

Project:

Fallago Rig Wind Farm

Location:

Lammermuir Hills, East Lothian
Berwickshire

Project completed:

2013

Owner/s:

EDF Energy and EDF Energies
Nouvelles

Applicator/Contractor:

CRL

Designer/Architect/Specifier:

EDF Energy and EDF Energies
Nouvelles

Market sector:

Onshore wind energy

Products used & amounts:

MasterFlow 9200 ExagROUT
144 tons

Fallago Rig Wind Farm

MasterFlow 9200 for a 144 MW onshore windfarm



Our reference in Berwickshire (United Kingdom): Fallago Rig Wind Farm

The background

Consent for the 48-turbine Fallago Rig Wind Farm covering many square kilometres was granted by Scottish Ministers in July 2010, with construction commencing in 2013.

Fallago Rig Windfarm, located high in the Lammermuir Hills on the border of East Lothian and Berwickshire, presented many engineering and logistical challenges, including the need to carry out low temperature winter working.

The challenge

Each of the Vestas (V90) turbines is based on a reinforced concrete foundation, each of which typically comprises approximately 350m³ of concrete with 55 tons of steel reinforcement.

With an expected operational life of 25 years and with possible extension of further 5 years it was an important requirement that the grout should be independently validated as being fit for purpose in order to give long term and maintenance free operation of the windfarm.

During their lifetime wind turbine installations are exposed to millions of dynamic loads caused by wind actions and the rotation of the rotor blades. Additionally, these giant structures weighing of several hundred tons also create large axial loads on the foundations. The most important loads acting on a wind turbine structure are: axial load, vibration, rotation, bending and torsion. All these loads need to be transferred/absorbed by the grout connecting the tower to the foundation structure.

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MasterFlow 9200 for a 144 MW onshore windfarm



Our reference in (United Kingdom): Fallago Rig Wind Farm

Our solution

Vestas, the turbine manufacturer, after due consideration specified MasterFlow 9200 ExagROUT ultra high strength, fatigue resistant cement grout to form the structural connection between the wind turbine and concrete gravity foundation.

MasterFlow 9200 ExagROUT was selected because of its proven fatigue resistance, excellent long term durability and its ability to be used in harsh weather conditions and temperatures ranging from as low as 2°C. Vestas also engaged Master Builders Solutions' licensed grouting contractor CRL to carry out the installation of the MasterFlow 9200 ExagROUT. Master Builders Solutions' licensed grouting contractors are fully trained in the application of the MasterFlow grouts and fully comply with highest industry quality control systems.

The customer's benefit

The installation of the MasterFlow 9200 was carried out by the Master Builders Solutions' licensed contractor CRL to guarantee best quality works, and grouting was performed during the late summer and winter period with grouting temperatures down to +2°C. The combination of the rapid strength build-up of MasterFlow 9200 and its high ultimate strength, allowed for grouting works being performed in a very short overall installation time. This combination gave a saving on the programmed time of the overall project, thus giving the opportunity of earlier operation of the wind farm and, combined with the secure maintenance free installation, thereby significantly contributing to the overall project efficiency.

Projects facts at a glance

- Number of turbines: 48 x 3MW Vestas (V90) turbines
- Wind farm total capacity: 144MW
- Homes equivalent: 90,000
- CO₂ reduced per year 40,145 tonnes
- Turbine hub height between 80-125m
- Area of the wind farm: 2,600 acres
- Foundation type: concrete gravity foundation
- MasterFlow 9200: 144 tons

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