

WINN & COALES INTERNATIONAL LTD

Denso Digest



Volume 34 - Number 4

Wharf piles protected with the SeaShield 2000 HD™ System, Hastings, Australia - See story page 7.

QUALITY & INNOVATION FROM 1883 INTO THE 21st CENTURY



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For further information on our products and their suitability for your particular project, please contact any of the Denso companies listed below:

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LEADERS IN CORROSION PREVENTION & SEALING TECHNOLOGY








Denso Steelcoat™ Protects Scottish Water Pipes

The Denso Steelcoat 100/400™ System has been used to protect two water pipes below a footbridge which crosses a small stream at Scottish Water's Killylour Water Treatment Works, in Dumfries & Galloway.

The Denso Steelcoat 100/400™ System comprises Denso Hi-Tack Primer™, Denso Profiling Mastic™, Denso Hi-Tack Tape™, Denso Ultraseal Tape™ and Denso Acrylic Topcoat™. The system provides an excellent coating solution for exposed steelwork, particularly in areas that are faced with constantly damp or humid conditions.

Due to the complexity of the structure and the small gaps between the pipes and supporting steel beams, both the Hi-Tack Tape and Ultraseal Tape had to be applied by a mixture of techniques. This involved "weatherboard" methods at the joints and "spiral" and circumferential wrapping of the barrel lengths.

The completed Steelcoat 100/400 System protects the pipes under the footbridge.

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

On some sections, the rolls of tape were partially "decanted" onto empty cores to allow spiral wrapping where possible.

The main contractor for this project was George Leslie Ltd. Sub-contractor was HySpec Services Ltd.



Project Summary

Product type:
Coatings for Exposed Steel

Country: United Kingdom
Object: Water pipes
Problem: Corrosion prevention
Product solution: Denso Steelcoat 100/400™ System


STEELCOAT™



LEADERS IN CORROSION PREVENTION & SEALING TECHNOLOGY

Queen's Marque Wharf Piles Protected with SeaShield™

The Province of Nova Scotia, located on Canada's Atlantic Coast is home to the city of Halifax, the provincial capital.

Nova Scotia recently commissioned the city of Halifax to undertake the building of an impressive new waterfront facility called the Queens Marque. Known originally as Queen's Landing, the Queen's Marque site was a hub of historically significant activity which helped define the city of Halifax over the past 150 years.



The construction of this new waterfront area involved building several wharfs which require long term protection of the supporting piles. To preserve these important structures, Harbourside Engineering in Nova Scotia specified Denso's SeaShield 2000 HD System.

The contractors, Dexter Construction and Dominion Diving have already completed the first phase of the project, installing close to 200 x 20" x 5' jackets covering roughly 4500



Photos showing the first construction phase of the new wharf with the new piles under construction and protected with SeaShield 2000 HD to just above the water line.



Project Summary

Product type:
Sub Sea Splash Zone Coating

Country: Canada

Object: Wharf Piles

Problem: Corrosion prevention

Product: SeaShield Series

solution: 2000 HD™

sq. ft. of piling. These contractors will be doing the second phase of the project later this summer and will utilise another several hundred 2000 HD jackets that will cover over 4800 sq. ft. of piling.

Both the contractors and engineering firm have been very pleased with the quality and overall application of the 2000 HD system and their satisfaction definitely bodes well for Denso's inclusion in future high profile piling projects happening on Canada's east coast!



LEADERS IN CORROSION PREVENTION & SEALING TECHNOLOGY

Denso Protection Still Effective After 25 Years

Denso were called to site, in Port Elizabeth, to inspect the condition of some anchor heads which were originally protected 25 years ago using the Denso Covercoat System.

Once the original Denso material had been removed, and the substrate cleaned, the existing anchor heads and bolts were found to be in perfect condition, as good as the day they were installed!

Penny Farthing have been awarded the contract to conduct

various tests to determine the integrity of the anchor cables.

Once the cables have been tested and re-installed, the Denso Steelcoat 100/400 System™ (which now replaces the Denso Covercoat System) will be used to protect the anchor bolts and heads for a further 25 years.

