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140

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Over 140 Years Service to Industry

Cover: Viscotaq™ System
protection for a bridge waterline
in Canada. See pages 6-7.

DENSO DIGEST

Winn & Coales International Ltd

Volume 38, Number 4

 **50** years™
Sea Shield
PROTECTING MARINE STRUCTURES FOR 50 YEARS

Timber Pile Restoration in the USA
and Australia - See Pages 8 -11

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WINN & COALES INTERNATIONAL

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Denso Protection of Mechanical Equipment

For many years Stevens Equipment Rental from Silloth in Cumbria have used Winn and Coales (Denso) Ltd's anti-corrosion tape systems to protect many of the fittings and pipes on the equipment which they supply to various sites.

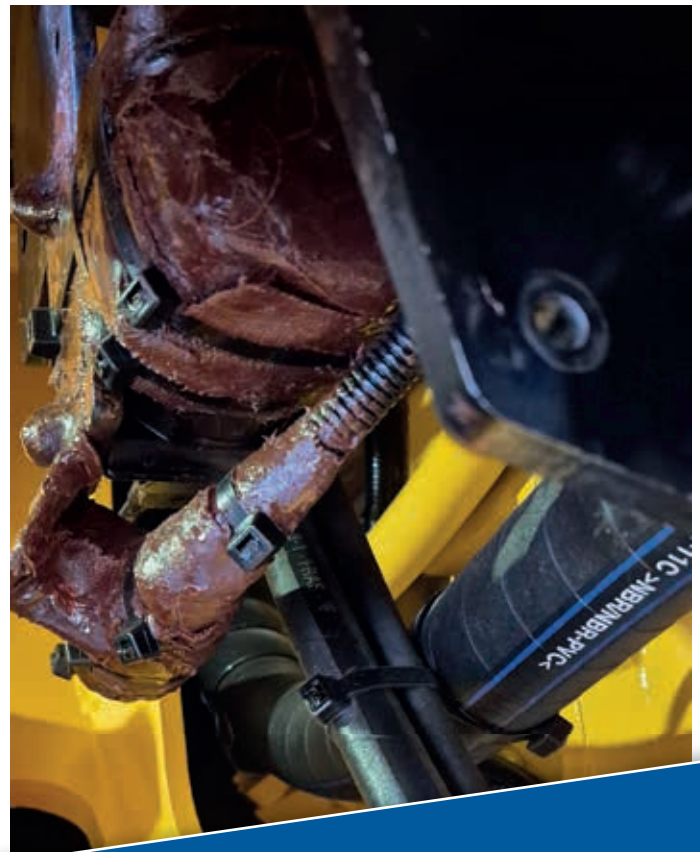
PROJECT SUMMARY

Product Type:
Coatings for Exposed Pipes & Fittings

Country: United Kingdom
Object: Rental Loading Shovels
Problem: Corrosion Prevention
Product Solution: Denso™ Petrolatum Tapes

Below and right: Some of the vulnerable areas on the mechanical equipment that benefit from Denso protection.

The use of Denso™ Tape, Densyl™ Tape and Denso Hotline™ Tape which cover a wide range of temperature requirements have proved highly successful even when the equipment is used by industries which handle very aggressive corrosive materials such as polyhalite and rock salt.



Denso Steelcoat™ Protection for Navigation Light Structure Replacement



After 50 year's of service, the existing navigation light on The Mucks Rock was finally retired and replaced by a new structure designed to withstand the harsh conditions.



The new light structure being airlifted into place by helicopter.

