

# The Hydrogen & Fuel Cell Letter

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**May 2010**

## Conference Season: Travel Chaos Hits Hannover Fair; H2+Fuel Cell Exhibit is Less Affected, is a Success

**HANNOVER, GERMANY** – Energy conservation and efficiency increases were supposed to be the main themes of the April 19-23 Hannover Fair here.

But then the eruption of that Icelandic volcano with that unpronounceable name, Eyjafjallajokull, got in the way: some 10% of the exhibitors, as well as a large number of visitors, didn't make it to the fairgrounds, according to the fair organizers because of the thousands of flight cancellations throughout Europe.



A direct-methanol micro fuel cell powers an iPhone-sized mobile electrocardiogram recorder developed by the German Medset company. It's scheduled to be ready for market by the end of the year. (Photo by Sven Geitmann)

Still, the 16th annual Group Exhibit Hydrogen + Fuel Cells did better than most: only six of the 141 exhibitors were affected by the chaos in Europe's air corridors to the point that they didn't reach this city in north central Germany.

The fair's cavernous Hall 27 with its 5,000 square meter (53,800 square feet) of hydrogen and fuel cell exhibit area proved to be a main magnet of the giant show with its 17 large main halls (plus a few smaller buildings). The first few days of the fair were extremely quiet because of the continent-wide flight ban, but then business and visitor traffic picked up to the point that both the group exhibit's organizers and exhibitors from 22 countries pronounced the event a success, considering the circumstances.

Like last year, the main attraction for many visitors was the Smart Fuel Cell AG (SFC) display area. This is still the only German company that has been offering DMFC systems for several years. Another reason for the positive reaction to SFC had to do probably with the professional, polished image of its booth, in terms of marketing appeal one of the most attractive venues of the joint exhibit. Quite a few visitors evidently enjoyed the opportunity to test-drive Smart Fuel Cell-powered fuel cell electric vehicles and scooters on the 3,000 square meter (32, 291 square feet) Ride+Drive area.

High expectations surrounded the launch of the new portable eneramic® fuel cell system from the Fraunhofer Institute for Ceramic Technologies and Systems (IKTS), which had been advertised as the "blue energy miracle from Dresden."

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Fraunhofer's stylish booth conveyed the impression of launching a light, brand-new, market-ready, user-friendly power generation device that would revolutionize energy for



High expectations: Dr. Michael Stelter of the Fraunhofer Institute for Ceramic Technologies and Systems explains the eneramic system (Photo by Sven Geitmann).

recreational and outdoor uses. This may be the case – eventually, but just not now: The futuristic model introduced here was basically a design study, without any operating hardware. A real-life functioning version probably won't be available for several months, or perhaps years. The eneramic is touted as a small, robust high-temperature fuel cell that produces electric energy, silently and efficiently, from liquefied natural gas. The SOFC system weighs about 8 kg and produces 100 Watt constant, sufficient to provide electricity for all typical camping and outdoor devices.

#### **Motor Gliders and Recreational Vehicles**

Tobias Renz, the organizer of the joint exhibit, was especially proud of the 15 land, water and air vehicles that for the first time were on display in such large numbers. The by far biggest object displayed was the Antares DLR-H2, the world's first manned airplane powered only by fuel cells, developed by the German Aerospace Center (DLR – H&FCL Aug 09)., The plane, essentially a sailplane with a 20-meter wingspan, set a world altitude record near the end of last year. The Hannover event marked the first time the plane was publicly displayed at a trade fair.

Another newcomer was Germany's Truma Geraetetechnik GmbH & Co. KG, based in Putzbrunn near Munich. The company presented a grid-independent power supply for recreational vehicles that's supposed to be ready for market launch by the end of the year. Truma's design is based on a reformer-fuel cell system of 250 W (6,000 Wh/day). It differs from similar systems, such as the methanol-based SFC systems, by running on liquefied natural gas permitting grid-independent operation of heating, lighting, entertainment electronics and air conditioning without relying on noisy diesel generators. The company says the device can generate about 28 kWh from a standard 11 kg propane cylinder.