Project Summary	
Product type:	Coatings for Exposed Steel
Country:	South Africa
Object:	Anchor heads
Problem:	Corrosion prevention
Product solution:	Denso Steelcoat 100/400 System™

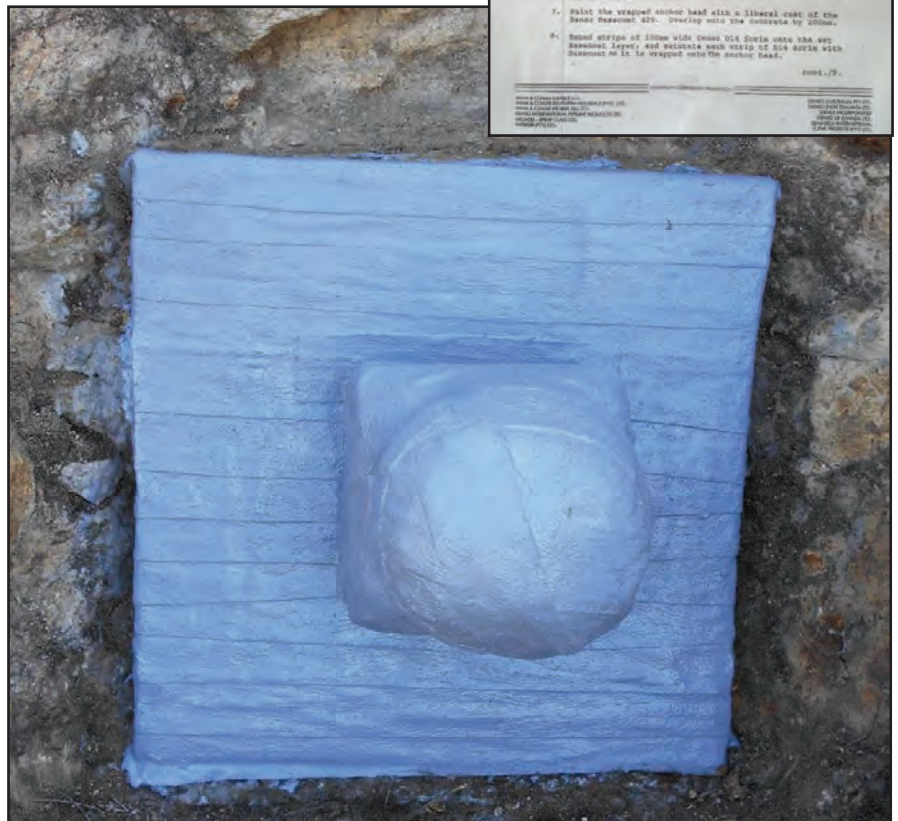
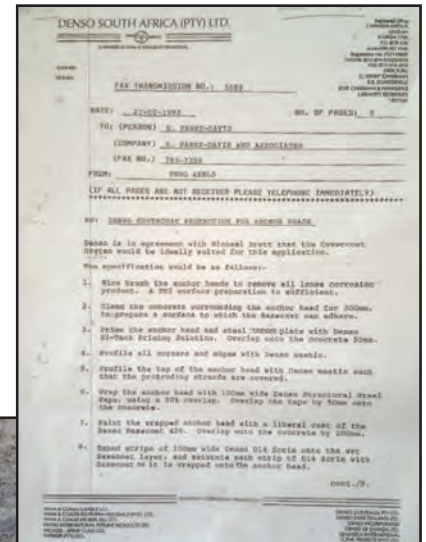


Top: Condition of the original Denso Covercoat System protecting the anchor heads, without any maintenance, after 25 years in service.

Above: The anchor heads were found to be in great condition after removing the original Denso protective system.

Right: 1993 fax confirming the suitability of the Denso Covercoat System.

Below: New completed application of the Denso Steelcoat 100/400 System.





