WINN & COALES INTERNATIONAL LTD

Denso Digest

Denso CTR protects steel sheet piling at Harwich International Port - see story page 5

QUALITY & INNOVATION FROM 1883 INTO THE 21st CENTURY

Denso®

LEADERS IN CORROSION PREVENTION & SEALING TECHNOLOGY

WINN & COALES INTERNATIONAL LTD

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

WINN & COALES (DENSO) LTD
Denso House, Chapel Road, London SE27 OTR, England
✓ Anti-corrosion and sealing systems
Tel: +44 (0) 20 8670 7511
Fax: +44 (0) 20 8761 2456
Email: mail@denso.net
Website: www.denso.net

ARCHCO-RIGIDON
Denso House, Chapel Road, London SE27 OTR, England
✓ Corrosion resistant linings
Tel: +44 (0) 20 8761 6244
Fax: +44 (0) 20 8761 2456
Email: mail@denso.net
Website: www.denso.net

DARTFORD COMPOSITES LTD
Unit 1, Ness Road, Erith, Kent DA8 2LD
✓ Manufacture and repair of FRP panels for cars and trains
Tel: +44 (0) 1322 350097
Fax: +44 (0) 1322 359438

DENSO NORTH AMERICA INC
90 Ironside Crescent, Unit 12, Toronto, Ontario, M1X 1M3
Canada
✓ Anti-corrosion and sealing systems
Tel: +1 416 291 3435
Fax: +1 416 291 0898
Email: sales@densona.com
Web site: www.densona.com

18211 Chisholm Trail, Houston, Texas 77060,
United States of America
✓ Anti-corrosion and sealing systems
Tel: +1 281 821 3355
Fax: +1 281 821 0304
Email: houston@densona.com
Web site: www.densona.com

DENSO SOUTH AFRICA (PTY) LTD
120 Malacca Road, Redhill Industrial Area, Durban North 4051,
Republic of South Africa
✓ Anti-corrosion and sealing systems
Tel: +27 31 569 4319
Fax: +27 31 569 4328
Email: bid@denso.co.za
Web site: www.denso.co.za

DENSO (AUSTRALIA) PTY LTD
411 Victoria Street, Brunswick, Victoria 3056,
Australia
✓ Anti-corrosion and sealing systems
Tel: +61 39356 7600
Fax: +61 39387 6973
Email: denso@densoaustralia.com.au
Website: www.densoaustralia.com.au

DENSO (NEW ZEALAND) LTD
46B Sir William Ave, East Tamaki, Auckland,
New Zealand 1701
✓ Anti-corrosion and sealing systems
Tel: +64 9274 1255
Fax: +64 9274 1258
Email: denso@xtra.co.nz
Website: www.densoaustralia.com.au

SEASHIELD INTERNATIONAL
✓ Marine corrosion protection systems
Denso House, Chapel Road, London SE27 OTR, England
Tel: +44 (0) 20 8670 7511
Fax: +44 (0) 20 8761 2456
Email: mail@denso.net
Website: www.denso.net

18211 Chisholm Trail, Houston, Texas 77060,
United States of America
Tel: +1 281 821 3355
Fax: +1 281 821 0304
Email: sales@densona.com
Web site: www.densona.com

411 Victoria Street, Brunswick, Victoria 3056,
Australia
Tel: +61 39356 7600
Fax: +61 39387 6973
Email: denso@densoaustralia.com.au
Website: www.densoaustralia.com.au

46B Sir William Ave, East Tamaki, Auckland,
New Zealand 1701
Tel: +64 9274 1255
Fax: +64 9274 1258
Email: denso@xtra.co.nz
Website: www.densoaustralia.com.au

Corrosion Prevention - Exposed Pipeline

Denso Steelcoat 700 Strikes Gold in South Africa

To enable quick identification of the subject matter within each story in this brochure we have adopted the following colour codes.

PROJECTS INVOLVING:

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

A Gold Mine in the Free State urgently required to coat an above ground pipeline (12,000m²) within a short period of time. The competitive products that had been offered and approved by the mine required time consuming and costly surface preparation (blasting) which would also create an environmental/contamination problem as the pipelines ran alongside a major arterial route. We told the mine engineers that our Denso surface tolerant epoxy was exactly what they needed!

