



**PORT OF
GOTHENBURG**

Protecting steel to concrete interfaces

Case Study

KORROSIONSTOPP

OXIFREE[®]
METAL PROTECTION

Protecting steel to concrete connections at the Gothenburg energy port

Location	Port of Gothenburg
Local Environment	Energy Port
Date	2015-2017
Condition	Clear, wind
Total Coatings	3
Substrate Type	Steel beam footing and brace
Duration	1 day a year for 3 years

Summary

Korrosionsstopp were asked to conduct a trial of TM198 at the Port of Gothenburg, an Energy Port.

The specified area for protection was on the tanker loading jetty which protrudes ½ mile into the open water at the mouth of the port.

The environment is subject to salt water, wind, and substantial weathering, and the steel to concrete interfaces from the loading structures suffer considerable corrosion.

Korrosionsstopp were called in to conduct a trial with TM198 for protecting these interfaces and reducing the maintenance expenditure.

Introduction

For energy ports the effects of corrosion have been a costly factor for many years.

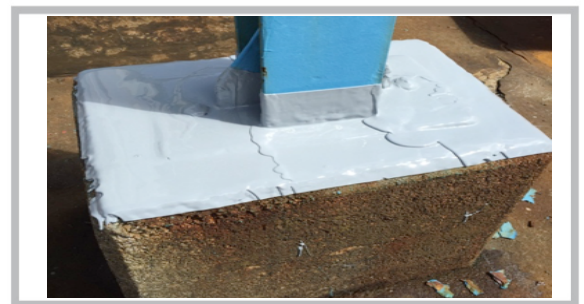
Valves, flanges and beam footings have historically suffered from exposure of the elements which leads to intrusion of particles, moisture and salt which in turn leads to corrosion and during winter even frostbite of concrete foundation. In addition, in the test area salt water is used for fire extinguishing and this facility is tested regularly. This escalates the rate of corrosion and increases the risk of structural failure.

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Before and after applications at the yearly intervals



After



Before - 2015



After - 2017



Case Study



The steel to concrete interface before and after application, then reviewed after 1 year. The bolts were in perfect condition.

Objective

Steel to concrete interfaces typically are at risk from corrosion from both the surface and through moisture ingress from the concrete itself.

TM198 is able to coat these surfaces successfully with minimal surface preparation and arrest existing corrosion.

A sealant is used to secure the edges to further prevent the ingress of moisture and contaminants.

Process

Before application the areas were brushed with a wire brush to prepare the surface, removing any loose rust and debris. This minimal surface preparation is a key advantage to using TM198. The applications took just one day using the Polymelt 50 applicator. A total of 3 applications took place.

TM198 starts working immediately and does not require equipment to be shutdown. The applications were then inspected after 1 and 2 years.

Solution

Applying TM198 creates a protective barrier against both corrosion and contamination. It reduces the cost of maintenance by protecting the metal assets. The material is easily removed for inspection as seen in the photographs. Inspections were carried out in June of 2016 and May of 2017, these inspections showed no further corrosion of the protected assets and this protection will continue for many years. Other solutions may not withstand the harsh environments that the Port receives, especially in winter when the temperatures cause the water to freeze on land. TM198 can withstand these extreme temperatures.



Conclusion

The project was a great success with the 1 and 2 year reviews showing outstanding results from TM198. The existing corrosion had not deteriorated any further and the other metal work that was new when coated was still in the same condition. The coating will go on to protect the assets for many more years in this variable environment.

The protection afforded by Oxifree TM198 at the steel to concrete interface, ensure the structural integrity is retained.

More photographs

This first photo shows an unprotected base which demonstrates the level of corrosion the port experiences in the course of a year,

The second and third photo shows the bolts being uncovered after 2 years of protection from Oxifree TM198 – there is no further corrosion, the bolts remain in perfect condition and can easily be operated if required..

Image showing the jetty from Satellite view –See red pointer

