



Volume 31 - Number 4

The rehabilitation of the Maitlands River Pipebridge, South Africa. Pipebridge being cleaned of old coating ready for the application of the Denso Steelcoat System - See story pages 8-9

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LEADERS IN CORROSION PREVENTION & SEALING TECHNOLOGY

Denso Aids Installation of Erskine Bridge Crash Barrier

Densoband has been chosen for use in the installation of new crash barriers on the A898 Erskine Bridge, Glasgow. The volume of traffic has greatly increased since the bridge was opened in 1971.

Consequently the existing barriers in the central reserve were not providing appropriate levels of protection to the bridge towers and cable anchorages against impact from the largest HGV's. Similarly, nearside barriers needed replacing in this project. All of the new barriers were designed by Flint & Neil, specialist bridge consultants.

The work was carried out for Transport Scotland who appointed Highway Barrier Solutions (HBS) as Principal Contractor. Scotland TranServe is the Engineer who managed the work.

The Glasgow branch of Briggs Amasco, specialists in industrial roofing and surface waterproofing recommended the use of Densoband in the reinstatement of the road asphalt adjoining the steel posts of the new crash barriers. Densoband was used to form a flexible weatherproof seal on the vertical joint face between the asphalt and steel.

Working in conjunction with Scotland TransServe, Briggs



The Erskine Bridge

Amasco applied all the asphalt reinstatement and Densoband.

Densoband is approved by the Department of Transport in

the Manual of Contracts 7th Edition for use in asphalt wearing course joints.

Densoband forms a flexible weatherproof seal between the crash barrier bases and surrounding asphalt.



Project Summary

Product type:
Sealing Mastics

Country: Scotland

Object: Crash barrier bases

Problem: Weatherproof jointing

Product

solution: Densoband

For quick identification of the relevant product type used in each story we have used the following colour codes:

Protective coatings for.....

- BURIED PIPELINES & LPG VESSELS
- EXPOSED STEEL & PIPEWORK
- SUB SEA PIPELINES & JETTY PILES

Protective linings for.....

- STORAGE TANKS, PUMPS ETC

Sealing & waterproofing.....

- SEALING MASTICS
- MEMBRANES & FLASHINGS
- INDUSTRIAL TAPES



LEADERS IN CORROSION PREVENTION & SEALING TECHNOLOGY

Denso Steelcoat Chosen for Derry Gas Pipeline

Firmus Energy who are a gas network operator responsible for the supply of natural gas to over 10 major cities and towns in Northern Ireland recently decided to upgrade the protection to a 360m long 273mm diameter pipeline carrying natural gas across the River Foyle in Derry, Londonderry.

Following consultation with contractors McNicholas it was proposed to use Steelcoat 100/400 System to provide long-term protection from corrosion in the aggressive marine environment. The heavy duty Steelcoat system comprises Denso Hi-Tack Primer, Densyl Mastic, Denso Hi-Tack Tape, Denso Ultraseal Tape and

Denso Acrylic Topcoat. It was chosen because of its proven properties for corrosion prevention and its suitability for application to surfaces with minimum surface preparation.

The Denso Steelcoat System was applied by EB Gas Services Ltd of Newry under the supervision of McNicholas. Surface preparation to remove

Project Summary	
Product type: Exposed Steel Coating	
Country:	Ireland
Object:	Steel pipeline
Problem:	Corrosion prevention
Product	Denso Steelcoat
solution:	100/400 System

existing loose paint coating was carried out using hand scrapers and wire brushing.

Firmus Energy are delighted with the completed application which included matching the Denso Acrylic Topcoat to the colour of the existing overall bridge structure.

The Denso Steelcoat 100/400 System was an ideal choice for protection of an exposed steel pipeline in a marine environment.





LEADERS IN CORROSION PREVENTION & SEALING TECHNOLOGY



Archco-Rigidon Protects Injector Spools, Pipework and Vessels

Painting and Labour Ltd of Immingham are long-term users of Archco-Rigidon 403D and 503D glass flake vinyl ester linings. The company has been regularly contracted to line internal surfaces of pipework, vessels and also injector spools with these specialist protective linings following abrasive grit blasting to the Swedish Sa2½ standard near white metal.

