

Triflex in Action

Batskär wind farm – Åland islands, Finland



Outstanding long-lasting protection for foundations against wind and waves

Triflex[®]

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The wind power plants located in the open seas make maintenance a logistical feat.

Triflex Towersafe protects wind power plants in Finnish waters

The Finnish province of Åland, which is made up of approx. 6,500 islands, is located around 40 km off the Swedish coast. In August 2008 the Batskär wind farm, named after the largest group of islands off the main island Fasta Åland, was connected to the network.

Since then, six ENERCON E-70 wind power plants have been providing up to 14 MW of renewable and emission-free energy. The exposed location on the barren cliffs means that the towers and foundations are subject to extreme weather conditions. The rain, wind and salty sea water all take their toll on the building structure over the years, endangering the stability of these enormous electricity producers. Liquid applied waterproofing from the Minden-based manufacturer Triflex was thus chosen in order to ensure the long-term stability of the foundations. The Triflex Towersafe waterproofing system, which was specially developed for the base and foundations of wind power plants, provides long-lasting waterproof and protection for tower foundations.

All those involved faced major challenges during the realisation of the project. The waterproofing of the foundations demanded a huge amount of work. What's more, work on site was made even more difficult due to the harsh climate and the difficult access to the sites.

All in all, a real challenge even for the specialists

The wind power plants have been erected on uninhabited islands and there are thus neither construction roads nor landings. All the material had to be transported on special ships. Loading was done by crane. The Berlin-based company WKA-Beton-Service GmbH was commissioned with realisation of the project. According to Uwe Szidat, the company's Managing Director, this presented a major challenge which, however, was successfully tackled together with all those involved.

As these islands are also breeding grounds for rare species of birds, numerous environmental protection requirements had to be met. For this reason, a foundation type was developed which is secured in the substrate with rock anchors. Unlike other foundation types, which, as a rule, are covered in soil, the foundations on the Åland Islands are completely exposed to the climatic elements such as storms and the sea water.



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The foundations of the wind power plants were waterproofed with Triflex Towersafe to ensure long-lasting protection.

"In extreme cases, such high stresses can cause the body of foundations to crack", explained the WKA Managing Director. To reliably protect these foundations from damage caused by the elements in the long term, ENERCON GmbH recommended that the Finnish operator should waterproof all the foundations in the Batskär wind farm with the Triflex Towersafe system.

Fast completion

The wind park was steeled against the effects of the wind and waves within four weeks: The working tools and waterproofing materials for the foundation area measuring approx. 425 square metres were supplied using deck cranes. On conclusion of the necessary preparatory measures, fleece-reinforced waterproofing was applied to the connection areas and the horizontal and vertical areas were also waterproofed. Triflex Towersafe Finish was applied to the foundations as a final finish.

The benefits of Triflex Towersafe

The Triflex Towersafe system was specially developed for use on wind power plants and has already proven itself in the most varied extreme locations, including in Norwegian fjords, the Irish Atlantic coast and the mountains of Portugal. Its liquid form allows even complex details to be waterproofed, leaving no seams or joints. The integrated special Triflex fleece additionally provides for flexible and long-lasting waterproofing and creates a dynamic crack-bridging surface in the event of structural movement. Since Triflex Towersafe is a fast curing waterproofing system, restoration work can be completed within just a few hours without having to shut the plant down. "Thanks to the good application properties and short curing time of the complementary system components, even stormy days and waves measuring several metres couldn't stop us getting the job done", is how Uwe Szidat summarised the successfully concluded project.





Application method



1 Transportation by ship to the Åland Islands.



2 Loading with the deck crane.



3 Naturally weathered foundations.



4 Preparation of the substrate by means of abrasion.



5 Levelling off of the formwork edges with Triflex Towersafe Paste.



6 Priming of the connections, details ...



7 ... and surfaces with Triflex Towersafe Primer.



8 Waterproofing of the connections with Triflex Towersafe.



9 The surfaces are then ...



10 ... waterproofed with Triflex Towersafe.



11 The finish is finally applied ...



12 ... using Triflex Towersafe Finish.

Site data

- Project: Batskär wind farm – Åland Islands, Finland
- Plant type: 6 ENERCON E-70/2.3 MW
- Client: Leovind AB
- Area: approx. 425 m²
- Substrate: steel and concrete
- Waterproofed with: Triflex Towersafe
- Completion: June 2009
- Realised by:
WKA-Beton-Service GmbH, Berlin

Application method

- Substrate preparation: Abrasion of the concrete
- Primer: Triflex Towersafe Primer
- Detail waterproofing: Triflex Towersafe
- Surface waterproofing: Triflex Towersafe
- Finish: Triflex Towersafe Finish

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