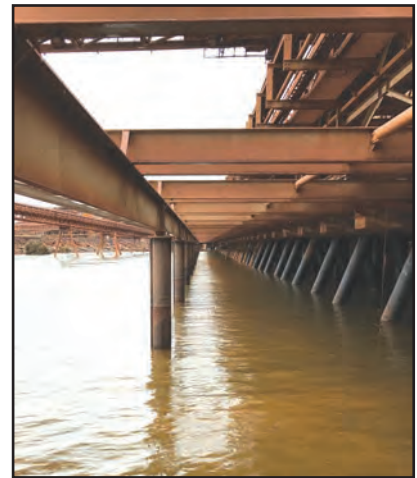
LEADERS IN CORROSION PREVENTION & SEALING TECHNOLOGY

Seashield™ Protection for BHP Wharf Remediation Project – Nelson Point

Port Hedland is located in the Pilbara region of Western Australia and is home to BHP's Iron Ore Industry. Australia plays an important role in meeting the demands of this market and exports approximately 85-90% of production each year, making it a valuable natural resource. With this comes the need to protect and extend the life of the loading docks and its steel structures.

Denso was awarded the project in April 2017, which utilised the SeaShield 2000 FD™ System for long-term corrosion protection in the splash-zone area in Berths A and B.

Installation is still ongoing however, and to date 60% of the 974 piles have been completed. The contractors 'TAMS' surface prepped the steel piles in accordance with the specification before applying



Above and below: The underside of Berths A and B showing the ongoing installation of SeaShield 2000 FD.

Denso SeaShield S105 Paste™, SeaShield Marine Piling Tape™ and the SeaShield 2000 FD™ jacket. It is expected that the system will support the docks operational cycle for 25+ years.

Project Summary	
Product type:	Sub Sea Splash Zone Coating
Country:	Australia
Object:	Wharf Piles
Problem:	Corrosion prevention
Product	SeaShield
solution:	Series 2000 FD™



LEADERS IN CORROSION PREVENTION & SEALING TECHNOLOGY

Seashield™ Protection for BlueScope Wharf Piles in Western Port, Hastings

Project Summary

Product type:
Sub Sea Splash Zone Coating

Country: Australia

Object: Wharf Piles

Problem: Corrosion prevention

Product SeaShield

solution: Series 2000 FD™

Hastings is located on the Mornington Peninsula, Victoria, and is home to Australia's largest steel manufacturer, BlueScope. BlueScope are manufacturing industry leaders for the Australian domestic market and have international business relations in America and across Asia Pacific. BlueScope owns the wharf at its Western Port Plant in Hastings and maintains it to ensure that it is available at all times for efficient movement of products in and out of the Western Port plant.

Part of the ongoing maintenance to the BlueScope wharf has been the progressive installation of Denso SeaShield 2000 FD™ jackets to the HP2 Octagonal Steel piles. Denso have manufactured and supplied hundreds of the SeaShield 2000 FD jackets for the stages of maintenance work undertaken to date.

The Denso SeaShield 2000 FD Series was the protection system of choice because of its aesthetic appeal and durable nature.





LEADERS IN CORROSION PREVENTION & SEALING TECHNOLOGY

50 Year Denso Case History; Protecting Steel Roller System for Water Tanks

In the late 1960's, SA Water built large capacity water tanks as storage and head of pressure for Whyalla and the surrounding suburbs.

The design of these tanks incorporated a roller system to allow for both thermal and pressure related expansion and contraction. The rollers were set into the concrete and after some 50 years of service the concrete surrounding the rollers has carbonated which has caused the concrete to fail. The concrete areas required repair in order to reinstate the structural integrity of the tank wall.

Upon inspection it was noted that the rollers had been protected using the Denso Petrolatum System.



The original SA Water inspection stamp.

The petrolatum tape was removed to inspect the condition of the steel. The steel under the petrolatum tape was still in perfect condition. In fact, the original stamp used by the SA Water Inspector was still clearly visible. This is a testament that the Denso Paste™ and Denso Petrolatum Tape was still protecting the steel structure some 50 years down the track.

