



Pilot project

Protecting flanges on a FPSO deck

Case Study



## Demonstrating TM198 on selected flanges at the live riser turret and deck of the FPSO

Location	Indonesia
Local Environment	FPSO
Date	October 2015
Condition	Hot and Humid
Total Coatings	4
Substrate Type	Flanges
Duration	1 day

### Summary

On October 2015, IEV was invited by an established oil and gas producer in Indonesia to demonstrate the Oxifree coating on one of their FPSOs.

The pilot project was implemented to demonstrate the capability of Oxifree non-bonding encapsulation coating technology to control corrosion on selected flanges at the live riser turret and deck of the FPSO.

### Introduction

The FPSO is situated in the Natuna Sea.

The Natuna gas field is in the Greater Sarawak Basin about 1,100km (700 miles) north of Jakarta and 225km (140 miles) northeast of the Natuna Islands, Indonesia's northernmost territory in the South China Sea.

The 640m Natuna transport system is one of the world's longest subsea gas pipelines.

### Objective

All offshore production assets are exposed to harsh marine environment, including but not limited to salt water, salt mist and UV rays, leading to corrosion of exposed metal components. The client's assets were also subject to similar conditions. In this case, the main challenges were:

1. limited space, accessible only through a small manhole, in which conventional method of corrosion prevention may not be applicable; and

# OXIFREE<sup>®</sup>

METAL PROTECTION

*The extent of corrosion can clearly be seen before application*



After



Before



After



# Case Study



2. surface preparation and application without an operational shutdown, in which blasting and painting is not an option.

## Process

Prior to actual application, a function test was carried out at the selected flange on top deck for client to witness the Oxifree application. Upon completion of surface preparation, two coatings of Oxifree TM198 were applied on four selected flanged connections on both the riser turret and the deck of the FPSO. The following is the detailed scope of work for the demonstration.

### Scope of Work:

- 1 unit of 6" gas line flange hanger at the riser turret
- 1 unit of 8" crude oil flange at the riser turret
- 2 units of 6" flange at FPSO deck

### Work Description

The Oxifree material (TM198) is melted in Polymelt 12 machine. The coating is then applied in 2 layers onto the surface of the selected flanges with the minimum thickness of 4mm achieved.

## Solution

Both the Polymelt 50 A/I (Atex and IECEx certified) and Polymelt 12 were mobilized, however for the work on the turret the smaller and more lightweight PM12 was employed to ease the application process, considering the limited workspace at site (a manhole of 65cm x 90cm). Minimal surface preparation is required prior to coating. Oxifree application only requires a minimum surface preparation of St2 standard without causing operational shutdown, which saves client's time, cost and resources.

The work was carried out within one day without the need for any shutting down of equipment. Protection is provided immediately by the TM198 coating yet allows for maintenance and inspection at any time, by simply removing a small section and refilling.

*The scope of work was increased to accommodate further corroded assemblies*





## Summary

This unique Oxifree coating application for a FPSO has overcome challenges in providing corrosion protection on a live riser turret for the oil and gas line flanges, within an extremely limited working space and without shutting down its operation.

The Oxifree coating was employed as a pilot project to undertake this challenge and has proven to be an effective and efficient solution. Hence, it would significantly reduce the maintenance costs and prolong the life span of the protected assets.

Oxifree material has been thoroughly tested and exceeds industry standards. It is capable of extending the life of assets for many years in harsh environments. It is also suitable for protecting complex assemblies and moving parts.