Cristal Pigments, also of Immingham, is a leading customer for Painting and Labour's services and recently commissioned them to line some injector spools and pipework for which the pretreatment was

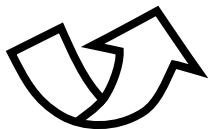

done at Painting and Labour's workshop.

Following blast cleaning of internal surfaces to Sa2½ the first coat of Archco-Rigidon 503D was applied to approximately 1000 microns.

A second coat consisting of Archco-Rigidon 403D was applied to 1000 microns thickness to achieve an overall thickness of 2000 microns. A final 250 microns coat of Archco-Rigidon Blue Wax Topcoat was then applied. Final thickness readings were taken and full holiday detection was carried out to ensure the work was in line with specification requirements.

Whilst carrying out all of the lining work, Cristal Pigments representatives carried out inspections of the processes and reported their full satisfaction with them.

Painting and Labour also lined two small receiver vessels onsite at Cristal Pigments. One of them only required coating with Archco-Rigidon 403D on the bottom dish end. The full vessel specification was abrasive blast cleaning followed by multiple brush applied coats of Archco-Rigidon 403D to achieve 100microns overall thickness. On completion of lining both vessels were checked for film thickness and holiday detection readings.

ARCHCO  **RIGIDON**
Resistant  Materials

Project Summary

Product type:
Protective Lining

Country: UK
Object: Injector spools, pipework and vessels
Problem: Corrosion prevention
Product solution: Archco-Rigidon 403D and 503D



LEADERS IN CORROSION PREVENTION & SEALING TECHNOLOGY



SeaShield Protection for Bulk Export Port Wharf Piles

The Port of Dampier, located in the Pilbara Region of Western Australia, is the world's second largest bulk export port. Exporting iron ore, salt, liquefied natural gas, anhydrous ammonia as well as project cargo, break bulk and general cargo

The Port is located approximately 1,550 kilometres north of Perth on the west Pilbara's Burrup Peninsula. With more than 120ha of land area and 650 km² of marine waters, the Port is one of Australia's largest bulk export ports. Its network extends 350 kilometres inland to the iron ore deposits of the Pilbara region and 200 kilometres seaward to the oil and gas fields of the North West Shelf.

Problem:

The Dampier Port MOF Wharf Steel Piles had originally been coated in a marine grade epoxy system that was prematurely breaking down due to the extreme marine environment encountered in the NW of Western Australia. The client requested a 25 year maintenance free solution that could be verified through case histories and independent testing.

View underneath the MOF Wharf showing the SeaShield 2000FD system applied to the steel piles.



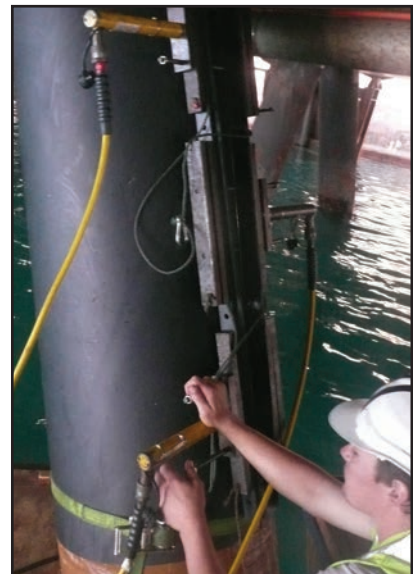
Product Solution:

Denso Australia submitted our Seashield 2000FD system for appraisal against other pile protection systems available in the market place.

The Seashield 2000FD system was ultimately chosen due to its ability to demonstrate:

- Long Term case histories
- Verifiable product data
- Ease of application
- Continuous jacket tension
- Expected 25+ years' service life

Now in its 8th year of service the Seashield 2000FD system has withstood multiple cyclones and severe seas encountered during these destructive storms.



