



TENNET – protecting onshore monopile nuts and bolts

Case Study

OXIFREE[®]
METAL PROTECTION

Oxifree TM198 Nut/Bolt encapsulations.



Moulds were used to help with the application of material, following a simple preparation.

Location	Bleiswijk, The Netherlands
Local Environment	Onshore
Date	15/04/2017
Condition	New
Total Coatings	52
Substrate Type	Nuts/Bolt Electricity Monopile
Duration	1 Day



Summary

On the 15th of March 2017, Isolatie Combinatie Beverwijk (ICB) and our representative were asked to perform a site visit to inspect the mounting nuts/bolts on an electricity monopile in Bleiswijk. The nuts/bolts are especially vulnerable to corrosion, with their only protection until now, being paint. The mounting area is exposed to the environment, putting it at risk of corrosion from all environmental factors.

Moulds



Introduction

TenneT is a leading European electricity transmission system operator with activities in the Netherlands and in Germany. They ensure a reliable and uninterrupted supply of electricity to over 40 million people.

There are currently 3,200 monopiles throughout the Netherlands with plans to construct more.

Before Application



Objective

In order to speed up the application process and minimise material use, a selection of moulds were placed in position over the Nut/Bolt structures.

The objective was to experiment the most efficient way of applying Oxifree TM198.

After Application



Case Study



Process

Our Polymelt 50 application machine was powered up by a 30 Kva generator.

The Oxifree Supervisor filled the moulds with melted Oxifree TM198 material. All 52 bolts were successfully coated in 1 day and there was no interruption to service as TM198 can be applied to live equipment without a shutdown.

The project was then to be reviewed in 6 months time to assess effectiveness of Oxifree TM198.

A total of 52 bolts were coated. These were then revisited 6 months later.



Solution

On the 3rd October, almost 6 months after the initial Oxifree applications, a site visit was organised to inspect the effectiveness of Oxifree TM198.

The Oxifree TM198 material was removed on 3 bolts and you can clearly see there was no visible corrosion underneath the material.

The Nuts/Bolts were still in the same condition as when they were coated showing the effectiveness of TM198.



Conclusion

Oxifree TM198 is a viable long-term solution for the protection of Nuts/Bolts on monopile supports for electricity pilons.

Oxifree TM198 would be equally effective on similar structures such as monopile wind turbines.

It is hoped the work will be extended to a larger project using more efficient moulds.

