

SUNFIRE AT HANNOVER MESSE 2015

- **Cleantech firm from Dresden to offer insights into reversible solid oxide steam electrolysis and fuel cells based on its Solid Oxide Power Core at Hannover Messe (Hall 27, Stand B44)**
- **EDF Pulse Award: sunfire reaches final of innovation competition / start of online voting**

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sunfire GmbH will be using Hannover Messe (13th-17th of April 2015, Hall 27, Stand B44) to present solutions enabling the highly efficient generation of power, heat (both using fuel cells), hydrogen and liquid fuels (both using electrolysis). Areas of application include Power-to-X projects. All processes benefit from the use of the Dresden-based cleantech firm's core technology: the Solid Oxide Power Core. This solid oxide cell stack achieves outstanding efficiency levels at lower cost than conventional technologies.

The reversible electrolysis process developed by sunfire uses green energy to turn steam into hydrogen and oxygen under high pressure (> 20 bar) and at temperatures in excess of 800 degrees. The renewable hydrogen produced is increasingly being used by the chemicals industry, fuel sector and gas networks as an environmentally friendly raw material which can also be used for further synthesis. The sunfire steam-based process facilitates the achievement of excellent efficiency levels of over 90 per cent – thus enabling the firm to realize complex projects at comparatively low cost in cooperation with integration partners.

High levels of efficiency are not the only benefit offered by sunfire's technology: When the cost of green energy rises, hydrogen production can be halted and the reverse (i.e. fuel cell) mode used to convert either the hydrogen already produced or other fuel gases into electricity for the public grid. As a result of this dual functionality, the technology has the potential to make a significant contribution towards grid stabilization. What is more, investors profit from a higher level of system utilization at only marginally higher costs when compared with classical electrolyzers.

Cogeneration and off-grid solutions

In addition to its reversible generator, sunfire also offers efficiency-enhancing solutions in the field of cogeneration. One example is a 30-kilowatt **Solid Oxide Commercial Generator** developed in close cooperation with ThyssenKrupp Marine Systems and currently undergoing testing. sunfire's key technology – the **Solid Oxide Power Core** – has already been in use in the field for a number of years as part of Vaillant's fuel cell heating appliance, with continuous development leading to increased reliability, higher performance and reduced costs. The 180 units installed to date have already clocked up one million hours in operation. The **Solid Oxide Off-Grid Generator** represents an excellent off-grid solution in remote regions, for example as a replacement for environmentally harmful diesel generators used to supply power to pipelines.

sunfire in the final of the EDF Pulse Award

sunfire has been selected as one of two finalists in the “Science & Energy” category of the EDF Pulse Award in its role as a developer and producer of reversible electrolysis and fuel cell systems. Online voting for this €100,000 innovation prize awarded by French energy provider EDF runs until the 3rd of May. **The following link takes you directly to the voting page: <http://bit.ly/sunfire-edf-pulse>.**

Stand and presentation

sunfire looks forward to welcoming journalists and other interested parties to its joint stand (B44, Hall 27) between the 13th and 17th of April. Carl Berninghausen, CEO at sunfire, will be making a presentation titled “The sunfire partner model for the energy industry” at the Public Forum Hydrogen + Fuel Cells + Batteries at 12:20 p.m. on the 14th of April.

ABOUT SUNFIRE

Founded in 2010, sunfire GmbH develops and produces high-temperature electrolysis cells (SOECs) and high-temperature solid oxide fuel cells (SOFCs) based on its **Solid Oxide Power Core** (a stack of solid oxide cells).

The firm’s SOFCs facilitate the highly efficient generation of power and heat according to the principle of cogeneration. This sees power and heat generated on-demand at the point of consumption – with local cogeneration at the lower end of the output scale therefore regarded as the energy concept of the future.

High-temperature electrolysis splits steam into hydrogen and oxygen. It is powered by renewable energy and characterized by a particularly high level of efficiency. The hydrogen produced can either be efficiently converted into fuels using the sunfire Power-to-Liquids process or used without further processing in the H₂ mobility or industrial sectors.

sunfire was founded by Carl Berninghausen, Christian von Olshausen and Nils Aldag. The firm is supported by Business Angels, Bilfinger Venture Capital, the ERP Startfonds at KfW, TOTAL Energy Ventures and Electranova Capital (a venture capital fund financed by EDF and Allianz).

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