The Denso Tape has been reinstated using Denso Hi-Tack Tape™ with an Elastomeric topcoat. This updated Denso system is once again designed to provide cost-effective corrosion protection well into the future.

The base of the tank showing the roller system used to cope with both thermal and pressure related expansion and contraction.





LEADERS IN CORROSION PREVENTION & SEALING TECHNOLOGY

Denso P2 Protection System for Hereford Water Pipeline

Lewis Civil Engineering is currently constructing an 8km length water main pipeline in Hereford for Dŵr Cymru Welsh Water.

Winn & Coales (Denso) Ltd were contacted for information on the most suitable anti-corrosion system along with application training of Lewis Engineers for the pipeline's Viking Johnson joints.

The selected Denso system meets the P2 Civil Engineering Specifications for Water Industry and consists of Denso Primer D™, Denso Profiling Mastic™ and 150mm width Densoclad 70™ Tape. Denso Profiling Mastic is a vital part of the system, it is applied to seal the voids, bolts and heads around the joints to avoid moisture entrapment. The Densoclad Tapes consist of a thick polymer-bitumen adhesive, giving superior adhesion and flexibility, laminated to a tough plasticised PVC backing.

It is expected that Lewis Civil Engineering will install more than six hundred 700mm by 600mm joints and nearly two hundred 700mm diameter Viking Johnson joints. In addition to this there are six 450mm diameter spigot & socket joint pipes. All pipe lengths and joints were supplied in new condition,

so no blasting pre-treatment was required.

The Denso materials were supplied via Burdens Civil Group, Merthyr Tydfil.

Project Summary

Product type:
Coatings for Buried Pipes

Country: United Kingdom
Object: Water pipeline
Problem: Corrosion prevention
Product solution: Denso Profiling Mastic™ & Densoclad™ Tape (Denso P2 Protection)



Winn & Coales (Denso) Ltd Area Manager, top right, trained Lewis Civil Engineering staff to achieve the best application of the Denso P2 Joint Protection System.



LEADERS IN CORROSION PREVENTION & SEALING TECHNOLOGY

Denso Protection for Jebel Ali Sewage Treatment Plant

Work has begun on the second phase of the Jebel Ali Sewage Treatment works which, when combined with the first phase of works, will be the largest sewage treatment project ever undertaken in the Gulf Cooperation Council (GCC) region.

Project Summary	
Product type:	
Coatings for Buried Pipes	
Country:	UAE
Object:	Sewage Pipeline
Problem:	Corrosion prevention
Product	Two Denso
solution:	Tape Systems

Aerial view of the massive Jebel Ali Sewage Treatment Plant.

Dubai is set to be host of Expo 2020: a Universal Exposition that celebrates human ingenuity and begins on October 20th 2020. The six-month long festival is expected to bring millions of visitors into Dubai and the surrounding areas. The Dubai Municipality has recognised this will put a strain on the sewage treatment facilities in the region. With this in mind, construction of a new sewage treatment facility began in 2016 with completion planned in 2019. The new sewage treatment works will ensure Dubai's sewage output will be treated to international standards and without environmental concerns.

Dubai has strict irrigation water standards due to its desert location. The new facility will allow the city to cut back the use of desalinated seawater for non-potable use by 700 million litres per day. The main



contractors on the project, Besix and L&T, are in the process of constructing 77 new tank clusters and building structures in order to fulfill this target. All of these new

structures require a substantial amount of buried pipework to connect them all. Through local agent Bin Moosa & Daly Ltd, Denso has been selected to provide two systems to ensure



LEADERS IN CORROSION PREVENTION & SEALING TECHNOLOGY



Picture of the completed second system for larger diameter pipes prior to backfill.

the long-term protection of buried pipework throughout the facility.

