



**Dŵr Cymru**  
**Welsh Water**

**END OF JOB REPORT FOR OXIFREE  
COATING ASSETS  
BRITHDIR MAWR RESERVOIR  
FEBRUARY 2019**

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Location	BRITHDIR MAWR
Local Environment	RURAL
Date	20 <sup>th</sup> Feb 2018 to 20 <sup>th</sup> Feb 2019
Condition	N/A
Total Coatings	N/A
Substrate Type	N/A
Duration	Twelve Months



## Summary

Orbis Asset Integrity Ltd were contracted by Dwr Cymru to coat two valves and three flanges with Oxifree TM198

The assets were located at Brithdir Mawr Reservoir near Mold in North Wales.



## Introduction

The assets to coat with Oxifree TM198 were located within a tunnel in the dam at the end of the reservoir. One of the difficulties of the job was access with all the equipment via a very narrow bridge and then a steep descent to the tunnel entrance. This was accomplished by using a Mule 4x4 and a trailer albeit a very narrow 'squeeze'.



## Objective

The objective for this trial was to complete the coating of two 10inch x 150 valves and three flanges. The trial was to last for six months but was extended to twelve months to give more time to assess the outcome over an extended period.

By conducting this trial it will prove that Oxifree will quickly and efficiently protect and extend the overall life of the assets.





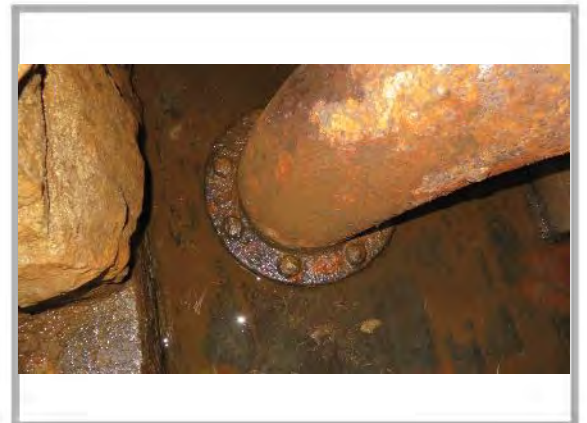
## Process

The process of Oxifree TM198 being applied is straight forward. Oxifree is a thermoplastic encapsulation system that is applied via a Polymelt application machine with a heated hose and gun. The material cools on contact and provides immediate protection.



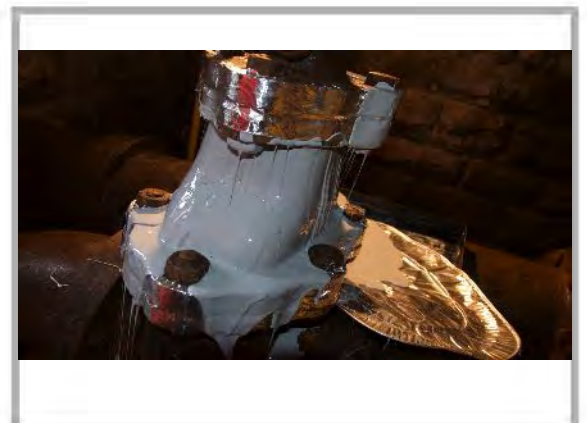
## Operations - Preparation

All the equipment – Polymelt Machine and Generator were transported down to the site in a trailer pulled by a 4x4 Mule. The choice of the Mule proved to be good as no other vehicle pulling a trailer would have manouvered across the bridge as it was extremely tight as only a few centimetres of space were available on either side. The trailer had to be manhandled to bring it into line. The descent from the bridge down to the tunnel entrance was no issue but reservations were noted for the return trip.



The surface of the valves and flanges were dried off as much as possible and were subjected to wire brushing to remove as much loose material as possible to minimise contamination of the product during 'run off' for re-use. Compressed air was also used to blow off loose material and also dry the surface. The original plan was to coat the flange going into the ground but was deemed too wet as a lot of surface water was present.

Aluminium tape was used to cover the flange gaps to prevent Oxifree from entering. Reasoning that makes it easier to remove the coating and also saves the client money in reduced product usage.







## Operations (Cont)

Both valves to be coated were closed because when opened and cold water flowing through condensation formed on the outside. The valves were wire brushed and compressed air used to blow the surface rust away. This is one of the major properties of Oxifree where only loose particles of rust have to be removed and not be subjected to blasting down to bare metal. The natural leeching of oil from the product contains an inhibitor which prevents any further corrosion along with the fact that oxygen is removed when the encapsulation takes place. It can be seen in the photo at the bottom right, the upper concrete plinth which was coated along with the valve and flanges.



