



Volume 30 - Number 4

SeaShield 2000FD system used to protect 3 huge mono piles in the Golar FSRU Khannur (West Java) Project, Indonesia - see pages 8 and 9.

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LEADERS IN CORROSION PREVENTION & SEALING TECHNOLOGY

## Winn & Coales International Become Associate Members of IPLOCA

We are pleased to announce that we have recently become associate members of the International Pipe Line & Offshore Contractors Association (IPLOCA).



IPLOCA is a highly respected association boasting an impressive range of members from all areas of the pipeline industry and we are pleased to be associated with the organisation and happy to be able to bring our particular blend of experience and knowledge along for the benefit of all.

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

## Denso Builds a New Training Centre

We are also pleased to announce that we have just completed building a new product training centre at our Head Office in London, UK.

The new centre comprises a highly customised workshop, designed for the application and demonstration of our coating and sealing products.

The building is in a controlled environment which is safe and comfortable for visitors and can be used all year round in any weather.

We are confident that this important new facility will enable us to fully demonstrate the virtues of our products to our customers as well as being the perfect venue to hold regular training sessions for the many applicators and contractors who need to keep abreast of the latest developments in our specialised product sector.

A training session underway at the new centre.





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Factory coating pipelengths with Protal Liquid Epoxy.

## Denso Protal Liquid Spray Certified Applicators

**A large portion of the Denso Western Canadian success depends upon the supply of Protal Liquid Epoxies into that market. Spray applied epoxies, sold in large drum sized kits account for a large portion of the epoxy used in the market, most of which is used on underground pipelines.**

Since the inception of the 100% plural epoxy technology used on pipelines in North America, Denso Canada has spent almost 20 years working with and building strong relationships with coating plants across the country in helping to build good quality control and application techniques within the pipeline industry. The coating plants typically spray either in the field on existing pipeline systems or in the plant for pipe to be used in new construction.

The Plural Pump Systems used to spray on the Protal material has developed and

continues to develop over time starting off from a strictly mechanical metering and pumping unit which limited the ratios that could be used, i.e. 3 to 1, to modern day electronic metering pumps that can spray out 100 to 1 ratios. The setup costs of a good pump system these days including hose bundles, spray whips, heaters, etc. can easily run into the hundreds of thousands of dollars. A commonly used Plural Pump System used in Canada is the Graco Xtreme Mix Plural Component Series and is an industry workhorse.

Quantity and quality of consistent shop/field liquid coating spray applicators is critical to the ongoing maintenance and new construction of the Canadian oil and gas sector and Denso works closely with pipeline operator companies to monitor the quality of workmanship that goes into the spray application process of the Protal series coatings.

In Canada, Denso has built strong relationships and has been supplying spray grade Protal to almost 30 coating plants throughout the country. These companies compete directly with very large mainline coating plants like Bredero Shaw, Bayou Coatings and the pre-coated pipe from places like India.





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It is not uncommon to be traveling down any freeway in Canada and see a load of pipe coated with Denso Protal 7250 being transported from a coating facility to the field where it will be used in oil or gas production, transportation infrastructure or in large water pipeline projects.

Protal Liquid Epoxy coated pipelengths ready for transportation.



Corrosion Prevention for Buried Pipeline - Canada



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## Denso Aids Sydney Harbour Bridge Resurfacing Works

For the first time in the iconic Sydney Harbours Bridge's 79 year history, the bridge was closed for two weekends in January 2012 for a road surface makeover. This involved tearing up the old pot holed, uneven, patch repaired, noisy surface and laying a smooth, quieter, waterproof surface. Roads and Maritime NSW (RMS) needed to install new vehicle sensors during the resurfacing process and turned to Traffic Tech Pty Ltd, a long time and valued customer of Denso (Australia) Pty Ltd to achieve this.



Photos above and below: Fixing the Ezyloops to the new bridge road surface.

The objective of the resurfacing work was to reduce the need for reactive maintenance, improve road quality by providing a smoother and more durable road surface, reduce road noise as the new surface would be smoother and quieter and reduce the risk of corrosion and structural damage on the deck.