Application of the SeaShield 2000FD Jackets.

Project Summary

Product type:
Sub Sea Splash Zone Coating

Country: Australia

Object: 235 steel piles and
80 fender struts

Problem: Original coating failed

Product: SeaShield

solution: Series 2000FD



LEADERS IN CORROSION PREVENTION & SEALING TECHNOLOGY

Denso Seals Canadian Manhole Chambers

In modern history there have been few products that have stood the test of time without undergoing multiple modifications and “improvements”. Rarely do you see a company with the confidence to continue to provide a product without feeling the need to constantly re-invent it.

Denso is one of those companies and its petrolatum tape is a product that truly has existed without significant change for nearly a century – and it still works.

The interesting thing is, it works for much more than its initial intention. The history of Denso petrolatum tape is long and storied and actually quite fascinating and its uses are constantly being diversified. Innovation through new application and not alteration.

Here in Ontario, Canada our communities seem to suffer the same problem; water infiltration into their chambers, culverts and catch basins. Many of these are designed to hold and even transport water but the problem arises when water is able to enter from cracks and failed joints. This results in the erosion of the under layer of roads, highways and city streets causing pot holes, traffic delays, safety concerns and huge repair bills.

As it turns out, Denso has a solution for this as well. Barrie, Ontario was the first to pick up on this practice and is now using Denso 12” petrolatum LT tape to wrap the exterior of their chambers both new as well as when exposed for rehabilitation. Other municipalities have since picked up on this. We are now tasked with spreading the word of yet another way Denso petrolatum tape can protect the

infrastructures of our communities. Flexible and able to withstand movement, pressure, vibration and

A new manhole chamber prior to wrapping with Denso Tape.



temperature fluctuations, Denso LT tape is a simple solution to a simple but serious problem. It is easy to apply, it requires minimal surface preparation and no curing time (allowing for instant backfill) and is far less expensive than the much more complicated alternatives.

The applications for this time-tested product are endless and this is truly what makes Denso the leader in corrosion prevention and sealing technologies.

Manhole chamber wrapped with Denso Tape.



Project Summary

Product type:
Concrete Manhole Sealant

Country: Canada

Object: Concrete manholes

Problem: External sealing

Product solution: Denso Petrolatum

Tape



A manhole chamber in Barrie Ontario is exposed for repair is wrapped with Denso Tape.



LEADERS IN CORROSION PREVENTION & SEALING TECHNOLOGY

Rehabilitation of the Maitlands River Pipebridge

Denso were recently involved in the rehabilitation of the Maitlands River Pipebridge. The Original Pipebridge was built in 1948 as a single 670Ø pipe known as the Church Hill Pipeline. In 1959 a second 1200Ø pre-stressed concrete line was added to the bridge.

In 1964 floods washed away the centre pier and the pier had to be replaced. The concrete pipe was also replaced with a 1168Ø steel pipe. In 1979 floods washed away the southern abutment and three piers subsided. A new abutment and

piers had to be constructed. In 1981 floods caused another three piers to subside.

All the original piers were then replaced and a new 1200Ø, 20mm thick welded steel pipeline was installed to replace the original 670Ø. The 20mm wall

Project Summary	
Product type: Exposed Steel Coating	
Country:	South Africa-Eastern Cape
Object:	Steel pipebridge
Problem:	Corrosion prevention
Product solution:	Denso Steelcoat 500 System

thickness was selected so that in the event of floods washing away the piers again the pipeline would be able to support itself.

In 1982 a tender was put out for the wrapping of the pipeline using a Denso Tape with a

The pipebridge during the early stages of having the original wrapping removed.





LEADERS IN CORROSION PREVENTION & SEALING TECHNOLOGY



Application of the new Denso Steelcoat 500 system.

cement slurry second wrap to provide mechanical protection. Since then the bridge and pipeline has undergone very little in the form of maintenance and there were signs of deterioration starting to appear along the $\pm 700\text{m} \times 1200\text{Ø}$ stretch of

Application of the Steelcoat System progressing along the pipebridge



pipework.