PROJECT SUMMARY

Product Type:
Coatings for Exposed Steel Structures

Country:	United Kingdom
Object:	Bolted Joints
Problem:	Corrosion Prevention
Product Solution:	Denso Steelcoat 100/400™ System

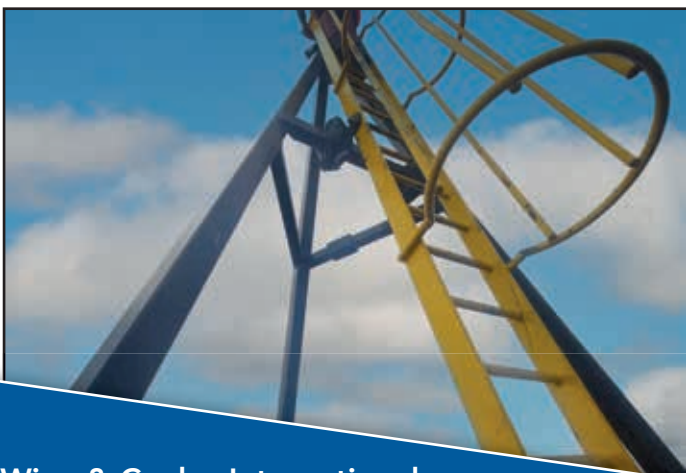
Aberdeen Marine Limited were appointed by Moray Council to install the new light on The Mucks Rock which is located 600m offshore of Buckie.

To maximise the life of the structure the Steelcoat 100/400™ System was applied to all the bolted joints on the structure, which due to the remote location was then airlifted in sections by helicopter and bolted into position on site.

The replacement of this structure was vital to protect vessels operating along this stretch of the Scottish Coastline.

The Steelcoat 100/400 System which consists of Denso Hi-Tack™ Primer, Denso Profiling Mastic™, Denso Hi-Tack™ Tape, Denso™ Ultraseal Tape and Denso™ Acrylic Topcoat has a proven track record in providing protection for above ground structures."

The bolted joints on the new light structure were protected with the Denso Steelcoat 100/400™ System.



Viscotaq™ Chime Sealing System used to Protect Airport Aviation Fuel Tank

As part of a contract to refurbish fuel storage tanks for North Air at Prestwick Airport, Teeside based firm, TIS (NGA) Ltd used The Viscotaq™ Chime Sealing System supplied by Winn and Coales (Denso) Ltd



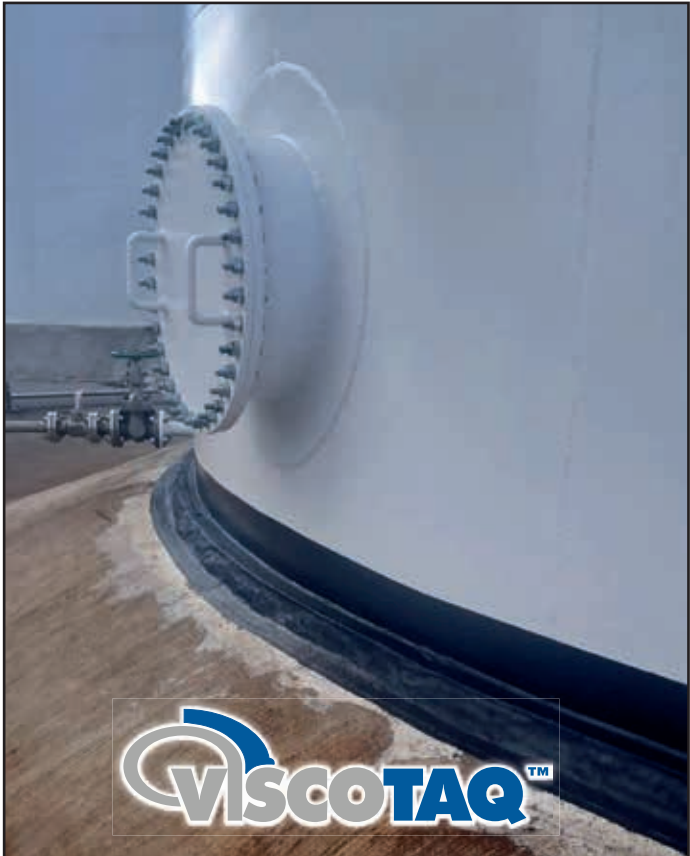
PROJECT SUMMARY

Product Type:
Coatings for Chime Sealing

Country: United Kingdom
Object: Fuel Storage Tank Chime
Problem: Corrosion Prevention
Product Solution: Viscotaq™ Chime Sealing System

The Viscotaq™ Chime Sealing System was used to prevent water infiltration at the concrete ring wall interface of the tank, a place where corrosion normally occurs. The Viscotaq System can be installed on new and existing facilities, can be painted immediately after installation, and does not interfere with any future paint, inspection.