#### **Micro Fuel Cell Not Yet Market-Ready**

A novel application for micro fuel cells came from the Fraunhofer Institute of Solar Energy Systems (ISE) in form of a mobile electrocardiogram (EKG) recorder powered by a direct methanol fuel cell. Medical devices of this type must have a durable, reliable energy supply, and this was the reason why the Hamburg-based Medset company developed several prototypes for patient surveillance. The project leader, Dr. Alexander Dyck of the partner company FWB Kunststofftechnik, Pirmasens, in southern Germany, explained that "especially in medical applications, long-term reliable operating times are essential, as is simplicity of operation." The device weighs about 130 grams and has the size of roughly an iPhone. It is expected to be ready for field testing by the end of the year.

Also of interest was the debut of the start-up eZelleron GmbH. Founded in 2008 in Dresden, it specializes in the design and production of micro-fuel cells (1-75 W). It showed a mini-sized charger fueled with cigarette lighter fluid to charge mobile phones and laptop computers, but the company will need to spend at least another two years on development before a product will be market-ready.

**Farewell for Arno Evers**

Of interest to the international hydrogen and fuel cell community were the remarks by Oliver Frese, project leader for the parent Deutsche Messe AG on the fair’s third day during the networking evening in which he thanked Arno A. Evers for his excellent work in launching the joint exhibit 16 years ago and running it for 12 years. For the last four years, Evers had continued to consult for the fair organization and had promoted the joint exhibit abroad, a collaboration that ended with this year’s event. The good-news followup was that Deutsche Messe renewed the contract with Evers’s successor, Tobias Renz, for another five years, guaranteeing the continued existence of Europe’s largest hydrogen and fuel cell platform.



Arno Evers, founder, longtime boss and operator of the Hannover Joint Hydrogen + Fuel Cell Exhibit, introduces his new book during his farewell appearance (Photo by Sven Geitmann).

A climax of sorts was reached Thursday with Evers’ last public appearance on the joint exhibit’s center podium. Evers presented his just-released 168-page book, “Hydrogen Society – More than Just a Vision?” in which he described his insights of past years, including a critical analysis of today’s energy business and a number of suggestions on how to bring a sustainable solar hydrogen economy to real life, complete with lots of colorful graphics and excellent photographs.

In his final emotional dialogue with his colleagues of many years, Evers thanked everybody for a happy period of his life, and assured the audience that he was not turning his back on the business but that he intended to continue to consult and teach interested audiences. With that, he took off his trademark orange tie, threw it into the audience, grabbed his suitcase and dashed off the stage.

**Single-Cell Stacks**

Hydrogen and fuel cell exhibits were also in evidence in other parts of the overall fair, for example in the joint exhibit of the ministry of economic affairs and energy of the German state of North Rhine-Westphalia. The Ritter Elektronik company, Remscheid, together with two other firms, Graebener Maschinentechnik and ProPuls and the University of Applied Sciences in Gelsenkirchen presented a fascinating new modular stack concept that’s actually very simple: It consists of only one sheet metal base plate into which the individual cells are plugged separately in a vertical arrangement. The cells are connected in the standard series configuration, but if one cell fails because of some defect it can be exchanged without any problems, minimizing the risk of damaging other system components during repairs.

The partners sought alternative materials to replace graphite for bipolar plates. Those plates resist degradation pretty well, but they are more expensive to fabricate than metallic components. The system is expected to be used by substituting lead batteries in lighting systems for construction sites.

### **Good Launch for MobiliTec**

All in all, the new MobiliTec trade show, one of eight separate venues within the overall fair confines, registered a good start despite the initial travel difficulties. Of special significance was the area of electric mobility – battery, plug-in hybrids and similar concepts – which currently enjoys a great deal of attention throughout Europe. The question many fairgoers are still asking, however, is how long the current electric-mobility boom will last.

The answer may be clearer by the time the next Hannover Fair rolls around, April 4-8, 2011.

*By Sven Geitmann in Hannover. Geitmann is editor and publisher of "HZwei," the German quarterly magazine for hydrogen and fuel cell technology. It is published by HydroGeit Verlag, Germany's only publisher specializing in this area. He can be reached at [www.hzwei.info](http://www.hzwei.info) and [www.hydrogeit.de](http://www.hydrogeit.de).*

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