Traffic Tech's product, sub-surface Ezyloops was chosen to be used on the bridge to monitor traffic flow, collect data about vehicle speeds, traffic volume and vehicle classification. This data is used by various groups within and external to RMS to make infrastructure planning decisions for the future.

The loops themselves also work in conjunction with the SCATS (Sydney Co-ordinated Adaptive Traffic System) system to monitor direction of contra flow traffic as the lane directions can be configured depending on desired traffic flow.

The sub-surface Ezyloops are manufactured using TechBand (Densoseal 450) and Densopol 100, which encase the signal sensor cables which are connected to a roadside control unit. The Denso bitumen products are ideal for this type of installation as they are flexible, long lasting and can withstand hot asphalt pours.

The works were completed on schedule.



### Project Summary

Product type:  
Industrial Tapes

**Country:** Australia  
**Object:** Ezyloops  
**Problem:** Signal sensors  
**Product solution:** Denso Bitumen Tapes



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## Denso Used on The Metolong Dam Project

Denso South Africa are supplying a pipeline project into the Kingdom of Lesotho which is an independent country within South Africa's borders. Lesotho is well known for its spectacular Maluti and Drakensberg mountain ranges. It is a popular tourist destination, well known for its hiking trails, trout fishing and horse riding.

The Metolong Dam project will allow the government of Lesotho to meet their domestic and industrial water requirements up to the year 2020 and possibly beyond, through the provision of a treated water supply of up to 80ml / day.

Pipe diameters varied from 700mm dia down to 273mm dia with an average of 500 joints per pipe dia and a total of 112km of steel pipe.

Denso Ultraflex 1250 and Weldbead Tape were recommended for the field joint repairs on the Sintakote pipe.

The Bituguard coated pipe extends from the Dam wall for approx 6km from where the smaller dia Sintakote pipe leads to the reservoirs.

Our Densotherm HD system is being used for the repairs of



Above: The water pipeline in situ.

the Bituguard coated pipe.

We have also had our Stoneguard system specified for the mechanical protection of the pipes due to the ungraded backfill.

Project Summary	
Product type: Buried Steel Coating	
<b>Country:</b>	Lesotho
<b>Object:</b>	Water pipeline
<b>Problem:</b>	Field joint repairs
<b>Product solution:</b>	Ultraflex 1250, Densotherm HD & Stoneguard

Below: The water pipeline joints protected with Denso Ultraflex 1250.



Lesotho with its spectacular scenery is a popular tourist destination.





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## Golar FSRU Khannur (West Java) Project, Indonesia

Denso's agent PT. Imbema Pacific Indonesia, have been active in the region for 35 years as experts in Cathodic Protection systems, as well as the many virtues of Denso anti-corrosion and sealing products.

With offices in Jakarta and Surabaya they cover the Indonesian archipelago of more than 15,000 islands.

At the Golar Floating Storage and Regasification Unit in the Java Sea, 15km north of Jakarta, Imbema installed a cathodic protection system to protect ten huge monopiles against corrosion for a period of 15 years.

The monopiles, varying in diameter from 3 to 4m and with a

length of 60m, had a very heavy epoxy coating on their surface. Unfortunately the occurrence of high seas and bad weather at the time when the huge piles were being installed resulted in the layer of epoxy protective coating becoming damaged on three of them.

As a solution to this problem the combined expert knowledge of Imbema Pacific in consultation with the technical department of Winn & Coales (Denso) Ltd in