Due to the pipeline being in an environmentally sensitive area, right on the beach, the work was going to be challenging. First the original wrapping had to be removed and the pipe surface cleaned before application of the

A view from a nearby sand dune shows exactly how close to the ocean the pipebridge is and the harsh environmental conditions the Denso Steelcoat 500 System needs to perform under.



Denso Steelcoat 500 system could be applied. Because of the large diameter of the pipe it was decided that the cigarette wrap method of applying the tape would be most suitable for the project.



LEADERS IN CORROSION PREVENTION & SEALING TECHNOLOGY

Denso Steelcoat System Protects Purified Water and Crude Oil Tank Bases

The Denso Steelcoat Tank Base Protection System was recently chosen to seal the bases of a purified water tank in Qatar and a crude oil tank in the UAE.

The bases and chimes of Aboveground Storage Tanks (AST) present challenging conditions for corrosion protection. Salt laden aerosols and industrial pollutants can be

deposited on the walls of an AST. Rainwater run-off from the walls will transport these accumulated deposits to the base of the AST forming a strong electrolyte and

facilitating electrochemical corrosion. This can corrode the periphery of the tank base, the weld area and the lower wall. It can also cause crevice corrosion in the underside of the tank base. These will lead to metal loss, perforation and structural problems. The concrete annulus can also spall and degrade and any seal initially installed to the base of the tank at time of construction can degrade by the action of weathering or become irreversibly displaced/compressed /debonded by the cyclic movement caused by emptying and filling the tank.

Corrosion of the steel, degradation of the concrete, and loss of an effective seal can create a route for the ingress of water to the underside of the tank causing damaging and unseen corrosion to the external base of the AST. This can be particularly likely if the external periphery of the AST does not drain properly. The solution, is our Denso Steelcoat Tank Base Protection System.

Purified Water Tank



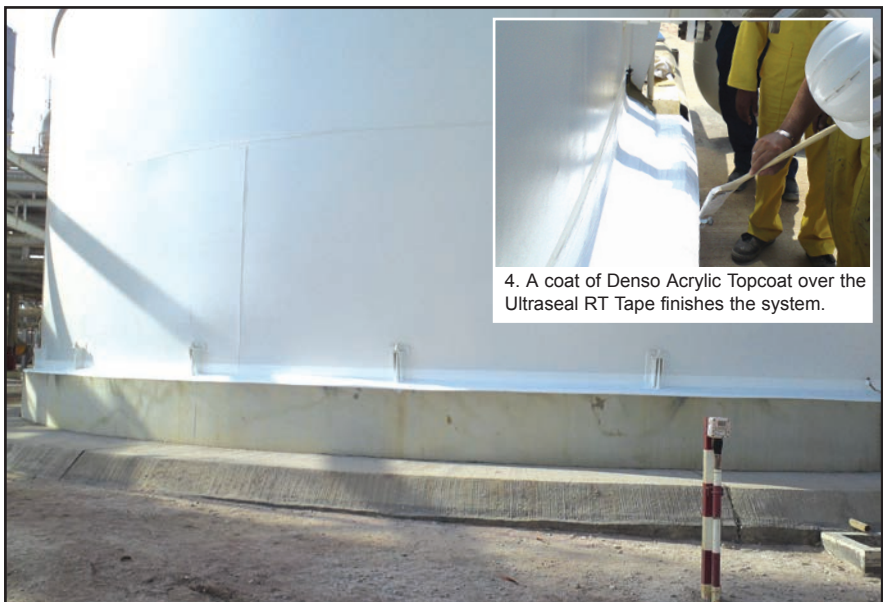
1. After cleaning and then priming with Denso Hi-Tack Primer the Denso Hi-Tack Tape is applied.



