

Analytical modeling of wind speed deficit in large offshore wind farms

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The proposed model for the wind speed deficit in wind farms is analytical and encompasses both small wind farms and wind farms extending over large areas.

As is often the need for offshore wind farms, the model handles a regular array-geometry with straight rows of wind turbines and equidistant spacing between units in each row and equidistant spacing between rows. Firstly, the case with the flow direction being parallel to rows in a rectangular geometry is considered by defining three flow regimes. Secondly, when the flow is not in line with the main rows, solutions are suggested for the patterns of wind turbine units corresponding to each wind direction.

The presentation is an outline of a model-complex that will be adjusted and calibrated with measurements in the near future.