

Project:

Kårehamn Offshore Windfarm

Location:

*Swedish part of the Baltic Sea,
off the coast of Öland, Sweden*

Project completed:

2013

Owner/s:

E.ON Climate & Renewables

Applicator/Contractor:

Østermark Grouting A/S

**Concrete Producer/Design/
Installation:**

Jan De Nul

Market sector:

Offshore Wind

Products used & amounts:

MasterFlow 9500

48 tons

Kårehamn Offshore Windfarm

MasterFlow 9500 for a 48 MW Offshore Windfarm



Picture: ©Jan De Nul Group
Our reference in the Baltic Sea (Sweden): Kårehamn Offshore Windfarm

The background

The Kårehamn Offshore Windfarm is located in the Swedish part of the Baltic Sea, 7 km offshore from the coastal town of Kårehamn. E.ON Climate & Renewable invested 120 million Euro in the construction and operation of the 48 MW wind park. The 16 wind turbines of 3 MW each produce enough electricity to facilitate 28,000 homes and reduce the CO₂ output by 100,000 tons per year.

The challenge

Because of the soil conditions of the seabed, securing the foundations with piles was not an option. Gravity based foundations were therefore specially designed, using extra ballast of crushed iron ore and quarry stone as filling material. Due to water depths of 8 to 21 meters, each foundation was specifically designed for its location in the windfarm. Installation of the turbines on top of the foundations started in early 2013, when temperatures in this part of the Baltic Sea can fall to -15°C making working conditions difficult. Such conditions put great demands on the construction materials, i.e. the grout, being used.

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Kårehamn Offshore Windfarm

MasterFlow 9500 for a 48 MW Offshore Windfarm



Our reference in the Baltic Sea(Sweden): Kårehamn Offshore Windfarm

Our solution

As the turbines were installed onto the gravity based foundations in early spring of 2013, the grout material that links the two elements to the foundations requires early and rapid strength build-up. MasterFlow 9500 was therefore chosen since this material may be installed in temperatures as low as 0°C without the need of extra installation precautions like tenting and heating. The choice for MasterFlow 9500 allowed the grouting contractor to install the material in harsh and cold conditions, ensuring an on-time project completion.

The customer's benefit

- The use of MasterFlow 9500 has allowed the applicator, Østermark Grouting A/S, to execute the grouting works in very difficult conditions.
- Rapid hardening of the MasterFlow 9500, even at cold temperatures, allowed the EPCI contractor to securely install the wind turbines in a short period
- Meeting the deadlines for wind turbine installation and first electricity production

Projects facts at a glance

- Number of turbines: 16 Vestas, V112-3.0 MW
- Windfarm total capacity: 48 MW
- Homes equivalent: 28,000
- Turbine tip height: 136 meters
- Rotor blade diameter: 112 meters
- Typical water depths: 8 to 21 meters
- Distance from shore: 7 km
- Construction period: spring 2013
- Foundation type: gravity based foundation
- Size of foundation: up to 1950 tons with maximum height of 24,5 meters and a diameter at its base of 18 meters
- MasterFlow 9500: 48 tons

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