2. Denso Primer D is applied to the masked area before the application of the Ultraseal RT Tape.



3. The Denso Ultraseal RT Tape is applied in weatherboard style



4. A coat of Denso Acrylic Topcoat over the Ultraseal RT Tape finishes the system.

5. The finished Steelcoat System provides a neat long-lasting flexible weatherproof seal to the problem area.



LEADERS IN CORROSION PREVENTION & SEALING TECHNOLOGY

Crude Oil Tank



1. After cleaning the vulnerable area is primed with Denso Hi-Tack Primer.



3. A layer of Denso Hi-Tack Tape is applied.



5. The Denso Ultraseal RT Tape is applied in weatherboard style.



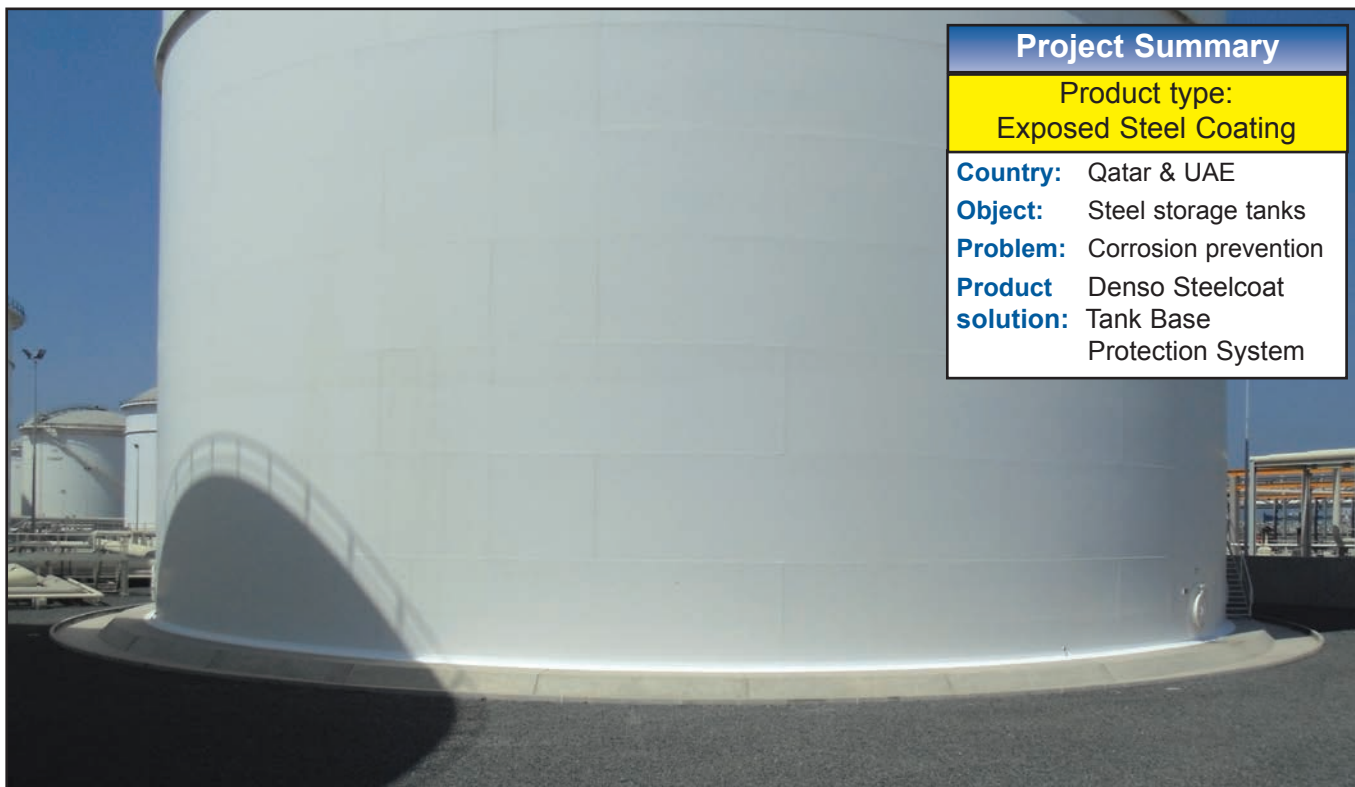
2. All voids are filled with Densyl Mastic.