The Viscotaq Tank Chime Sealing System comprises Viscosealant™, or ViscoPutty™ and Viscotaq™ EZ Wrap."



The Viscotaq™ Chime Sealing System applied to the fuel storage tank.



ViscoTaq™ Protection for Bridge Waterline



The bridge waterline cleaned and ready for the Viscotag System.

The Region of Peel located in Ontario, Canada had a critical water infrastructure project in urgent need of an anti-corrosion solution to protect a 5'-0" diameter x 170'-6" long above-ground bridge waterline. The impressive pipeline runs alongside a bridge and plays a vital role in transporting water. With an exposed setting, ensuring long-term protection from environmental factors was crucial. The region turned to GEI Consultants Canada, who served as the project's engineering partner, and Michels Canada, the general contractor, to deliver a solution that combined a robust design, skilled execution, and protective materials with a history of proven success.

PROJECT SUMMARY

Product Type:
Coatings for Exposed Steel Pipelines

Country:	Canada
Object:	Above Ground Bridge Waterline
Problem:	Corrosion Prevention
Product	Viscotag™ ViscoWrap™ ST,
Solution:	ViscoWrap™ PE Outerwrap

Below and top of page 9: A wrap of ViscoWrap™ ST (blue) is followed by a wrap of ViscoWrap™ PE (black).



To meet the challenge, Denso was chosen to provide its industry-leading corrosion prevention technology. After thorough consultation and technical review, Denso recommended its Viscotaq ViscoWrap™ ST along with ViscoWrap™ PE Outerwrap solution. This combination provided a high-performance, robust protective tape system, paired with a PE Outerwrap to deliver an additional layer of UV and mechanical protection. This solution allowed for an effective, easy-to-apply, and maintenance-friendly system perfectly suited for exposed steel in challenging outdoor environments. The project required precision and expertise, with teams carefully applying the Viscotaq system using various lifts to ensure complete coverage and application along the pipe's entire length.

The result was a resounding success. The protective system now shields the pipeline from moisture, UV exposure, and other corrosive elements, ensuring decades of reliable service. The Region of Peel can now rely on a pipeline system that is fully protected against corrosion-related risks. The end result of this project showcases the value of investing in advanced protective coatings for essential water infrastructure.



Below: A wrap of ViscoWrap™ PE Outerwrap completes the protective system.



Marine Borers Defeated: 6,500 Timber Piles Restored Using Denso's SeaShield Series 500™ System

In the early 1960s, New York Harbor had become overrun with raw sewage, oil and chemicals discharged by factories. This led to the Clean Water Act being passed in 1972. The Act established a framework for controlling pollution, including a requirement for permits for industrial discharges and the enforcement of penalties for violations.



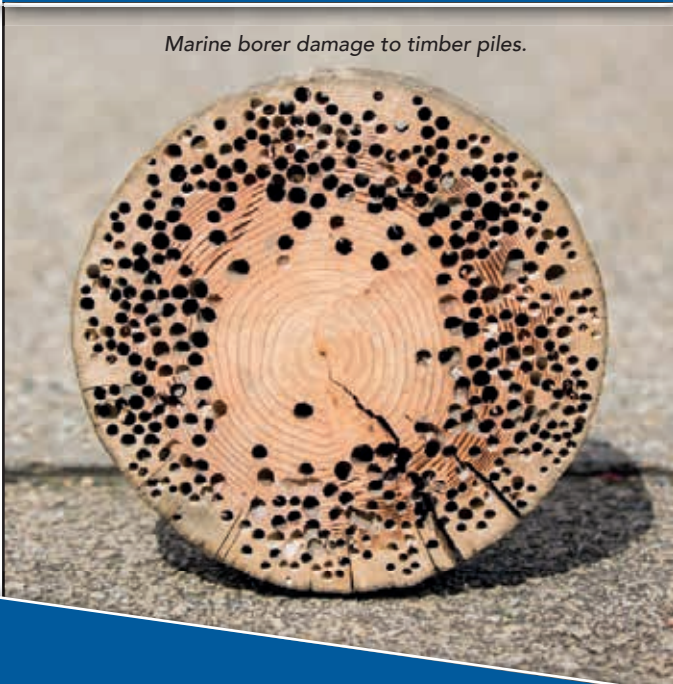
Above: Brooklyn, NY industrial piers in the early 1900s.

