NAUTEC
UHPC Ingenuity

WIND ENERGY
CASE HISTORY

Type of work:
Offshore Windfarm Installation
Location:
Off the coast of Shapa town, Yangxi County, Yangjiang City, Guangdong province, China
Turbine manufacturer:
Mingyang Smart Energy
Materials used:
880 MT NaX® Q140-E
Project date:
May - June 2019

THREE GORGES YANGJIANG SHAPA 300MW OFFSHORE WINDFARM PROJECT

DISCIPLINES:

- Renewable Energy
- Subsea Jacket Installation
- Offshore Grouting Services

This is Nautec's third offshore renewable wind project and first major large-scale windfarm installation project to be carried out in Chinese waters. It is owned by China Three Gorges New Energy Co.,Ltd. The first project being Binhai North Phase 2 (2017) and second project being Dafeng (2018), both owned by State Power Investment Corporation (SPIC) of China.

This wind farm comprises 55 units of 5.5 MW wind turbines and a 220-kV substation, of which 10 are jacket structures requiring grouting, as well as the substation jacket. The water depth is approximately 30 m and it is currently one of the deepest in China.

Other types of foundations in this project are monopiles (36 nos.), suction-bucket (8 nos.) and 1 floating type. When fully connected, the wind farm will supply 840 million kWh of renewable energy.

SCOPE

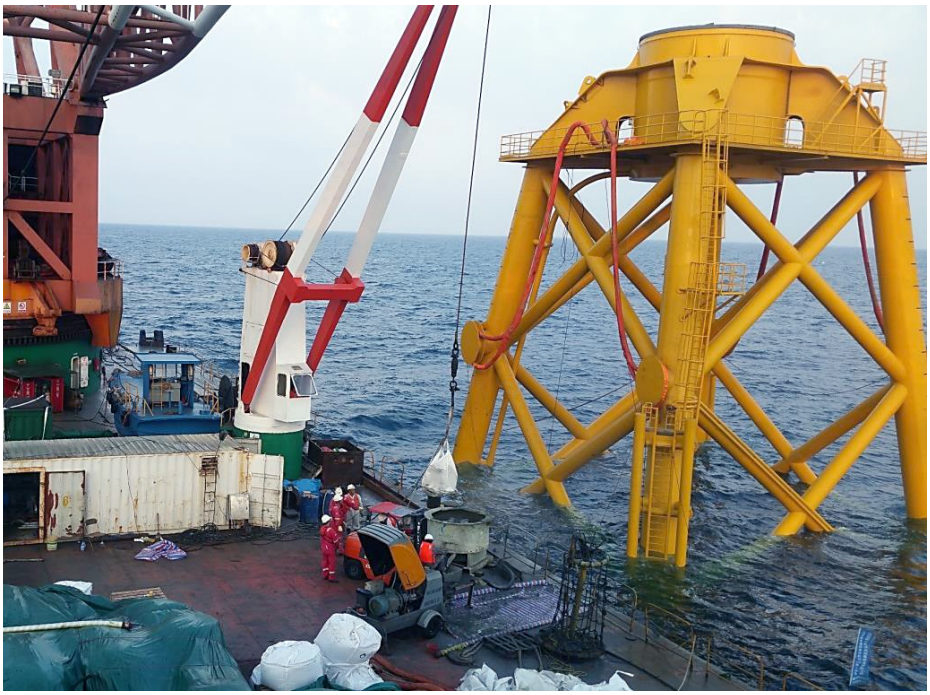
- Supply of grouting materials for a total of 10 turbine jackets and 1 substation jacket installation.
- Supply of technical expert for grouting operation in cooperation with Chinese local company, Zhuhai Ruifeng Offshore Technology Co. Ltd.

SERVICES

- Supervision of grouting operation carried out by local Chinese partner for 1 turbine jacket and 1 substation jacket installations.

CHALLENGES

- Rough seas and strong wind conditions as well as high



UHPC, or Ultra High Performance Concrete and Composites are our business. We develop and produce UHPC products and we offer UHPC based solutions for multiple industries including the Renewable, Civil Construction, Ports, Offshore and Energy Industries.

We have documented the technical performance of our UHPC products through a large test program at MPA (Germany) which included creep and fatigue testing and we have carried out large-scale trials at low (European conditions) and high temperatures (Tropical conditions) to demonstrate the performance of our materials under severe weather conditions.

Our NaX® Premix Grouts are a portfolio of ultra high performance concrete and composites with strength and durability 10 times

CLIENT BENEFITS

- The team completed the Grouting of Offshore Jacket Foundation Installation using NaX® Q140-E UHPC grout on schedule and without any delays.
- Nautec's NaX® Q140-E has been developed specifically for grouted structural connections for offshore structures including wind turbine foundations situated in extreme cold and in hot tropical climates.
- NaX® products have been used in more than 60 offshore projects primarily in South East Asia, Indian and the Middle East where the operational temperature often exceeds 35° C.
- The unique composition of our products allow us to pump the materials through several hundreds of meter of 2" and 3" hoses. This was verified in the DNV type approval for NaX® Q140-E where the hose temperature exceeds 35 °C.