4. Denso Primer D is applied to a masked area before the application of Denso Ultraseal RT Tape.



6. A coat of Denso Acrylic Topcoat is applied over the Denso Ultraseal RT Tape.



Another completed Steelcoat Tank Base Protection System.

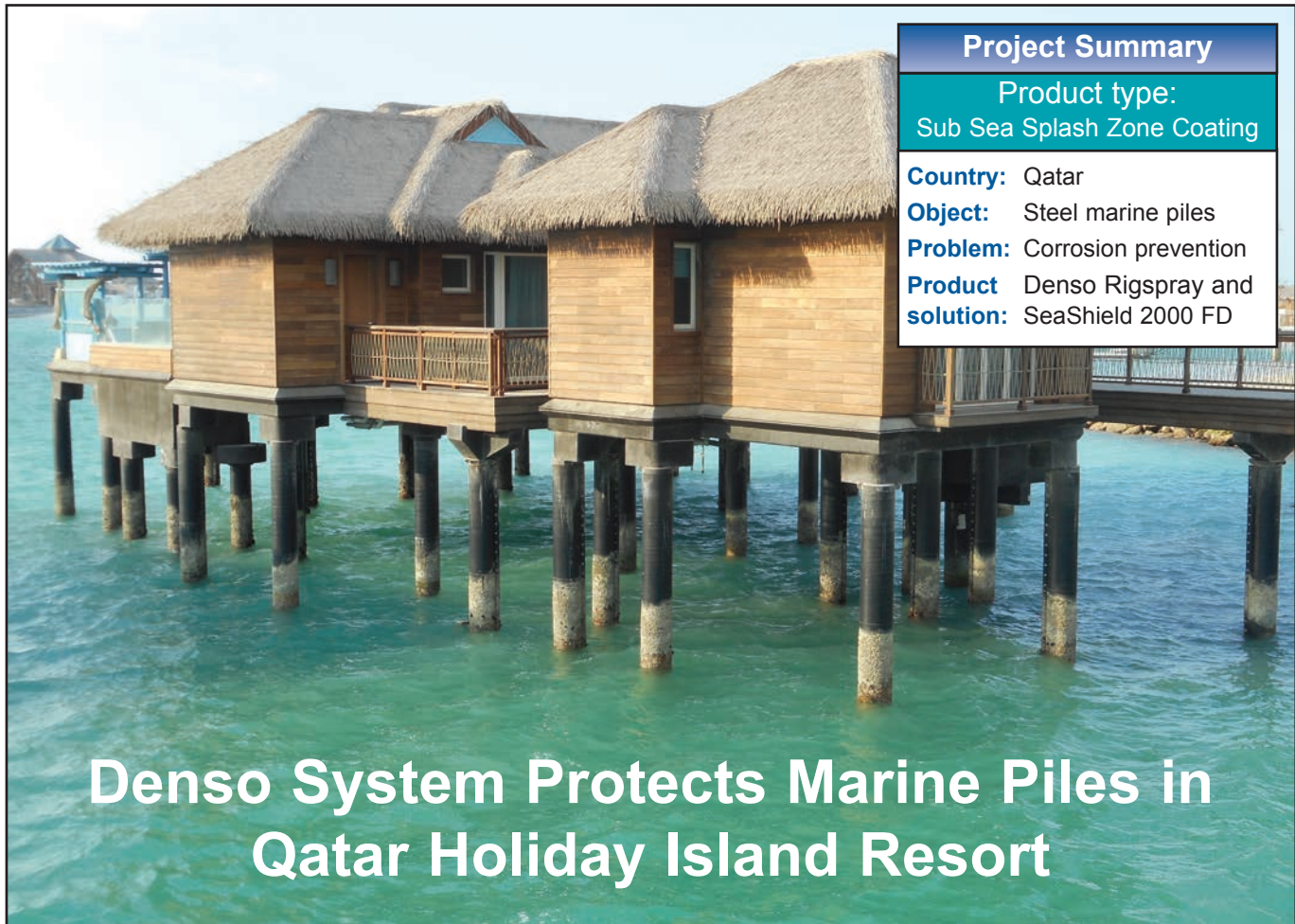
Project Summary

Product type:
Exposed Steel Coating

Country: Qatar & UAE
Object: Steel storage tanks
Problem: Corrosion prevention
Product solution: Denso Steelcoat Tank Base Protection System



LEADERS IN CORROSION PREVENTION & SEALING TECHNOLOGY



Project Summary

Product type:
Sub Sea Splash Zone Coating

Country: Qatar

Object: Steel marine piles

Problem: Corrosion prevention

Product Denso Rigspray and

solution: SeaShield 2000 FD

Denso System Protects Marine Piles in Qatar Holiday Island Resort

Denso Rigspray combined with the Denso SeaShield Series 2000 FD System has recently been used to protect marine piles which support holiday villas at the Antara Doha Island Resort, off Doha Bay, Qatar.

First all loose material and marine growth was removed from the piles by mechanical cleaning methods. The area at the top of the piles including the top pile fins and below to a minimum of 100mm was then abrasive blast cleaned to achieve an anchor profile of at least 50 microns. Two coats of Denso Rigspray were spray applied to this area to a total thickness of 1200 microns.

Next the SeaShield 2000 FD system was applied to the piles comprising a wrap of Denso

Marine Piling Tape followed by the installation of the SeaShield 2000 FD protective Jackets.

This specific combination system was recommended to the client as the best Denso option available to protect the most vulnerable areas of this design of marine pile.



The piles after cleaning to remove all loose flaking material, marine growth etc.





LEADERS IN CORROSION PREVENTION & SEALING TECHNOLOGY



Abrasive blast cleaning of the top of the pile area to be coated with Denso Rigspray.



