



# Adaptive yaw control

## APPLY

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### Background

Misalignment between nacelle and wind directions implies a loss of power production and an increase of the aerodynamic loads. Yaw control keeps turbine misalignment below design conditions, but activation of yaw system implies consumption of energy and wear of the system. Due to this, nacelle movements must be minimized to ensure a reasonable wear of the yaw components. Due to the nature of wind, changes direction are completely unpredictable and very site dependant. Therefore, an adaptive yaw control can potentially adapt to site conditions and find a better balance between power production, turbine loads and yaw system wear. Future increases in rotor size will impact on the yaw system design due to higher loads, and requirements from wind farm control will be stricter.



### Scope

The aim of this project is to develop an adaptive yaw controller that, as a generic solution, finds an optimum balance for each windfarm. A simple model of the turbine must be used to simulate yaw dynamics, and yaw control solution must be tested against several time traces from real data from actual wind farms to check the gains of the proposed solution.