GREATER GABBARD WIND FARM

YEARS OF TECHNICAL EXPERIENCE ENABLED CEMEX TO DELIVER A RANGE OF HIGH DENSITY CONCRETE MIXES TO BE USED IN THE PRODUCTION OF PRE-CAST CONCRETE MATS FOR USE UNDER THE SEA.

The growing trend towards sustainable energy sources has challenged existing engineering practices, particularly when the energy is harnessed off shore. Recently contractors have also opted to move towards a pre-cast foundation base, eliminating complicated in-situ placement and other intrusive foundation methods...

→ THE CHALLENGE

CEMEX were approached to help design and supply a range of ***high density concrete*** mixes to Subsea Protection Systems for use in off-shore wind farms. The pre-cast mats are used to protect cables beneath the sea, as well as providing stabilisation for the wind turbines. Subsea were involved in a number of these projects, including the Greater Gabbard Wind Farm, which is one of the world's largest off-shore wind farms, boasting a 504 MW capacity generated from 140 turbines.

The customer needed a range of mixes to be used for the mats dependant on their final usage and this required a detailed mix design and testing phase to ensure the correct consistency and strength could be achieved. ***High density concrete*** can also be difficult to transport, with some mixes being as dense as 3800kg/m3. This increased weight means that mixer trucks reach their maximum laden weight quicker whilst carrying less than maximum volume. The nature of the production process also called for a reliable and continuous supply, so as not to affect the integrity of the bases.

→ THE SOLUTION

CEMEX were ideally located less than one radial mile from the Subsea operation in Great Yarmouth. This became an important factor during the continuous pours required to complete each base. Due to weight restrictions on the vehicles they could not carry a typical full load, so a quick turnaround was essential in maintaining supply continuity. Raw material supply was also a key component of the project's success. CEMEX utilised both in-house materials as well as a specialist aggregate supplier to achieve the correct densities. Constant communication and involvement of the external supplier allowed CEMEX to gain a greater understanding of the raw materials, whilst also ensuring that supplies were matched with demand from the customer.

The onset of winter also provided a number of challenges for both Subsea and CEMEX as temperatures regularly fell below freezing. To alleviate this, CEMEX were able to provide hot water during periods of cold weather, allowing the production process to continue unimpeded.

→ THE OUTCOME

CEMEX have continued to work alongside a number of wind farm developers to develop solutions for both off and on shore sites. Using the experience gained supplying this contract, CEMEX have also been able to develop and refine manufacturing and logisitics practices.

KEY FACTS

- Contract - Stabilisation Bases & Protection Mats
- Customer - Subsea Protection Systems
- Volume - 1,000m3
- Main Mix - High Density Concrete

www.cemex.co.uk

CEMEX UK Materials

CEMEX House
Coldharbour Lane
Thorpe
Egham
TW20 8TD

Telephone: **01923 568 833**
Email: **gb-enquiries@cemex.com**
Website: **www.cemex.co.uk**

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