Denso Rigspray was applied by spray in two coats to a total thickness of 1200 microns.



Denso SeaShield 2000 FD application begins with a circumferential wrap of Denso Marine Piling Tape to the previously cleaned pile surface.



The SeaShield 2000 FD Jackets are then placed over the pile and bolted together to complete the system.



LEADERS IN CORROSION PREVENTION & SEALING TECHNOLOGY

37 Years of Denso Protection in a Humid Environment

In 1977 American General applied the Denso Petrolatum System to protect their cooling tower framework and piping.

After years of service the cooling towers had to be replaced. This provided the perfect opportunity to inspect Denso's Petrolatum Tape System.

The petrolatum tape coating had been in service for over 37 years in a wet/humid corrosive environment. It was found after removing the Denso Petrolatum Tape, the steel was in perfect condition with no corrosion.

Since the coating system exceeded the life of the cooling tower the engineers specified that all pipes, valves, fittings and structural steel be protected with the Denso Petrolatum Tape System again.

Denso has a long list of successful case histories as we have been manufacturing petrolatum products for over 85 years.



The removal of a small patch of the Denso Tape coating for an inspection of one of the support I-Beams reveals the steel to be in excellent condition after 37 years.

The cooling tower pipework in its original 1977 Denso Petrolatum Tape coating after 37 years in service.





LEADERS IN CORROSION PREVENTION & SEALING TECHNOLOGY

The newly replaced cooling tower pipework and support frame protected with Denso Petrolatum Tape System.

Project Summary

Product type:
Exposed Steel Coating

Country: USA

Object: Steel cooling pipes and fittings

Problem: Corrosion prevention

Product solution: Denso Petrolatum Tape System



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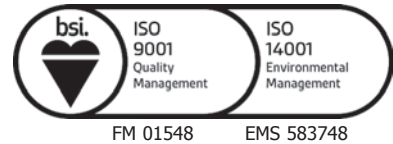
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