System 1 (small diameter pipework). The first system is a petrolatum tape wrap system for pipework of small 40mm and 80mm diameters. Denso Paste™ is used as a primer with Densyl Mastic™ used to create even profiles around bolts and awkward shapes. Densyl Tape™ is then spirally applied to the pipework with a 55% overlap to ensure full, even coverage across the length of the pipe and associated fittings. Finally, a layer of Denso PVC Outerwrap™ is applied to fully seal the system and provide excellent UV protection until the pipework is backfilled.

System 2 (medium to large diameter pipework). The second system is for medium to large diameter pipework. A reinforced bitumen tape system is selected to provide a more robust tape coating. A bitumen based primer (Denso Primer D™) is applied before the Densopol 60HT™ Tape is spirally wrapped with a 55% overlap.

The second system is also completed with Denso PVC Outerwrap™ for UV protection in the local tropical desert environment.



LEADERS IN CORROSION PREVENTION & SEALING TECHNOLOGY

Denso Protal™ Protects Flood Control Sheet Piles

Houston, TX has experienced a major construction boom in recent years. With the recent devastation of Hurricane Harvey, a large number of steel sheet pile projects have been included in this construction for added flood control. Many of the city's waterways are being revamped in the hopes it will help prevent another catastrophic flooding event like Harvey. Corrosion protection for sheet piles is paramount to their long-term service life as they are extremely difficult to repair once corrosion has begun.

For decades, the most popular method to protect sheet piles has been coal tar epoxy coatings due to the low cost and excellent water resistance. However, many problems arise during the application of these standard coal tar epoxies such as delamination between

multiple coats, poor adhesion, and long cure times. These issues can cripple the applicator's production rates and lead to premature coating failures once the sheet piles are in service.

The Protal 600 CTE™ (Coal Tar Epoxy) was chosen for this sheet pile project in Harris County, TX



Protal 600 CTE™ Part "A" & "B" being mixed prior to the spray application.

due to its high build one coat application, excellent adhesion, abrasion resistance and fast cure time. The coating was spray applied using a Graco 70:1



Sheet Piles coated with Protal 600 CTE being driven into place.