## Operations - Coating

Once the surfaces of each of the valves and flanges were dried and cleaned, coating operations began. One of the valves we were going to coat fully to include the flanges on each side. The other valve we only coated the body and left the flanges uncoated. This was to have a comparison to work to. The flange in the background of the photo below was also to be coated.





## Operations - Coating

Below Photograph shows the fully coated valve and flanges





The above shows the part coated valve without the coated flanges





## Operations – Twelve Months Later – Coating Removal

Below are a series of photos showing the assets as found when entering the chamber on 20<sup>th</sup> February 2019-02-26





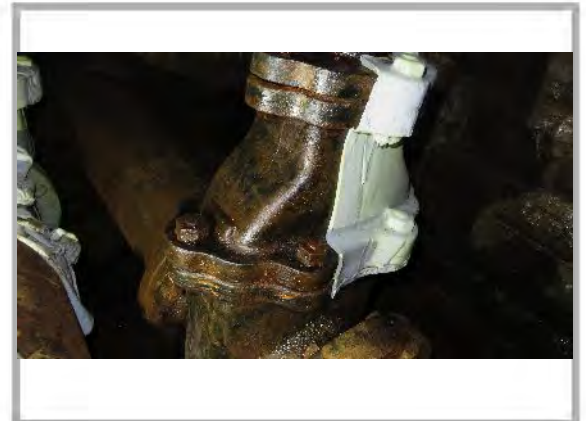
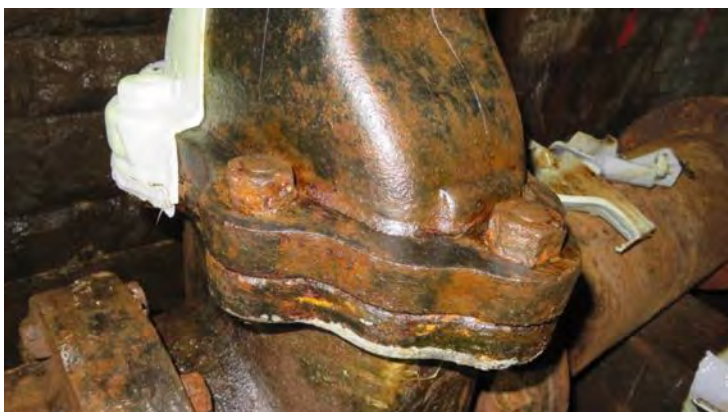
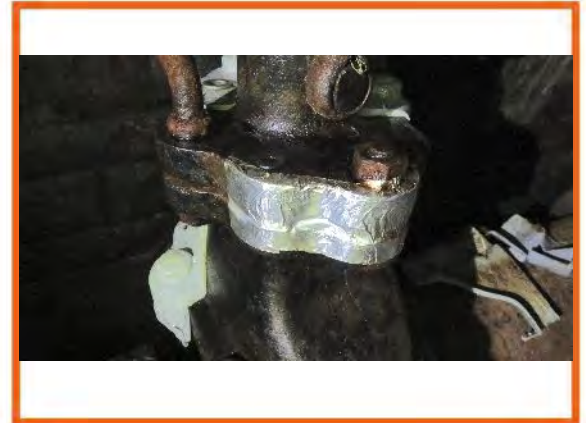
## Conclusions

One of the questions brought up was why the inside of the removed coating was stained brown. This is easily explained by the fact the surface of the assets were corroded and we only lightly wire brushed to remove the loose contamination. There was still corrosion present and the inhibited oil within the product has dissolved some of the remaining corrosion. If the assets had been blasted to clean metal or they were brand new then there would be no staining.

One can see by the coating that the surface was showing slight contamination and the surface was slightly oily. The oil within the product leeches out naturally as this a barrier to prevent moisture and any other contaminates ingressing.

A quick wipe over with a cloth removed most of the surface contaminates.

One can see by the photos that there is a film of oil on the surface of the valve once the coating was removed.





Orbis Asset Integrity would like to take this opportunity to thank Dwr Cymru Welsh Water for their interest in Oxifree TM198 and coating their assets at Brithdir Mawr Reservoir.

Hopefully this trial has proved that Oxifree TM198 will preserve and extend the life of many of your assets.

