

PRESS - RELEASE

European Fuel Cell GmbH (efc) is changing its name; new field test unit is being presented at the ISH trade fair, Frankfurt

European Fuel Cell Now Operating as BAXI INNOTECH

Frankfurt, 7th March 2007 The Hamburg-based development company for fuel cell heating equipment, European Fuel Cell GmbH, is operating under the new name of BAXI INNOTECH from March 2007. By developing this subsidiary, the British BAXI Group from Derby, one of the leading manufacturers of heating equipment in Europe, is grasping the opportunity to make the potential for innovation widely accessible to the whole group in the future.

This benefit could already be in evidence within the next three or four years, when the first single-family homes will be drawing their energy by means of hydrogen extracted from natural gas. The newly-named BAXI INNOTECH has presented the results of their first successful field tests at the ISH in Frankfurt – the leading trade fair worldwide for the technologies of construction and energy.

Located in the cellars of private households, the fuel cell heating unit will operate as a compact home energy centre, supplying the household not just with electricity but also with heat. “We have the market within our sights from 2010 onwards”, says Guido Gummert, the managing director. Currently, however, his new technology is still on the expensive side, which is why his company is working consistently towards making the components and the production process cheaper, in preparation for series production. “The potential exists to place 250,000 fuel cell heating units in German households every year”, says Mr Gummert. As a consequence, emissions that affect global warming, such as CO₂, can be reduced by thirty to fifty per cent. Consumers’ energy costs will also be significantly reduced. Numerous professional and private visitors could see the proof of this for themselves at the ISH trade fair in Frankfurt, where BAXI INNOTECH presented their results in Hall 8 from the 6th to 10th March,

Following on from laboratory tests and virtual simulations, fifteen BETA 1.5 field test units (with a maximum output of 1.5 kW electricity and 3 kW heat and an integrated 15 kW auxiliary boiler) have been deployed under true-to-life conditions. The first such unit was installed a year ago and already has more than 5,000 hours of operation under its belt. “We are still working with field test products”, says Mr Gummert, and he compares his development process with that of a new car, where you can’t judge the top performance just by looking at its exterior. “The new BETA 1.5 PLUS unit looks just the same as its predecessor from the outside. But inside it has been improved and streamlined, with fewer components, most of which have reached a status almost ready for series production, so that they can in future be manufactured in large numbers. The system has also proved itself in terms of its operation and safety, so we now need far less measurement technology”.

The fuel cell heating unit is designed for the economical generation of heat and electricity using the natural gas infrastructure. According to Mr Gummert, "The fuel cell heating unit supplements conventional heating technology with the added value of combined heat and power generation" which makes it, along with the constructive integration of renewable energy, a central part of ISH – as the leading trade fair for construction and energy technology worldwide.

The parent company BAXI, which was also showing innovative heating technology at the same stand, has a great deal of experience in this field. It is the third largest manufacturer of heating equipment in Europe and has so far substantially financed the development of this €25m project at their subsidiary. The Future Investment Programme of the German Ministry of Economics has contributed around €7m to the project.

The following was clearly demonstrated that the ISH. In the reformer of the unit, the natural gas is divided into methane and hydrogen. In the fuel cell, which constitutes the heart of the unit, the reaction between the hydrogen and oxygen from the air releases electricity. As a single fuel cell only produces a small amount of electric voltage and a little heat, several such cells are connected together in series to make the fuel cell stack. "So far that has been the most expensive part of the fuel cell heating unit," says Mr Gummert, "and also large parts of the system have so far been finished by hand." The fuel cells, as electrochemical transformers, make combined heat and power (CHP) generation possible without any noise. The hydrogen burns completely, does not have any exhaust fumes, and is harmless to people and the environment.

The fuel cell heating units are designed precisely around the consumption needs of the individual consumers. "In terms of its technology we are consistently keeping to our adopted course of development and we are concentrating on the system design," says Mr Gummert.

The low-temperature polymer electrolyte membrane (PEM) fuel cell is the favourite when it comes to combined heat and power generation in a single family house as the usable heat is obtained at a temperature of 65°C. The design parameters of the fuel cell have been set to cover a little more than the basic heat requirement rather than the maximum heat requirement. In this way single-family households can generate around two thirds of their hot water and heat requirement and as much as three quarters of their own electricity requirement from CHP. The key to the effectiveness of the complete system, however, is in the skilful integration of the fuel cell, its integrated auxiliary boiler and its heat storage device.

Yet nothing works without the heat storage device, as it removes the interdependency between heat requirement and heat production. "In this we are also following the trend" says Mr Gummert. With the help of this heat storage device, the fuel cell can operate comfortably within a usable range of between 50 and 100 per cent demand, and its heat can be stored. When the house is being heated up in the mornings and, at the same time, people are taking their showers – that is, when the demand increases – the storage device has extra heat or hot water available. Only when its energy store is insufficient is the auxiliary boiler

deployed for times of peak demand. Among the products being put through their paces in Hamburg, a storage device with a total volume of around 600 litres, of which 180 litres is hot water, has been proving itself.

This project, which was initiated in 2003, is setting an example in successful teamwork between development companies, energy companies and particularly also the specialist trade. This cooperation will also be supporting the company at the market launch. So far, thirty heating and electrical installation specialists have been able to get to know this innovative technology in workshops and seminars. Service and advice during the commissioning process, obtaining spare parts, maintenance, repairs and a hotline are all part of the package. "This is how our field test development partners and specialist workshops feel assured that we are looking after them in all aspects of our technology" says Mr Gummert. "The technicians and specialists are our partners in the market, and we want to – indeed we must – take them with us into this new technological age." There was an appropriately high degree of interest shown at the ISH trade fair stand in Hall 8, and already many technicians are inspecting the equipment by data transfer. In this way, adjustments and improvements are rapidly and efficiently being made.

Public funding from the German Ministry of Economics has made it possible for efc to carry out its research and its field tests – and such funds will also be necessary for BAXI INNOTECH over the coming years. Yet, after further developments towards a series production version and a necessary market launch programme, the product should then also be supporting itself without any financial help. The user meetings for everyone involved in the project provide a regular exchange of views. Not only facts, data and measured values are dealt with here; there is also an exchange of ideas and opinions – and suggestions for improvements can be acted on straight away. There is a great deal of interest in this project – and a great deal of interest was shown by the visitors to the trade fair – because in summer the results from a complete heating period will then be available.

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picture caption: Second endurance test – the BETA 1.5 PLUS fuel cell heating unit: the information gained during the first year of the field test with the BETA 1.5 unit set off the further development of the "PLUS" version, first presented to the public by Guido Gummert, CEO BAXI INNOTECH GmbH at the ISH 2007

press contact:

IMA Institut GmbH

Claudia Palozzo

Alstertor 1

D- 20095 Hamburg

Tel. +49 (0) 40 30 96 96 -0

Fax: +49 (0) 40 30 96 96 -66

Email: c.palozzo@ima-gination.de

www.ima-gination.de