PROJECT SUMMARY

Product Type:
Sub Sea Splash Zone Coating

Country: United States of America
Object: Timber Piles
Problem: Rehabilitation and Protection from Marine Borers
Product Solution: SeaShield Series 500™ System

Marine borer damage to timber piles.



In addition, it included major upgrades to sewage treatment plants. By the 1990s, as the waters became cleaner, large quantities of marine borers had returned and began actively eating/destroying the timber pilings in the harbor. In the early 2000s, New York City's Economic Development Corp. (NYCEDC), with state and city funding, began repairs to many of these timber piers in the harbor, including the Hudson River and East River.

In 1984, the Port Authority of New York closed its cargo operations, including Brooklyn Heights industrial piers, and announced plans to sell the piers for commercial development. In 2010, Brooklyn Bridge Park was opened to the public, sitting on four former industrial piers held up by 13,000 timber piles (a 5th pier sits on a landfill). In 2018, the new Brooklyn Bridge Park was completed and the supporting timber piles, infested with marine borers (Teredo), were slated to be encased with FRP jackets and epoxy grout.

In 2019, Denso's SeaShield Series 500™ System was selected to protect and rehabilitate approximately 6,500 timber piles beneath Brooklyn Bridge Park Piers 3 and 6. Over the next two years, more than 110,000 linear feet of SeaShield™ Fiber-Form Jackets and 80,000 gallons of SeaShield 550™ Epoxy Grout were installed, forming a robust barrier against future marine borer attack.



Timber Pile Restoration in the USA



The system not only encapsulated the piles to halt ongoing deterioration, but also restored their structural integrity by filling voids and reinforcing damaged sections with high-strength epoxy grout. This dual action of protection and rehabilitation ensured the piles could continue to support the bridge for decades to come. Thanks to the efficiency of both the product and the contractor, the project was completed ahead of schedule in 2021, leaving Brooklyn Bridge Park with a stronger, more resilient foundation.



Above:
SeaShield 550™ Epoxy Grout
(165 gallon kits).

Left:
SeaShield™ Fiber-Form Jackets
staged on barge.

Below:
Industrial piers converted into
new Brooklyn Bridge Park.



SeaShield™ Timber Pile Rehabilitation and Repair at Camp Quaranup Jetty (WA)

In 2024, Denso Australia was entrusted with the rehabilitation and protection of 30 timber piles supporting Camp Quaranup's jetty in Western Australia. The project utilised our SeaShield 400™ and SeaShield 70™ systems to deliver these outcomes.

This case study not only highlights one of the most comprehensive Australian applications of these systems to date — it has also produced some of the clearest underwater footage we've ever collected of SeaShield in action!



PROJECT SUMMARY

Product Type:
Sub Sea Splash Zone Coating

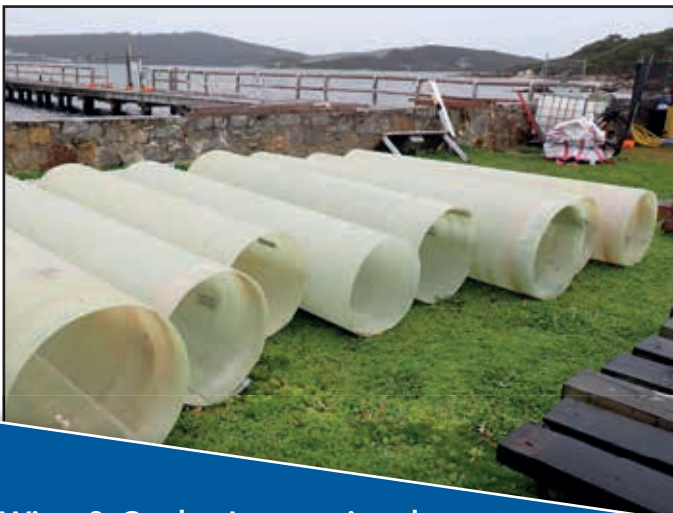
Country: Australia
Object: Timber Piles
Problem: Rehabilitation and Protection
Product Solution: SeaShield 400™ & 70™ Systems

Located within Albany's Princess Royal Harbour, the Camp Quaranup jetty is more than just a functional marine structure - it is a historic and community asset.