### Project Summary

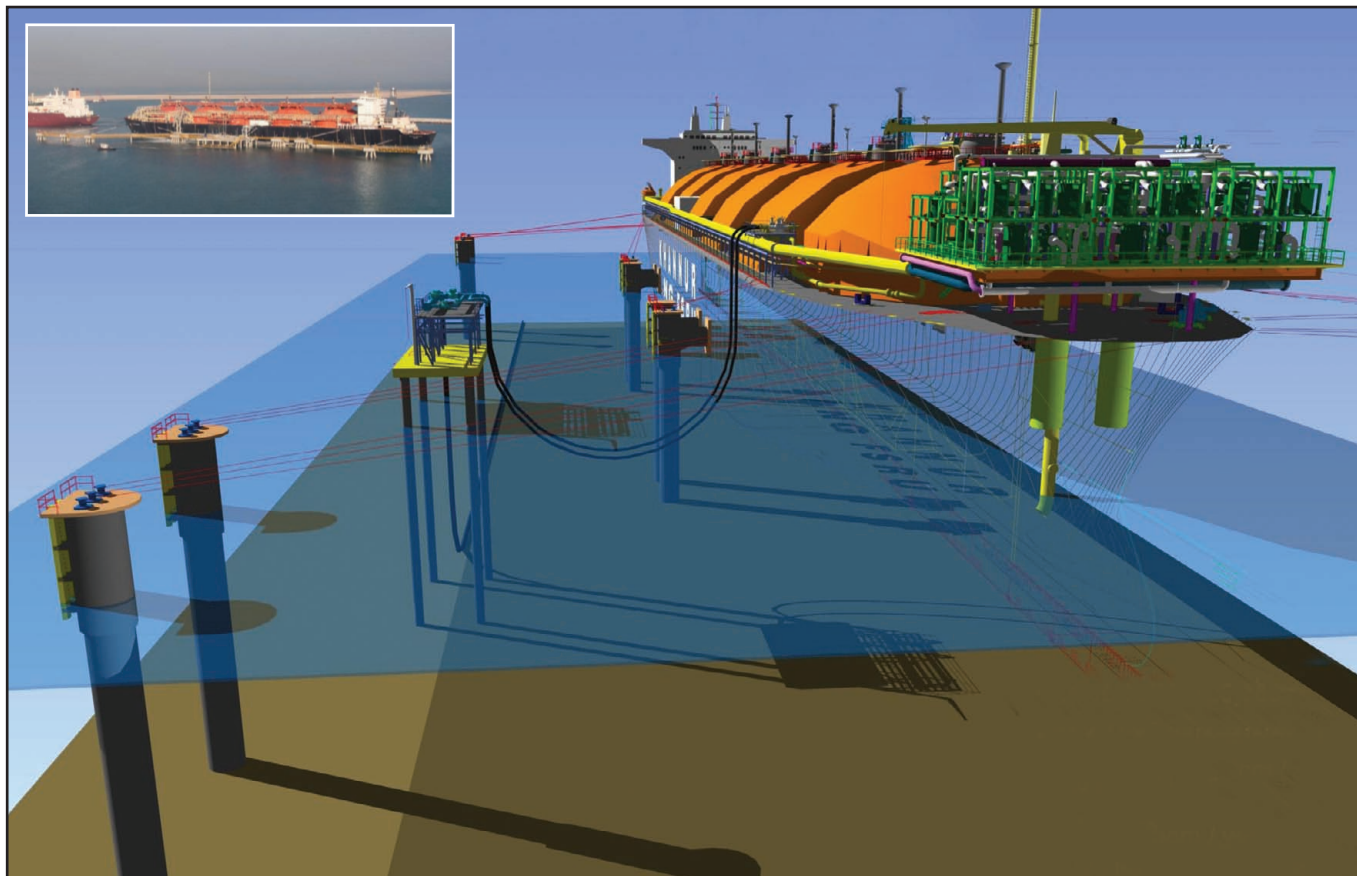
Product type:  
Sub Sea Slash Zone Coating

**Country:** Indonesia  
**Object:** Monopiles  
**Problem:** Corrosion prevention  
**Product solution:** SeaShield 2000FD

London recommended the installation of the Denso SeaShield 2000FD system. Normally the SeaShield jackets wrap around the pile and have one seam which is bolted together. In this case because the piles were so large the jackets needed to be in two halves, requiring two seams to be bolted together on each pile.

As the section of the pile to be protected had a diameter of 3m

Diagram of the Floating Storage and Regasification Unit (Inset shows one of the shipping vessels used to transport gas).







