



## DAFENG H3 Offshore Windfarm

For our client, State Power Investment Corporation (SPIC), LICEngineering A/S executed the entire design phase for 72 monopile foundations for the DAFENG H3 offshore windfarm in the Southeast Chinese Sea.

Following industry standard codes such as DNVGL and IEC, LICEngineering developed the design basis, the design briefs and concluded with FEED and detailed design.

### Project Details

The windfarm will be located in the Southeast Chinese Sea in the Jiangsu region. The windfarm is developed and owned by State Power Investment Corporation (SPIC). The project is included in the “National Offshore Wind Power and Development plan” from 2014, which was an ambitious plan by the Chinese National Energy Administration to construct 44 offshore wind projects with a total capacity of 10.53 GW until the end of 2016.

The turbines are delivered by Envision Energy each turbine with a 4,2 MW capacity, which brings the project capacity to 302,4 MW. The windfarm is expected to be fully commissioned in 2019, reducing CO<sub>2</sub> emissions with 432851 tonnes annually and powering approximately 215.000 homes.

### Geotechnical Conditions

In order to identify the soil parameters at each foundation and validate soil strength and support for the selected type of foundation, geotechnical investigation included field testing accompanied by onshore and offshore laboratory tests.



## Corrosion

The corrosion protection system consisted of 3 elements, coating, corrosion allowance and cathodic protection. From 1 m below the mudline considering scour and upwards the monopile is coated.

All surfaces below MSL is protected by cathodic protection. Internally corrosion allowance is accounted for from the mudline to the top. Externally corrosion allowance is accounted for from the lower limit of the splash zone to the top of the monopile. Corrosion allowance was calculated according to the guidelines in DNVGL-RP-0416

When calculating the corrosion allowance the coating was assumed intact for the first 15 years as the specified coating is NORSOK M-501 Coating System no. 7 with a thickness > 600 mm.

## Liquefaction

Any cyclic loading like earthquakes can cause liquefaction. Liquefaction occurs when the soil matrix experiences a reduced grain contact stress causing loss of capacity. Soil liquefaction affects both vertical and lateral stability.

The analysis for calculating reduced capacity of the soil during liquefaction was carried out with cLiq software. The software uses as input the CPTU raw data and provides among others results and plots for potential liquefaction, reduced undrained shear strength for soil layers.

## Hydrodynamics

The windfarm is located 43 km from the shoreline, making it China's farthest offshore wind farm.. The water depth is varying from 8 m to 16 m with an average of 13,3 m for all the 72 monopiles.

For more information:

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