

## Programme

### **Keynote: Energy Perspectives and the Role of New Technologies**

Prof. Dr. Nebojsa Nakicenovic, Coordinating Lead Author of the Intergovernmental Panel on Climate Change (IPCC), 2002 to 2007.

Energy de-carbonization requires a dramatic improvement in energy efficiency. This is driving "smart integration" between energy generation and the end use, which is undergoing a transformation toward more self-organization using Internet-like management tools. The speaker discusses the implications for R&D, deployment, and the economics.

### **Energy Forecasting for Distributed Generation in Local Energy Neighbourhoods**

Dr. Tamás Bertényi, Quiet Revolution Ltd.

Smart integration of local energy neighbourhoods with the grid requires the prediction of site-specific energy yield. The speaker discusses forecasting small-scale turbine farms' output, covering the correction of macro-scale wind resource for local micro-scale effects, energy yield modeling, and statistical methods for predicting short-term energy yield.

### **Building Simulation and Control**

Dr. Gerhard Zucker, Austrian Institute of Technology

Enhancing the thermodynamic simulation model of a building with models of its energy consumption systems – such as HVAC, heater, and ventilation chillers – would enable more efficient energy control strategies. Adding weather constraints such as temperature, humidity and sun radiation would optimize energy control further. The speaker discusses the ins-and-outs.

### **Smart Energy Management**

Prof. Dr. Fritz Schmidt, ennovatis GmbH

Demand management and smart metering require new, automated energy management methods for both energy-using-products and local renewable energy providers. The speaker will discuss the hardware and software requirements to implement a system with a cost payback over a few years, and will report first experiences.

### **Keynote: Electric Energy Storage in Smart Buildings**

Bettina Lenz, Head of the Energy Storage Division at EWE Research Centre for Energy Technology in Oldenburg, Germany

Distributed feed-in of renewable energy into the low-voltage-grid will increase significantly. However, energy that cannot be used instantaneously should be stored – and storage devices are usually very costly. The speaker discusses the motivation for energy storage, reviews storage technology, and presents an initial approach to system sizing.

### **Security Considerations for SmartCoDe Network**

Juraj Hájek, Ardaco, s.a.

The speaker discusses security in smart energy grids. Analysis of security breaches enables avoidance of repeated vulnerabilities caused by software flaws, hardware weakness and inherited problems. The lessons are applied to the security architecture of SmartCoDe network, which is described in detail, and compared with existing standards.

### **An Architecture for Energy Management in Smart Appliances**

Prof. Dr. Christoph Grimm, Vienna University of Technology

Demand management and smart metering require an appropriate monitoring and communications infrastructure. The speaker discusses an integrated, microelectronic platform that is scalable, highly secure, and can be implemented as a highly reliable system-in-package – ideal for low-cost mass production.

### **SmartCoDe - On the Way to a Miniaturised Wireless Sensor Node for Monitoring and Control of Appliances**

T. Herndl, Infineon Technologies Austria AG

The SmartCoDe monitoring and communications platform will be a small, integrated device that can be embedded in diverse appliances. It will measure power consumption, communicate wirelessly, and control the appliance via a simple serial interface. And it will do so at a consumer price-point. The speaker discusses implementation plans and progress.