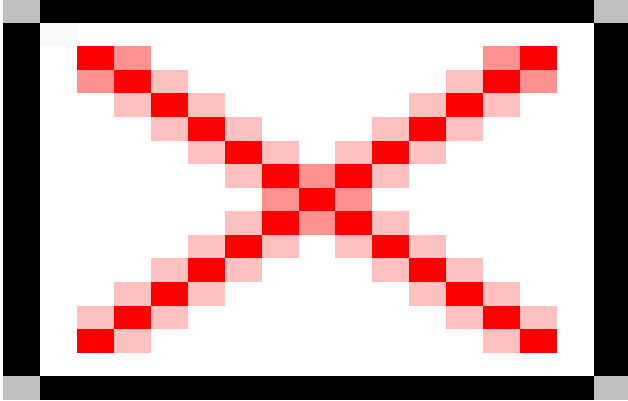


IMDC
Offshore wind parks
Blue energy
Off shore structures
Location:
Oostende, Belgium
Client:
C-Power



Project Contact Information

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C-Power Offshore wind farm ? Phase 2

Project description

IMDC was involved as Owner's Engineer in the pre contracting period of the 2nd phase of the C-Power project for the installation of 24 Wind Turbines and one transformer station on the Thorntonbank, a sand bank situated about 30km offshore from the Belgian Coast. IMDC defined the hydrodynamic design parameters, designed scour protection systems for different foundation types, performed cable trajectory analysis and wave modeling. IMDC set up the appropriate basis of design and scour protection system for three different foundation structures, i.e. a gravity based foundation, a jacket foundation and a monopile foundation.

Set up of the design basis

Based historical available data and on recent wave, water level and current measurements in combination with recent bathymetrical surveys a design basis for gravity based foundations, for jacket foundations and for monopile foundations was set up. IMDC performed the hydrodynamic analysis to define normal and extreme wave, water level and current climate at the project area. An analysis of historical and new bathymetrical surveys was performed in order to define the erosion trend and dune mobility in the project area.

Scour protection system

For the three foundation types IMDC evaluated the scour phenomena and defined appropriate scour protection systems. The scour protection system around the GBF's was based on the static scour protection system used in the first phase. This system was optimized for shallow locations and locations potentially subject to wave breaking. For the jacket foundation, a non protected seabed approach was compared with a dynamic and static scour protection system, while for the monopile foundation a comparison between a static and dynamic scour protection was done. Maintenance and monitoring programs for the scour protection systems of all foundation types were defined.

Wave modeling

IMDC performed for the area of the second phase a Boussinesq and spectral wave analysis in order to assess firstly the influence of the entire shoal and secondly the separated influence of the sand dunes on the wave heights.

Cable trajectory analysis

In preparation of the infield cable works an analysis of the necessity of pre dredging activities along the infield cable trajectory was performed. Historical bathymetrical surveys and the expected erosion trend and mobility of the sand dunes were combined in order to indicate which parts of the cable trajectory would likely be uncovered if a standard burial depth was applied.

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