Originally established as part of a military quarantine station in the late 1800s, Camp Quaranup has since evolved into a much-loved recreational and educational camp, welcoming schools, community groups and visitors from across Western Australia.

The jetty itself plays a central role in providing safe access to the harbour for boating, water sports, and educational activities. Its preservation is therefore critical not only for heritage reasons, but also for ensuring ongoing community use and tourism in the region. By extending the service life of this jetty, Denso's SeaShield systems are helping to safeguard a piece of WA's coastal heritage and sustain its value for future generations.

SeaShield™ Fibre-Form Jackets ready for installation.



About the SeaShield Systems Used:

SeaShield 400™ System - C-Grid 450, SeaShield™ Fibre- Form Jackets, and either SeaShield 510UW™ (cementitious underwater grout) or 550™ Epoxy Grout was used to fill the annulus between the pile (and any reinforcement or grid) and the inside of the jacket, restoring structural strength and ensuring the pile is encased.

SeaShield Fibre-Form jackets, each with a 6m length were supplied and installed to restore structural strength to deteriorated timber piles and provide protection from further decay.

SeaShield 70™ System - SeaShield™ Primer, Denso Marine Piling Tape™ and Denso™ Glass Outerwrap UV.

Applied to new and existing timber piles each with a 500mm OD and a length of 3.2m. On existing timber piles, this system was selected to protect the pile from further deterioration (primarily through worm and borer infestation) while they were still structurally adequate. For new piles, the SeaShield 70 system provided immediate defence against the aforementioned erosion factors.



The completed SeaShield 70™ System.

Contractor's Observations:

Jackets were installed sequentially, filled with cementitious grout, and sealed. Translucent jackets allowed divers and applicators to visually monitor grout flow, ensuring complete coverage. Where visibility was poor, grout was pumped until it exited at the next port, thus providing applicators with another means of confirming sufficient coverage. Contractors reported straightforward installation and grout pumping, aided by the lightweight jackets and intuitive sequencing.

Independent Testing:

The decision to apply the 400 Series for pile restrengthening was strongly supported by independent research:

- Texas A&M University** bending tests showed all repaired piles exceeded the strength of undamaged baseline piles, in some cases more than doubling their original load capacity.

- AW Maritime (Australia)** confirmed these findings, with encasement repairs restoring axial compression and flexural stiffness while correlating closely with Denso's own test data.

This dual validation underscores the reliability of Denso's SeaShield systems when used for the purposes of protecting and rehabilitating timber piles.



Underwater view of the completed SeaShield 400™ System.

