billion. The realization of NIP is coordinated by NOW GmbH (Nationale Organisation Wasserstoff- und Brennstoffzellentechnologie or, in English, National Organization for Hydrogen and Fuel Cell Technology). Dr. Klaus Bonhoff, spokesman and head of the board of management at NOW GmbH, clearly considers the Mettmann installation to be the best solution for the future. “The combination of modular design with efficiency and hydrogen generated from renewable sources will lead to an extremely broad spectrum of future applications. The possible field of application extends up to the design of a virtual fuel cell-based power plant which will show a completely neutral CO₂ balance. Therefore, I see hydrogen and fuel cell technologies as important elements in a future energy mix..”

Further information and photo material is available at
<http://www.pasm.de> and <http://www.future-e.com>