

## Wind Energy Systems Workshop

# Enhanced ancillary services from wind power plants

## EASEWIND

**9 December 2014, 13:00 – 16:30**

DTU Wind Energy - Risø Campus Roskilde

**Building 115 (basement meeting room)**

The constantly increasing penetration of wind power in the power systems over the last years has posed serious concerns regarding the sudden loss of power during grid faults, which could be caused by wind turbines' disconnection, leading possibly to further severe frequency and/or voltage instability. These concerns have led to detailed review of national grid codes, which nowadays include a wide range of technical requirements that wind farms must fulfill. In order to ensure a reliable and secure power system operation, the operational behavior of wind farms has to follow today some ancillary services (AS) which have been up to now traditionally only referred to conventional power stations. There is therefore need for R&D to ensure such development of suitable technology for future wind power plants (WPPs) and power systems.

The workshop will present the research results of the PSO EASEWIND project which objective is to develop technical solutions for enabling wind power to have similar power plant characteristics as conventional generation units.

### Workshop agenda:

- 12:55            Workshop introduction  
                  **Nicolaos A. Cutululis, DTU Wind Energy**
- 13:00            EASEWIND project and control features for AS from WPPs  
                  **Jorge Martinez Garcia, Vestas**
- 13:30            Modelling of AS at WPP level  
                  **Anca D. Hansen, DTU Wind Energy**
- 14:00            Power system studies: impact of AS from WPPs  
                  **Müfit Altin, DTU Wind Energy**
- 14:30            Coffee break**
- 15:00            Forecasting for AS (Models for extreme wind power forecast errors)  
                  **Peder Bacher, DTU Compute**

15:30 Markets for AS

**Tiago Soares**, *DTU Electrical Engineering*

16:00 Wind Power Plant Control: A Real-Time Hardware-In-the-Loop Approach

**Catalin Iosif Ciontea**, *AAU*

16:30 **End of workshop**

The workshop is free, but for logistic issues registration is required. Please register via an e-mail to [niac@dtu.dk](mailto:niac@dtu.dk) stating your name and affiliation. Deadline for registration is **December 7**.