WindTwin: Towards a digital twin for forecasting of power production to wind energy demand

Description

The expected growth of both on and offshore wind energy is enormous and many new wind parks are planned for the coming years. Experience from the existing wind farms shows the importance of a proper micrositing of the wind turbines as well their efficient interconnection within the farm. In addition, bringing wind farms together into clusters toward a wind power plant concept might induce long distance negative interaction between the farms, reducing their expected efficiency. This might happen both on and offshore. The high amount of connected wind power and the expected increase during the coming years requires that this technology has to be prepared to take a more important role as of its contribution to the reliability and security of the electricity system.

The present proposal, WinDTwin, targets to develop and validate an offshore wind farm digital twin (DT) for highly accurate prediction of power production and energy demand of the end user. The DT will give users tailored access to high-quality information, services, models, scenarios, forecasts, and visualisations, as a central hub for offshore wind decision-makers, and will also serve as platform, offering users access to a comprehensive array of high-quality resources, services, models, scenarios, forecasts, and visualisations.

WinDTwin seeks to revolutionise the way industry professionals make informed choices. To reach WinDTwin expected impact, the ambitious innovation-led research proposed necessitates bringing together a range of skills and expertise which cannot be found within a single member country or institution. We have put together a unique team that has a broad range of expertise through the whole wind energy development process; ranging from the management of wind energy production and development of industrial codes, numerical methods, algorithms, ensuring the uptake of improved methodologies..

The WinDTwin consortium consists of 13 organizations from 7 different member states.

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