LEADERS IN CORROSION PREVENTION & SEALING TECHNOLOGY

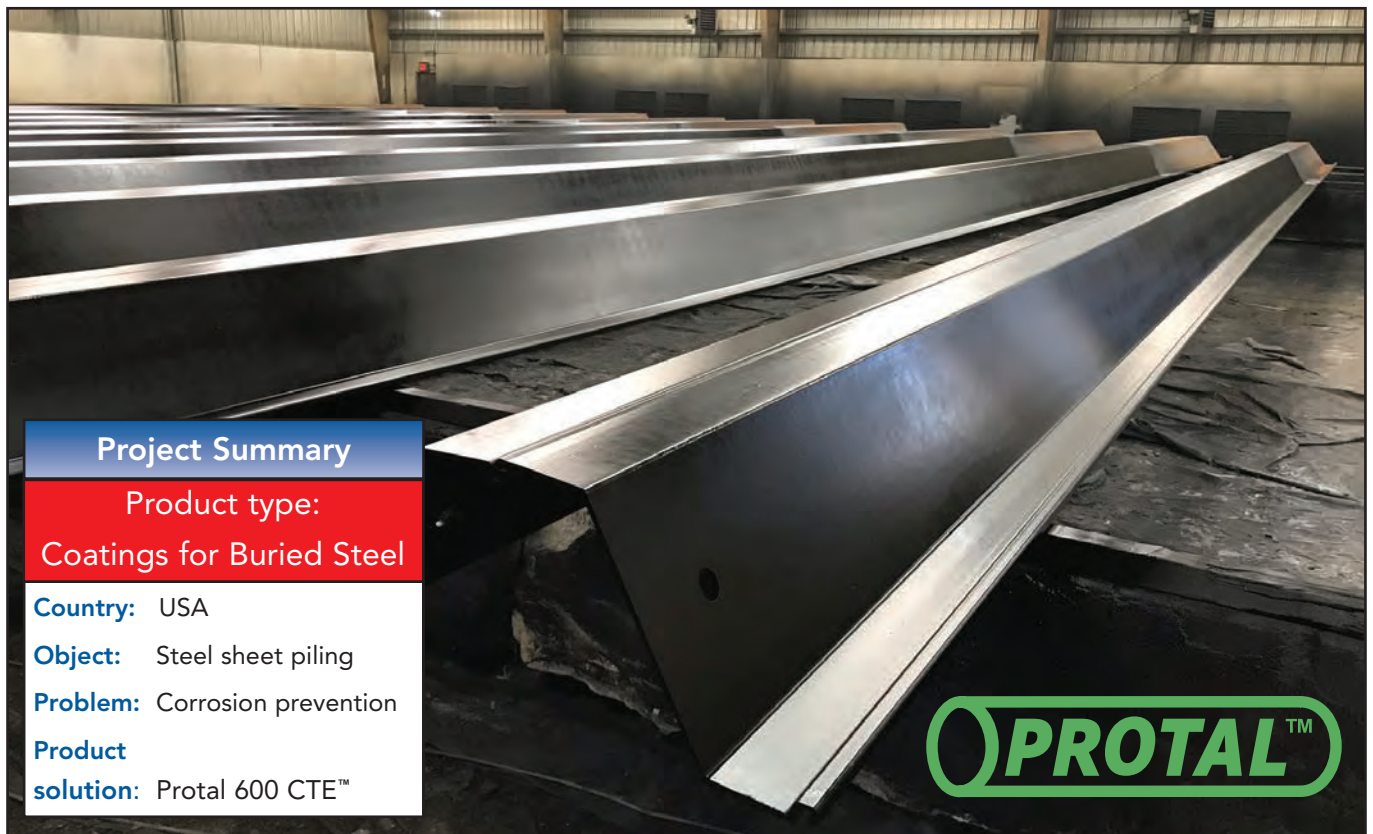


Above: Application of Protal 600 CTE using a single leg airless spray pump.

Below: The completed Protal™ coated piling sections ready for installation.

Single Leg Airless Pump by an extremely experienced and qualified spray applicator. The applicator, CPS-Houston, was impressed with the efficient one coat application and fast cure time, which dramatically increased their production rates.

The owner was very pleased with the quick delivery, success of installation, and quality of the coating. The owner and applicator have made the Protal 600 CTE their coating of choice for sheet pile protection. Denso also manufactures an alternative Protal 650 CTR which is a replacement to coal tar epoxies.



