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Control Schemes for Wind Electricity Systems

Guest Editor:

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Message from the Guest Editor

Dear Colleagues,

Wind electricity systems are complex and involve numerous components arranged in subsystems that have different control objectives and modelling and performance requirements over a broad range of timescales. With the development of large onshore/offshore wind farms and the attainment of high wind power penetration, it is no longer satisfactory for wind farms to be passive providers of generated power. Instead, they must become virtual generation plant that behaves similarly to conventional generation plant. The power generated by the wind farm and its wind turbines can no longer simply be that dictated by wind speed. The power must be adjusted as required by the Transmission System Operators (TSOs). To do so requires flexible operation of the individual turbine and a wind farm controller to maximise wind farm-generated power and provide ancillary services, including curtailment, frequency support, voltage/reactive power support, and minimise O&M costs.

This Special Issue aims to gather new knowledge on control schemes for wind electricity systems to optimise the utilisation of these expensive assets, thereby assisting to reduce the cost of energy. Topics of interest for publication include:

- Wind farm models for control design purposes;
- Wind turbine/wind farm control for
    - loads mitigation
    - power production maximisation
    - Grid Code compliance and provision of ancillary services;
- Control of HVDC for large offshore wind integration;
- Control systems for floating wind turbines;
- Control systems for multi-rotor wind turbines.

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Message from the Editor-in-Chief

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