Life Asset Extension for Corroded Pipe Supports

Case Study

MUN SIONG ENGINEERING LIMITED

OXIFREE®
Surface Tolerant Corrosion Solutions

Addressing Corrosion Under Pipe Supports (CUPS)

Location	Singapore
Local Environment	Shipyard,dry-docking
Date	1st Phase: 27 Nov 2019 –18 Dec 2019 2nd Phase: 6 Jan 2020 – 31 Jan 2020
Condition	Hot, humid and rainy episodes
Total Coatings	190 pcs, 8'' to 16''
Substrate Type	Pipe supports, U-bolt clamps, flanges
Duration	40 days

Summary

Mun Siong carried out Oxifree TM198 application on a FPSO which had pipe support/flange components that were heavily corroded, due to salt and water exposure in offshore environment. After encapsulation with TM198 the pipe supports were completely protected from any further corrosion damage caused by the harsh offshore environment.

Introduction

The client is one of the world's leading Floating, Production, Storage and Offloading (FPSO) service provider. The FPSO was built in 1992 and has been stationed in Keppel Shipyard for a limited time period to undergo refurbishment and life extension works before being deployed offshore.

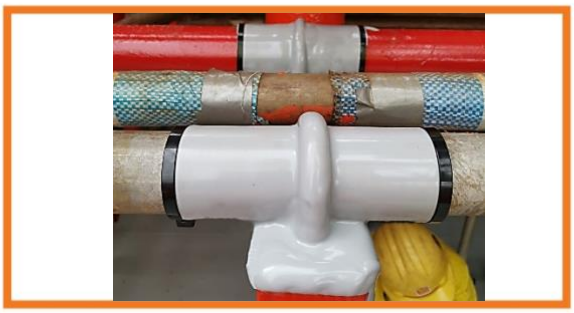
The vessel has been regularly maintained using blasting and painting methods. However there was persistent corrosion, especially on complex geometric areas such as pipe supports, pipe brackets and flanges.

Objective

The primary objective of these works was to provide an efficient and viable solution to stop further CUPS and extend the lifespan of the substrates that are exposed to crevice corrosion. The secondary objective was also to perform works with minimum disruption onboard the vessel to allow other works to be carried out during the limited dry-docking window period.

The intention of the client was to use the vessel as pilot project to demonstrate the efficiency of TM198 which could reduce maintenance costs dramatically, saving both CapEx and OpEx expenditure in the long run.

Pictures of the substrates with Oxifree TM198 after job completion



Case Study

Process

The equipment, ancillaries and Oxifree TM198 material were lifted onboard the vessel using a crane one day before the works.

Before the application, the areas were cleaned with a wire brush (St 2) to prepare the surface, removing any loose rust flakes.

A crew of 3 technicians and 1 supervisor was mobilized to perform the works. During the application, the material was continuously added into Polymelt PM50 ATEX Machine allowing for an uninterrupted application.

Collection trays were installed around the substrates so that so that the dripping material could be placed back in the machine and reused.

To protect the leading edges of the coating, Smart Band and silicone sealant was used. Although this is not necessary, it is a precaution and best practise.

Solution

Total quantity of 190 components including pipe supports, U-bolt pipes and flanges were coated with Oxifree TM198.

It was a commendable solution as no lifting of pipeline and no blasting activities were required. Oxifree's simple application process also allowed other works to be carried out around the application areas.

The coating is built with corrosion inhibitor oil which exudes from the material and immediately stops further corrosion. It can be removed easily using a cutter or a penknife for maintenance and inspection purposes.

Conclusion

The 190 substrates were successfully coated, offering immediate and long lasting protection on the salt spray exposed substrates. Oxifree Anti -Corrosion Thermoplastic (ACT) coating is deemed to be the best solution to address CUPS corrosion effectively.

The client will inspect the coated components later in the year with the intention to further integrate TM198 in their global maintenance budget.

Pictures of the substrates with Oxifree TM198 after job completion