Invitation to panel session on

Demand Flexibility – Dream or Reality

IEEE PowerTech Eindhoven 2015

Monday,	**29th June 2015**
Meetingroom:	IEEE PowerTech 2015 conference venue, 'Zwarte Doos', Film Theatre first floor
Registration:	In order to participate send a mail to: rene.kamphuis@tno.nl with PowerTech2015 DemandFlexibilityPanel in the subject before **June 20th 2015**.
Contact:	Matthias Stifter (matthias.stifter@ait.ac.at) – Operating Agent IEA DSM Task 17 René Kamphuis (rene.kamphuis@tno.nl) – Operating Agent IEA DSM Task 17

Demand response as a measure to increase the power system flexibility is technical feasible and well investigated, stipulated from regulatory bodies and supported from the industry. Recent developments from research projects and pilots pave the way to large scale deployment and commercialization. This panel session will present different national and international approaches and discusses how flexibility of demand is making its way into markets and network operation and thereby, considering the challenge to use the flexibility for market as well as grid services in conformity with the unbundling requirements. Speakers from academics, distribution network operators and industry will discuss their viewpoint on missing links and challenges.

The panel session is organized and supported by IEA DSM Task 17: Integration of Demand Side Management, Distributed Generation, Renewable Energy Sources and Energy Storages:

IEA-DSM Task 17 will address the current role and potential of flexibility in electricity demand and supply of systems of energy consuming/producing processes in buildings (residential and commercial) equipped with DER (Electric Vehicles, PV, storage, heat pumps, ...) and their impacts on the grid and markets.

Link: www.ieadsm.org

09:15 Reception

09:30 Welcome and introduction

Introduction to IEA DSM Task 17 phase 3 (Matthias Stifter, René Kamphuis)

9:45 Theoretical foundations and simulations

9:45 **Mapping flexibility of power systems** - *Roman Targosz* – (Copper Alliance Europe)

Copper alliance and Ecofys have been involved in a joint study on flexibility in power systems. A new overview clarifies the flexibility needs for the transition to power systems with very high penetration levels of variable renewable energy sources (VRES). The talk provides a comprehensive assessment of the complete spectrum of flexibility options and identifies key barriers for their deployment.

10:00 **DSM in Switzerland – Possible Coordination of Networks and Markets** –
Matthias Gallus (Swiss Federal Office of Energy SFOE)

The coordination of flexibility (load,Production, storage) for markets and networks at the same time is a complex task. Switzerland is looking into solutions, which offer large playing field for markets and competition. Of interest are topics such as benefits for markets, networks and total social welfare, dynamic innovation, data exchange, processes for markets and non-discriminatory access.

10:15 **Load flexibility in small and medium enterprises and criteria for successfully enabling them** – *Tara Esterl* (AIT Austrian Institute of Technology)

In the project hybrid-VPP4DSO DR-components in Austria and Slovenia are studied regarding their flexibility potential and their willingness to provide their flexibility. Potential business models and business cases are investigated to make use of this flexibility in different markets. Furthermore, the impact on the grids is analyzed and how this flexibility can relieve the grids in critical situations. Hybrid solutions - serving both markets and grids - are challenging regarding unbundling requirements, but have the highest priority of the project.

10:30 **Valuing Flexibility in power systems: the ValueFlex project** –
Stephen Galsworthy (TNO Netherlands Organisation for Applied Scientific Research)

The VALUEFLEX project aims at developing services able to give to utilities and grid operators a better understanding of the value of electricity flexibility. These services are based on a comprehensive set of simulation tooling (the Toolbox) that allows companies to analyse the economic and technical feasibility of demand response services.

10:45 **Buildings Equipment Connectivity Interoperability for Energy Applications** –
Steve Widergren (PNNL, USA)

Buildings automation can become a major contributor for providing flexibility services to the electric grid and greater overall energy efficiency, but the vast majority of facilities (at least in the USA) are not prepared to easily coordinate with the grid even if an flexibility signal was available. Efforts are underway to advance interoperability of connected building equipment to bring down integration costs and enable buildings to be more efficient and flexible users of energy.

11:00 Coffee break

11:15 Realized demand response

11:15 **Field test verified flexibility options from a DSO perspective** – *Arnoud Rijneveld* (Stedin) and *Marijn Renting* **(**Enexis, the Netherlands**)**

Flexibility is an upcoming theme for DSOs. Some insights and first results of current test beds, of the Dutch DSOs Stedin and Enexis, which explore demand side management will be shared. Also, questions that still need to be answered in the Netherlands regarding DSM by DSOs, will be addressed.

11:30 **Flexibility and Cost Benefit Analysis of the PowerMatchingCity-II Living Lab in Hoogkerk the Netherlands** – *Elke Klaassen* (Enexis, the Netherlands)

Based on the results of the Dutch smart grid pilot PowerMatching City phase-II (45 house holds), we try to answer the question: *what are the potential benefits of a large-scale implementation of PowerMatching City phase-II in the Netherlands*? To do so, the measured data from the pilot was used to quantify the flexibility of the smart appliances (i.e. micro-CHPs, heat pumps and electric vehicles). Consequently, this flexibility is used as input for a model that represents the Dutch power system. To quantify the benefits both the energy market value and the grid value are assessed, using basic energy market simulations and load balance calculations respectively.

11:45 **Demand response in the Smartgrid Gotland project** –
Daniel Brodén (KTH Royal Institute of Technology)

This talk presents preliminary results and studies from the Smart Grid Gotland Project. The focus of the talk is on subproject (i) wind power integration and (ii) market test and installation. Results from subproject (i) include simulation results on demand-response potential for congestion management. Results from subproject (ii) include lessons learned from an actual demand-response implementation and survey results on customer satisfaction.

12:00 **Flexibility analysis and implications of the real time market concept of EcoGrid** –
Matthias Stifter (Austrian Institute of Technology)

One of the possible approaches to implement demand response is using a real-time market. Within the EcoGrid project, a real-time market place for distributed energy resources was implemented in a demonstration on the island of Bornholm in Denmark with considerable customer involvement. Flexibility and volume of demand response activated by real-time price signals will be discussed.

12:15 **Regulatory Recommendations for the Deployment of Flexibility** –
Werner Friedl (Austrian Institute of Technology)

The report *"Regulatory Recommendations for the Deployment of Flexibility"* focuses on flexibility from distributed resources, including demand side participation, and seeks to identify flexibility services, relevant value chains, but also the necessary commercial and market arrangements, while it answers the question on how different actors can be incentivised to provide and use flexibility. Finally, concrete recommendations are provided to the European Commission, to policy makers and stakeholders, for removing regulatory barriers and incentivising the uptake of flexibility from distributed resources.

12:30 Panel discussion

Discussion with the presenters

13:00 Closing