

Renewable Energy Research in Oldenburg Today - Some Insights -¹

Contraction and Convergence: Towards climate-friendly economic systems

A pressing problem in socio-economic energy research is how international climate policy can effectively counteract climate change that is being primarily caused by the use of fossil fuels. In contrast to technological research, the question here is who will shoulder the costs of the necessary economic adjustments of a transition to climate-friendly energy and economic systems. According to the most recent progress report by the United Nations, the man-made emissions of greenhouse gases have to be severely restricted if climate change is to be effectively reduced and drastic negative consequences of climate change avoided.

Christoph Böhringer and Heinz Welsch

<http://www.uni-oldenburg.de/wipol/22822.html>

Thin-film Photovoltaic Systems

In the face of global climate change and the decreasing fossil energy resources, the need for alternative means of clean energy production is becoming more and more obvious. During the past decade, the photovoltaics group in the Energy and Semiconductor Research Laboratory of the Institute of Physics at the University of Oldenburg has been engaged in the development and optimization of thin solar cells. The team further addresses novel concepts for cost reduction and increasing the long-term stability of photovoltaic systems. These complex questions require mid- and long-term scaled interdisciplinary research, ranging from the fundamental processes in the materials involved, to the transfer of results to large-scale industrial production.

Ingo Riedel and Jürgen Parisi

<http://ehf.uni-oldenburg.de/visiten.php?sprache=deutsch&show=50>

Wind Energy

Wind power is an essential element for achieving the target of supplying 20% of Germany's energy consumption through means of renewable energy by the year 2020. The use of offshore-technology will be of crucial importance in this process. Oldenburg University has a leading role in a research program, which has a scientific consulting role in the installation of Germany's first offshore wind-park off the coast of Borkum.

Detlev Heinemann and Joachim Peinke

<http://www.energiemeteorologie.de/25488.html>

Wind and Weather

With the rapid development of renewable energy production, the importance of weather and climate is growing as well, factors that were hardly important for energy production from coal, oil and gas. Because the availability of the new sources of energy, sun and wind, varies with time and place, meteorological information has gained a key role in the financially viable use of these new technologies. The new interdisciplinary research area energy meteorology is meant to provide the necessary know-how and information in this area.

Annette Hammer, Detlev Heinemann, Elke Lorenz and Abha Sood.

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IT-Systems for sustainable energy management

Sustainable, increasingly decentralized generation and transportation of energy to ever more autonomous consumers demands more intelligent and flexible IT-systems. Such systems must predict generation and consumption reliably, control corresponding sales and purchase activities and smoothly facilitate the decentralized management and control of suppliers and consumers, and their facilities and equipment. Keywords are: economic energy constraints and their IT-requirements, the IT-integration of virtual power plants, questions of standards and standardizing communications, the importance of flexible software architectures and quality secured data, changed business processes and added value in the energy market, as well as questions of IT-security.

Hans-Jürgen Appelrath and Christoph Mayer

<http://www-is.informatik.uni-oldenburg.de/>