



SIKA AT WORK

FIFE ENERGY PARK, SAMSUNG 7 MW TEST TURBINE, NORTH SEA, UNITED KINGDOM

OFFSHORE & MARINE CONSTRUCTION
RENEWABLE ENERGY

BUILDING TRUST



FIFE ENERGY PARK SAMSUNG 7 MW TEST TURBINE



PROJECT DESCRIPTION

The Scottish government granted approval to Samsung Heavy Industries (SHI) for the testing of its first 7 MW offshore wind turbine at Fife Energy Park in the North Sea. Energy Minister Fergus Ewing granted consent for the offshore demonstration turbine, which has an installed capacity of up to 7 MW. SHI aims to use this prototype testing to enhance the reliability and efficiency of its offshore turbines for future wind farm projects.

Project name: Fife Energy Park
Location: Methil, North Sea, United Kingdom
Year: 2013
Application: Jacket foundations
Product: SikaGrout®-9500

PROJECT REQUIREMENTS

The four-legged steel jacket foundation, weighing over 500 tons, needed to be permanently secured to the seabed. Samsung's 7 MW offshore wind turbine – the world's largest offshore turbine and weighing several hundreds of tons – was installed on top of the foundation shortly thereafter. Each rotor blade measures 83.5 meters, longer than the wingspan of an Airbus A380, making them the longest ever installed to date.

Rising 196 meters above the sea at its highest point, this massive structure stands just 50 meters offshore in the Firth of Forth. A walkway connects the turbine to the shore, providing easy visitor access.

SIKA SOLUTIONS

SikaGrout®-9500 was chosen for this project as it is the only ultra-high strength grout specifically designed for grouting offshore wind turbines offering certified fatigue resistance, long-term durability, and zero autogenous shrinkage. Its fast strength gain enabled a more efficient and cost-effective installation.

Any product name or reference reflects the Sika product name at the time of creation of this document and may differ from the product name or reference during past events.

Our most current General Sales Conditions shall apply. Please consult the most current local Product Data Sheet prior to any use.



SIKA SERVICES AG
Tueffenwies 16
CH-8048 Zurich
Switzerland

Contact
Phone +41 58 436 40 40
www.sika.com

The steel jacket structure was anchored to the seabed using a technique known as rock socket grouting. Piles were inserted into 30 meters deep pre-drilled rock sockets. Specialist contractor FoundOcean Ltd. utilized its Super Pan Mixer, which doubles grout output rates compared to conventional high-strength grout mixers. 909 metric tons of SikaGrout®-9500 was pumped through a flexible hose and injected into the annulus, with grouting continuing until high-quality returns were observed.

In the second stage, the annuli between the jacket's stab-in legs and piles were grouted to form the structural connection. Grouting proceeded from the bottom up via the primary inlet until overflow from the top of the pile confirmed a complete fill. All grout mixing was performed onshore, with the material pumped directly to the jacket 50 meters offshore. The walkway connecting the turbine to the shore was also fixed and grouted to the seabed.

CUSTOMER BENEFITS

- The wind turbines were securely installed with high early and final strengths.
- The wind farm became operational ahead of schedule, enhancing return on investment.

PROJECT PARTICIPANTS

Applicator/ Contractor: FoundOcean Ltd.

QUICK FACTS

Number of turbines:	1 × Samsung 7 MW
Windfarm total capacity:	582 MW
Homes equivalent:	3,914
CO₂ reduced per year:	7,910 tons
Turbine tip height:	196 meters above mean sea level
Hub height:	110 meters
Rotor blade diameter:	171.2 meters
Area of wind farm:	70 km ²
Foundation type:	Jacket
Typical water depth:	5 m