

Press release

April 2011

3D imaging shows the inside of an electrode

NEXT ENERGY presents its research activities at the Hannover Messe trade fair – insights into modern analysis and characterisation laboratories

How can the lifespan of high-performance batteries be extended? How can electric cars be used to create stability in the smart electricity grids of the future? Which parameters should be modified to improve the efficiency of combined heat and power systems? The EWE Research Centre for Energy Technology, NEXT ENERGY, has set its focus on a sustainable energy supply system and is currently developing solutions for application-oriented topics. The institute will provide a practical insight into its research activities at the Hannover Messe trade fair between 4 and 8 April 2011.



Only virtual for now, but a reality at the Hannover Messe trade fair: NEXT ENERGY's stand in the Hydrogen Fuel Cells Group Exhibit located in hall 27.

NEXT ENERGY will be presenting its activities at stand C 50 in hall 27 as part of the "Group Exhibit Hydrogen Fuel Cells". Representatives from the institute's fuel cell and energy storage research areas will demonstrate their expertise in fully equipped analysis and characterisation laboratories.

At the NEXT ENERGY research centre a nano-CT scanner (computer tomography) provides high-definition three-dimensional images of the morphology of electrode coatings, for example. These images supply valuable information about the structure of the active material and aging processes. Furthermore, NEXT ENERGY offers this uncommon characterisation method as a service for external customers who are interested in optimising their production processes or battery performance.



3D images provided by nano-CT scanning enables NEXT ENERGY scientists to analyse the structure of an electrode's coating.

Battery system electrodes are also at the centre of one of NEXT ENERGY's research projects, the aim of which is to examine ways to optimise cathode conductivity. The NEXT ENERGY research team is investigating to what extent treating a cell's aluminium current collector foil with plasma can reduce the overall resistance of the cell. The oxide layer on the foil is modified, which increases conductivity and ultimately improves the battery's overall efficiency.

NEXT ENERGY's involvement in the "GridSurfer" research project is attracting a great deal of interest; the institute's scientists are looking at



Germany's first battery changing station will soon go into operation on the site of the NEXT ENERGY institute.

how the anticipated boom in electric cars could be used to create stability in the electricity grid. The thinking behind this is that with ever more electricity being generated from wind and solar energy, the need for storage facilities that can keep the power grid stable in cloudy and calm conditions is becoming greater. The traction batteries of electric cars could supply part of this capacity in the future, the idea being to feed electricity not only from the network into the battery, but also in the opposite direction. NEXT ENERGY is busy preparing Germany's first electric car battery changing station for operation in order to research how this bidirectional exchange will affect batteries and the power grid.

Economic and efficiency issues are of central importance in the fields of fuel cells and combined heat and power. NEXT ENERGY is researching alkaline fuel cells in order to design catalysts that do not use platinum. This precious metal is extremely expensive, subject to considerable price fluctuations and only produced in small volumes. NEXT ENERGY believes that these factors constitute a significant obstacle to establishing fuel cell technology on the market in the future. Which is why the scientists are developing alkaline anion exchange membranes for use in fuel cells in order to facilitate the use of platinum-free catalysts.



The test platforms used at NEXT ENERGY are fitted with extensive measuring equipment for CHP system characterisation.

The most efficient use of energy is the main topic in combined heat and power (CHP) technology for domestic energy supply. Because existing setups often fail to operate to their full potential, NEXT ENERGY's CHP research team uses test platforms to simulate realistic operating conditions for any distributed micro-CHP system. Systems can be evaluated and optimisation measures investigated. With time-lapse tests the anticipated annual utilisation ratio of CHP systems can be calculated. For NEXT ENERGY's industry partners, this means technologies can be characterised at different levels of maturity.

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NEXT ENERGY – Energy research for the future

The EWE Research Centre for Energy Technology NEXT ENERGY is an independent research institution. It was founded to develop solutions to make the energy supply of the future efficient and environmentally friendly. NEXT ENERGY focuses its research on photovoltaics, fuel cells and energy storage devices. NEXT ENERGY carries out application-oriented and interdisciplinary work, ranging from materials research to systems development, in close collaboration with partners from both scientific and industrial sectors.

NEXT ENERGY is an independent institute located on the natural sciences campus of the Carl von Ossietzky University in Oldenburg, Germany. The research centre, which was inaugurated in 2009, now employs over 80 people. The institute is organised under the umbrella of the non-profit association the EWE Research Centre for Energy Technology. Members of the association include EWE AG, which is the primary sponsor, as well as the University of Oldenburg and the state of Lower Saxony.