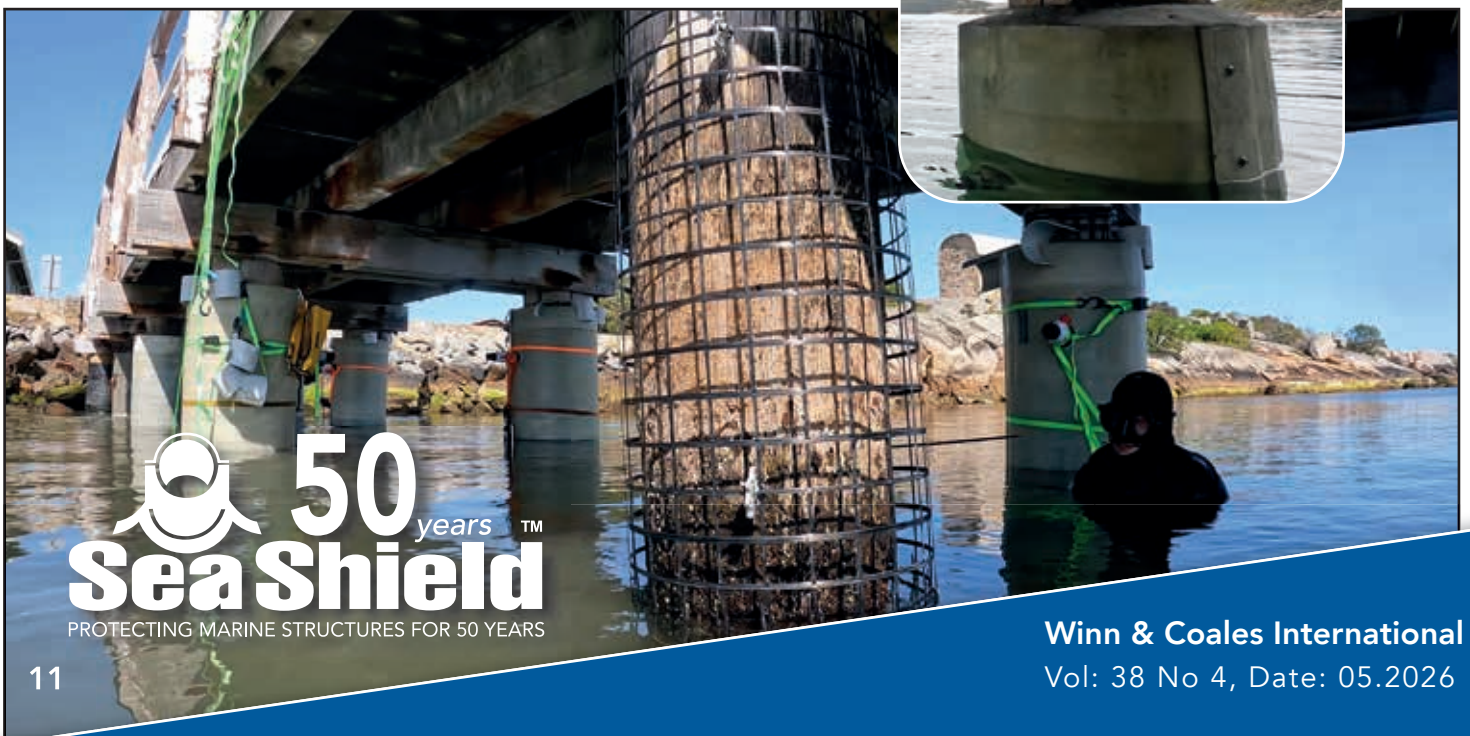
Outcome:

The project was successfully completed, leaving the Camp Quaranup jetty piles protected, strengthened, and ready to endure many more years of service. The combination of SeaShield 400™ and 70™ not only rehabilitated compromised piles, but also safeguarded new and existing timber against future damage.

Importantly, this work ensures the ongoing safety and usability of a jetty that holds both historical and community value in Western Australia. By extending the life of this structure, Denso has helped preserve a vital coastal landmark that supports local heritage, education programs, and recreational activities for generations to come.

Special thanks to the team at Shorewater Marine Pty Ltd for their expert application and outstanding underwater camera work, which captured some of the clearest project footage we've seen! We'll be releasing the footage on the Denso Australia LinkedIn and YouTube channels very soon so please stay tuned!

Below: A pile undergoing the installation of the SeaShield 400™ System with C-Grid 450 shown front centre of picture and completed piles shown around and in close-up inset.



Denso Sealing Techniques for Irregularly Shaped Precast Concrete Culverts

Due to the irregular shapes and installation constraints of culverts installed on a main road, a durable waterproofing and sealing system was required to address the gaps created between them.

Denso recommended Denso Primer D™, combined with Butyl mastic and Densotherm HD Tape™, as the most suitable system for sealing the internal joints of the culverts.

For the external sections, with flatter surfaces, Denso proposed the Denso Premseal 100™ tape system. Denso Premseal 100™ is a durable sheeting made from cross-laminated, orientated high-density polyethylene, coated with a strong adhesive polymer-modified bitumen compound.