Project Summary

Product type:
Coatings for Buried Steel

Country: USA

Object: Steel sheet piling

Problem: Corrosion prevention

Product

solution: Protal 600 CTE™





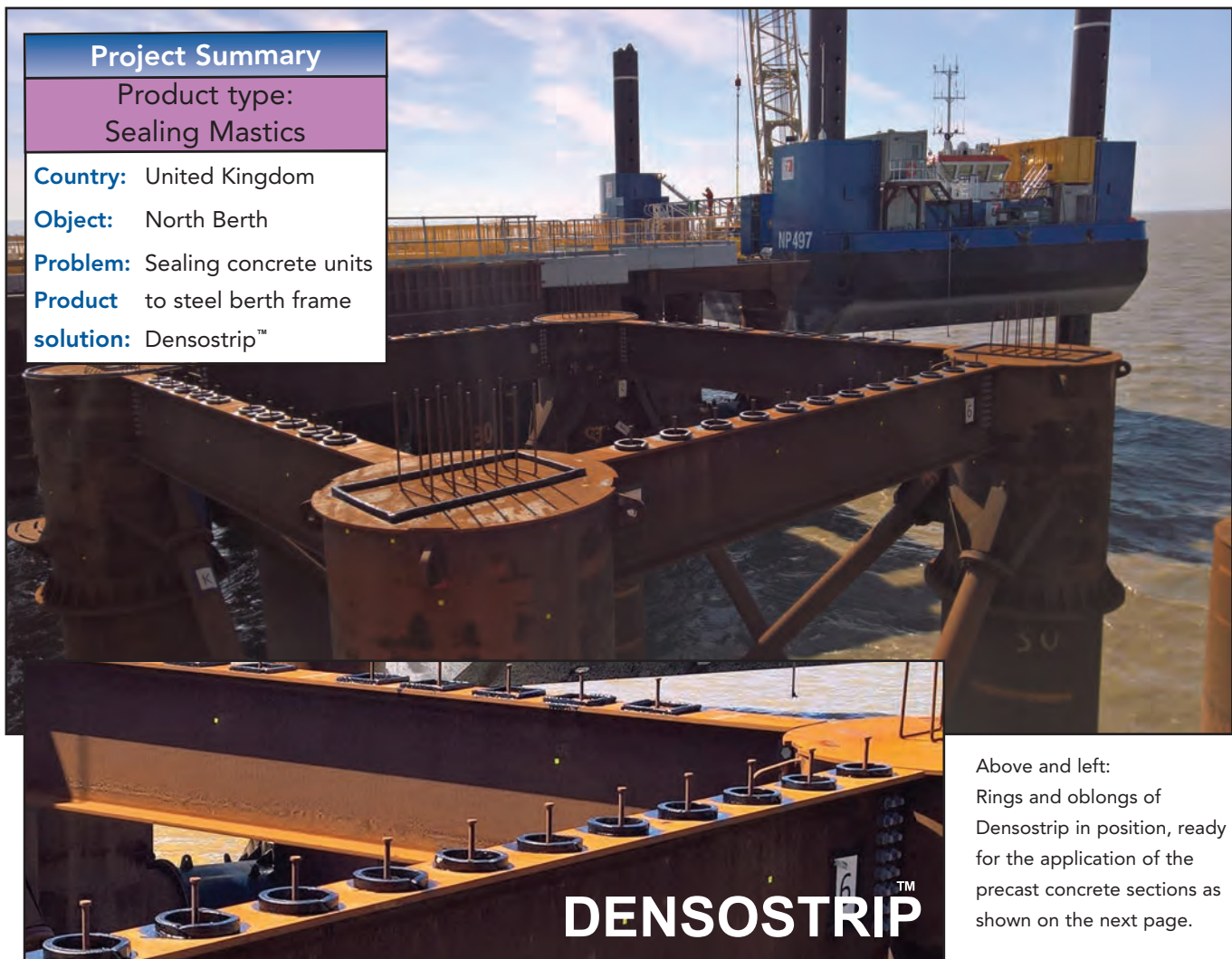
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Densostrip™ Seals North Berth Surfaces for Hinkley Nuclear Power Station

Construction is well underway by Costain on the North Berth project that will serve the forthcoming construction of the Hinkley nuclear power station. Precast concrete units are being applied to the surfaces of the North Berth. As can be seen in the photo, within the black circles, Winn & Coales Densostrip™ is used to permanently seal the concrete units following the application of Densostrip Primer™.

Densostrip is a compound rubber and bitumen joint sealing strip specifically for precast concrete units to provide a permanently flexible watertight seal when compressed between joint faces previously primed with Densostrip Primer. As well as being resistant to water and sea water it is also resistant to chemical and biological attack.

It is also an effective seal for precast concrete box culverts, manholes, inspection chambers, shafts, tunnels and pipe sections.



Above and left:
Rings and oblongs of
Densostrip in position, ready
for the application of the
precast concrete sections as
shown on the next page.



LEADERS IN CORROSION PREVENTION & SEALING TECHNOLOGY



The precast units being lowered on to the Densostrip already in position on the steel berth frame.

DENSOSTRIPTM

Sealing Precast Concrete Units to New Steel Berth - United Kingdom

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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 email back this completed page and we will supply you with more information.

BURIED ONSHORE COATINGS

- External corrosion prevention for underground pipelines, welded joints, valves and fittings.
- Protection of mounded LPG vessels and fuel tanks.

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- Corrosion prevention for metal roof purlins and metal roof sheets.
- Protecting pre-stressing and post tensioning bridge cables and ground anchorages.

SUB SEA/SPLASH ZONE COATINGS

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