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After first cleaning the designated pile area (inset) for the SeaShield system, a coating of Denso S105 Paste is followed by a double wrap Denso Marine Piling Tape.

and a height of 3.7m, the installation had to be executed very precisely. To ensure this, Mr. Edmond Chow, the Denso Regional Manager for Indonesia, assisted the Imbema diving team to guarantee a perfect fit.

SeaShield systems have been in use in Indonesia for over 30 years now. Denso Paste S105 and Marine Piling Tape have proven to encapsulate and protect steel surfaces, even at very high ambient temperatures. At the same time the SeaShield HDPE jacket and closing system resist the negative influences of the intensive tropical ultraviolet sunlight.

By using a Denso SeaShield system, PT. BAM Decorient, the Indonesian subsidiary of BAM

International in The Netherlands have achieved an excellent degree of protection for this Golar LNG Energy project!



The HDPE jacket is installed, completing the SeaShield 2000FD system.



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## 8,000 Gallons (30,280 liters) of Denso Rigspray protects New Sheet Piles in New York City

Like many existing timber structures in New York and New Jersey, a deteriorating timber pile bulkhead (located in New York City's Upper East Side) needed to be replaced. The New York City Department of Transportation selected the largest and most expensive steel sheet piles as the replacement.

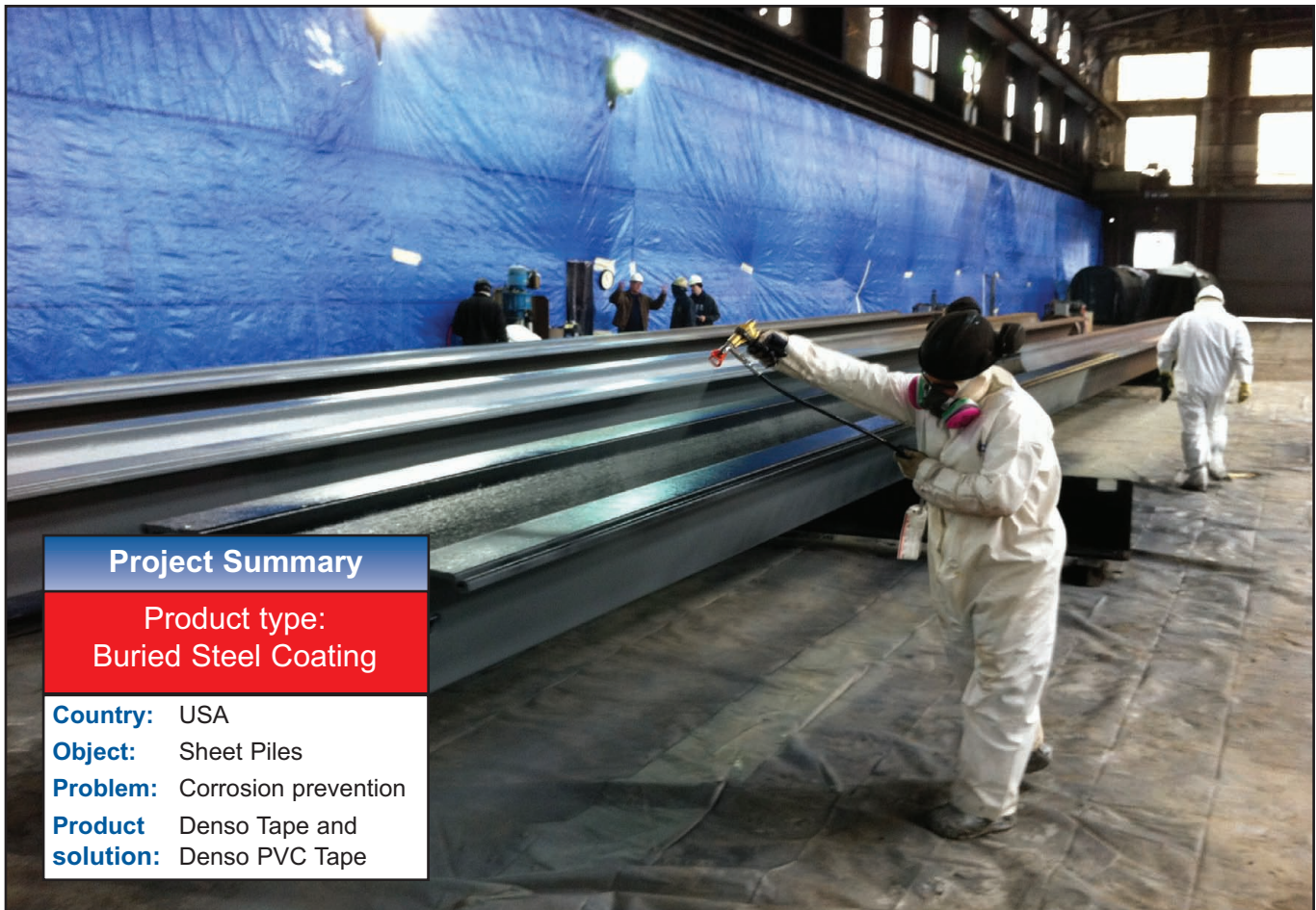
In addition, Denso Rigspray was specified as the coating of choice to protect these new sheet piles. Denso Rigspray is designed specifically for the long-term protection of steel

