

## **Design and Systems Engineering of Wind Turbines and Plants**

### **Conveners:**

Katherine Dykes (NREL, [katherine.dykes@nrel.gov](mailto:katherine.dykes@nrel.gov))

Michael McWilliam (DTU Wind Energy, [mimc@dtu.dk](mailto:mimc@dtu.dk))

Frederik Zahle (DTU Wind Energy, [frza@dtu.dk](mailto:frza@dtu.dk))

### **Description:**

Over the last few decades, wind energy has evolved into a large international industry involving major players in the manufacturing, construction, and utility sectors. Coinciding with the industry's growth, significant innovation in the technology has resulted in larger turbines with lower associated costs of energy and more complex designs in all subsystems. However, as the deployment of the technology grows, and its role within the electricity sector becomes more prominent, so have the expectations of the technology in terms of performance, reliability, and cost. The industry currently partitions its efforts into separate paths for turbine design, plant design and development, finance, grid interaction and operation, mitigation of adverse community and environmental impacts, and other areas. These activities must be more integrated to meet a diverse set of goals while recognizing trade-offs between them. To address these challenges, methods of systems engineering and integrated design are being increasingly applied at both the wind turbine and plant level. This symposium will highlight recent research and industry application of design and systems engineering to wind turbines and plants. The symposium will focus on more integrated approaches to wind turbine and plant design with a particular emphasis on multi-disciplinary design, analysis and optimization using both deterministic and stochastic approaches.