The system has been applied to both the inside and outside of the culverts, ensuring a complete seal on both sides. The system's strong design accommodates movement caused by high traffic, making it durable against such impacts.

Denso Primer D™ and Denso™ Joint Sealer being applied on the inside of the culverts that have already been stacked.



PROJECT SUMMARY

Product Type:
Sealant for Precast Concrete Culverts Joints

Country:	The Republic of South Africa
Object:	Precast Concrete Culvert Units
Problem:	Sealing Internal & External Joints
Product Solution:	Denso™ Tape Systems

Denso Primer D™ & Denso™ Joint Sealer applied for all new concrete bases placed forward (external section).



Densotherm™ Protection for Pipe Specials

The client required a durable, heavy-duty corrosion prevention system that could be efficiently applied to irregularly shaped, large-diameter fittings, ranging from 1800mm Ø to 2350mm Ø.

Completed wrap of Densotherm HD Tape™ on the fittings and reducers.

Denso proposed a 5mm heavy-duty, torch-applied Densotherm HD Tape™ system, incorporating Denso™ Butyl Profiling Mastic filler to accommodate the irregular shapes and sharp edges of the fittings.

This robust, high-impact-resistant system minimised the damages caused during transport and provided a solution that was repairable, in the event that any damages occurred.

PROJECT SUMMARY

Product Type:
Coatings for Buried Steel

Country: The Republic of South Africa
Object: Large Diameter Pipe Specials
Problem: Corrosion Prevention
Product Solution: Densotherm™ Tape System



Fittings: 1800mm Ø (top)
x 2350mm Ø (bottom)
x 1100mm (high)

Denso Steelcoat™ Protection For Two New Grand Bahama Shipyard Floating Docks



Floating Dock 1: 120,000 TLC.



Grand Bahama Shipyard placed an order with China State Shipbuilding Corporation (CSSC) for the construction of two new floating docks. Now completed, these floating docks are dedicated to the ship maintenance operations of Carnival Cruise Line.

To ensure the smooth operation during ship maintenance, a large number of long gas and water pipelines needed to be laid along the inner and outer walls of the floating docks. As the floating docks are required to submerge for ship docking and rise to lift ships during operation, the pipelines are exposed to an extremely harsh corrosive environment.

Below: On the deck of one of the floating docks.

PROJECT SUMMARY

Product Type:
Coatings for Exposed Steel

Country: China
Object: Gas & Water Pipelines
Problem: Corrosion prevention
Product Solution: Modified Denso Steelcoat 100/400™ System



Inset pictures: various gas and water pipes protected with the modified Steelcoat 100/400™ System



In such areas, the continuous alternating interaction of air, temperature, and chloride-containing water creates an 'ideal condition' that easily leads to severe rusting, resulting in an extremely high risk of pipeline corrosion.

The Steelcoat 100/400™ System is the optimal solution to address this issue. Firstly, the system has a proven track record of success in the field of corrosion prevention, with its performance stability fully verified through many practical applications.

Secondly, the system has been modified for this application to include an additional wrap of Denso™ Glass Outerwrap UV (for exposed pipelines only situated above the water line) and Denso™ Glass Outerwrap HD UV (for submerged/splash zone pipelines alternating between above and below the water line). This enhanced system gives excellent impact resistance, capable of withstanding various potential collisions and impacts during operation, thus ensuring long-term reliable performance.

Floating Dock 2: 93,500 TLC.



The modified Steelcoat 100/400™ System prior to completion with an additional wrap of Denso™ Glass Outerwrap UV or HD UV - depending on location.

More gas and water pipes protected with the modified Steelcoat 100/400™ System.



STEELCOAT™

If you would like more information about our long-term corrosion prevention and sealing systems that deal with the problem areas listed below, simply tick the boxes and send us back this completed page and we will supply you with more information.

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- ☐ Protection of mounded LPG vessels and fuel tanks.

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- ☐ Subsea pipelines and outfalls.
- ☐ Protection of timber and concrete piling.

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- ☐
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