structures exposed to corrosive marine environments. A dual layer coating (30 mils black and 30 mils gray) was specified to achieve 60 mils of coating protection.



Uncoated steel sheet piles.

Spraying two coats of Denso Rigspray to achieve 60 mils.



### Project Summary

**Product type:**  
Buried Steel Coating

**Country:** USA  
**Object:** Sheet Piles  
**Problem:** Corrosion prevention  
**Product solution:** Denso Tape and Denso PVC Tape



## LEADERS IN CORROSION PREVENTION & SEALING TECHNOLOGY



Driving the sheet piles.

A total of 212 sheet piles, that measured 6 ft. x 75 ft. (1.83 m x 23 m) were coated with Rigspray in a steel plant in Pennsylvania. Over 8,000 gallons (30,280 liters) was used to coat the 300,000 sq. ft. (27,870 sq. meters). Once completed, the coated steel sheets were transported to the Manhattan jobsite where they were prepped for installation.

Due to the sheer size and weight, 15,000 lbs (6,804 kgs) per sheet pile, a crane was first used to position the sheet piles in place before they were driven into the mud line.

In recent years, more engineering company's have been specifying Denso Rigspray as the coating of choice, to protect steel structures in corrosive marine environments.

Aligning the pile as it is being driven down in place.





Certificate No. FM 01548  
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## Would you like more information about our long-term corrosion prevention and sealing systems?



If you are interested in any of the products featured in this issue of the Denso Digest please tick box:

Please indicate page number(s):

We also offer tried and tested systems to deal with all the problem areas listed below, simply fax 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.

### EXPOSED SURFACE COATINGS

- Corrosion prevention for chemical plant, structural steelwork, above ground pipes, storage tanks, offshore rigs, bridges and support cables, cranes and pipe bridges.
- 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

- Maintenance corrosion protection for steel jetty piles.
- Subsea pipelines and outfalls.
- Protection of timber and concrete piling.

### INDUSTRIAL LININGS

- Internal linings for tanks, pumps, vessels and pipelines.
- Linings for concrete bunds and floors.
- External abrasive wear protection

### MEMBRANES & FLASHINGS

- Tanking / waterproofing.
- Exposed rooftops and parapets.

### SEALING MASTICS

- Joint sealing of precast concrete manholes and culverts.
- Joint and crack sealing of asphalt road surface wearing courses.
- Joint sealing for airport runways.
- Sealing of cable entry ducts.

### INDUSTRIAL TAPES

- Sealing and insulating
- Protecting and bonding

### DIY WEATHERPROOFING

- Waterproofing and flashing

**For further information - tick boxes, fill in coupon and fax or post to your nearest Denso branch (full list of addresses on page 2).**

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