

Disruptive wind farm wide control

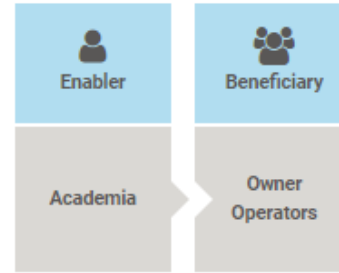
<https://offshorewindinnovationhub.com/category/operations-maintenance/>

Type of Entry: Innovation Area

O&M and Windfarm Lifecycle > Operations > Assets & Technical > Control Optimisation

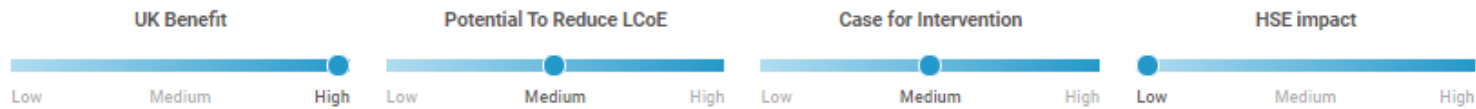
Description

Wind turbine controllers are designed by the OEM to optimise their chosen balance of production, loading and design life. There is limited/no consideration made to how individual turbines operate within an array or whole farm, for example how the wake of one machine may influence another. It is likely that advantages in both energy production (operator concern) loading (OEM concern) as well as the provision of services to the grid (grid operator concern) could be enabled by adopting a control strategy which optimises the operation of the whole farm as a single entity. A holistic view of this nature may also help to describe potentially more efficient maintenance behaviours. Provision of power system requirements should be integrated with the provision of O&M requirements by wind farm control. Thus, would then provide a systems level solution where the system is a large wind farm that can be extended to clusters and beyond to provide the flexible operation required to meet future scenarios. It will require cooperation between academia, through development of tools and optimisation of algorithms (these may need to be adaptive), and Industry through O&M data etc.



Strategic Outcome

- Enabling disruptive innovation
- Commercialising >15MW turbine platforms
- Maximising operational performance of existing wind farms**



Notes: The UK is at the leading edge of development of wind farm controllers and is developing the most advanced analysis and design tools.

