

Technical University of Denmark



Offshore Wind Farm Clusters - Towards new integrated Design Tool

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Approach

In EERA DTOC testing of existing wind farm wake models against four validation data test sets from large offshore wind farms is carried out. This includes Horns Rev-1 in the North Sea, Lillgrund in the Baltic Sea, Roedsand-2 in the Baltic Sea and from 10 large offshore wind farms in Northern European Seas using satellite remote sensing.

Project objectives

The project builds on already established design tools from the project partners and possibly third parties models. The wake models have been tested in two wake bench tests. Furthermore, the project focuses on grid integration and energy yield.

The presentations at the side-event will highlight the results of wake model tests on wake loss calculated by models: WAsP/Park, DWM & RDWM, FUGA, EllipSys LES, WRF with EWP(DTU), FarmFlow, Farm-Farm, LES AD/AL (ECN), CRES-Flow RANS AD and CRES-farm flowNS (CRES), RESWFYield WRF and Ainslie (RES), CFD OpenFoam RANS AD, WRF and SKIRON (CENER), VENTOS (UPORTO) and WRF (CIEMAT). The wake models include engineering models, linearized CFD, non-linear CFD models, and coupled meso- and micro-scale models.

The overall tool including energy yield and uncertainty will be presented and the electrical issues outlined. The project includes design tools for the analysis of variability and predictability of power feeding with wind farm clusters, for grid planning and for system services provided by clusters with grid code compliance, and electrical components. EERA DTOC will use future scenarios on offshore clusters relevant for developers and strategic planners to demonstrate the design tool.

The overall aim is to produce an efficient, easy to use and flexible tool - to facilitate the optimised design of individual and clusters of offshore wind farms.

Link to full program

Side-event on EERA DTOC
Tuesday 19 November, 16:00-18:00
Messe Frankfurt, Forum, level C, room Substanz 1&2
<http://www.ewea.org/offshore2013/whats-on/design-tool-offshore-wind-farm-clusters/>

You can also visit the
www.eera-dtoc.eu