Reducing carbon footprint of offshore foundations using wind turbine data

An innovation project by a group of industry and academic partners will utilize measurements from operating offshore wind turbines to improve foundation designs leading to reduced material consumption and ultimately to increased life spans and reduced carbon footprints of foundations

COWI will join University of Oxford (United Kingdom) and several industrial partners in an innovation project denoted SIMOWSA (System Identification Methods for Offshore Wind Structural Analysis) designed to reduce the carbon footprint of foundations for offshore wind turbines.

This will be done by monitoring performance of operating wind turbines, aided by computer simulations and laboratory tests, and using this data to validate new and improve existing foundation designs.

The project will kick off in the autumn of 2020 and run for 2 years, where the research will be available for project partners exclusively. After those 2 years, the research will become publicly available.

Project activities include assessment of data generated from tests performed in a controlled laboratory environment, supplemented by computer simulations and measurements from operating offshore wind turbines.

Development of offshore wind plays a key role in green energy transition and in the global response to climate changes. An important reason for this is that offshore wind has become increasingly financially attractive over the last decade, and the costs related to the foundation plays a major role in this development. This calls for continued improvement of foundation designs that will allow for a further reduction of material consumption and thereby cost.

The long-term perspectives for offshore wind are promising – especially if the industry continues to push the boundaries within technical innovation. Offshore wind turbines are expensive, so the project will aid in the reduction of these costs through an optimization of future foundation structures and an improvement of life spans for existing foundation structures.

Ultimately, the project will help reduce the carbon footprint for the foundations – not only to benefit the offshore wind industry, but to society at large.