Abstract: Ewan Machefaux. Vestas Wind Systems A/S – WindTech 2017

Title: Vestas Simulation Environment

Wind energy is a growing and global market. The competitiveness of wind will continue to improve with market specific reduction between 23 % and 36 % expected by 2017 – 2030. However, the financial contribution of the LCOE, often perceives as financial risk, is paradoxically not expected to decrease at the same rate. An important contributing factor is the uncertainty associated to park power performance.

Vestas has been developing over the last years a multi fidelity simulation environment platform. This computing platform integrates all components of a power plant into a model based system engineering approach allowing modeling and validation across scales, leveraging on high performance computing, surrogate modeling, probabilistic design and advanced data analytics.

This virtual laboratory is used for different function across the organization from testing of new turbine or plant design, control strategies, to site design and optimization under uncertainty, focusing on improving the customer business case by providing an optimal site specific technical solution.

About the presenter:

I have 10 years of experience in Wind Energy. I hold a Master Degree in Wind Energy from the Technical University of Denmark, a PhD Degree in experimental and numerical analysis of wind farm flow fields from DTU Wind Energy Risø Campus. Following my PhD, I became a Post-Doctoral researcher in Wind Farm control and Optimization in the Aeroelastic design department of DTU Wind Energy. I joined Vestas Wind Systems A/S 2 years ago as a Specialist in Wind power plant flow modeling at the Plant Siting and Forecasting department and recently extended my area of interest to Plant simulation and optimization at the Data, Engineering and Analytics department. I have published several papers and articles in peer reviewed journals and conference.