The doubting engineers insisted that sample pipes with S.T Epoxy, the main component of the Steelcoat 700 System, were to be submitted for approval, one with minimal surface preparation (St2) and one that had been abrasive blasted (Sa2½). The pipe samples were subjected to a number of rather unorthodox tests (e.g. the African hammer and "torcher" test!) by the mine engineers. Both samples really impressed them, especially the one that had received minimal surface preparation.

The engineers were so exited they had the S.T. Epoxy properly tested by their new product test laboratory in record time, as it normally takes six months to approve a new product. The Denso S.T. Epoxy performed beyond their expectations.

A R400,000 order was placed for the Steelcoat System and the pipes were duly coated within the required time period resulting in a happy ending for both parties.

The exposed pipeline runs alongside a major arterial route.

Sealing Mastics - Jointing Precast Concrete Units

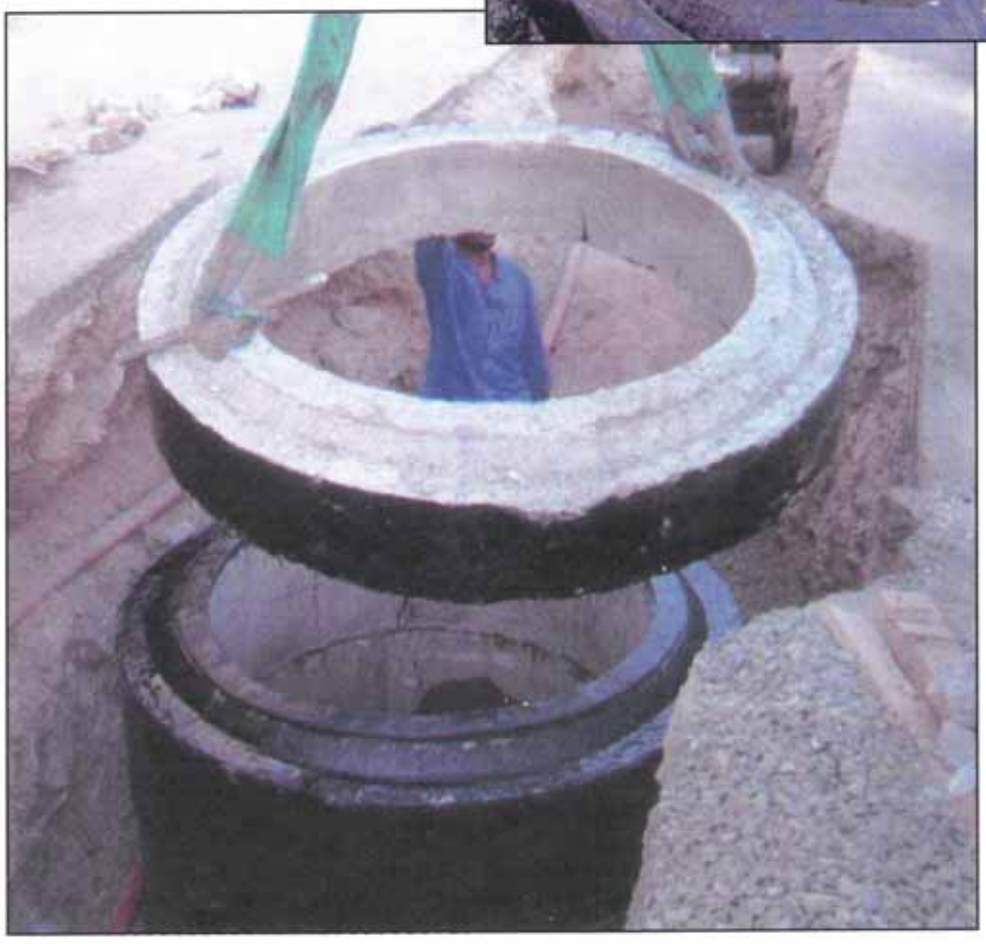
Tokstrip Used in Saudi Precast Manhole Construction Project

A total of 6,000 reels of Tokstrip, the flexible jointing strip for precast concrete units, are being used in the construction of 12,000 manholes that connect into a sewage pipeline in Makkah, Saudi Arabia.

The sewage pipeline project serving homes in the area is owned by the Ministry of Electrical and Water and the work started in April 2001 is due for completion in April 2005.

Consultants Saudi Consult are utilising contractor Abuljadayel Est. for construction and maintenance on this scheme. All Tokstrip and primer was supplied by Denso Agent in the region, Rezayat Trading Company Ltd.

Tokstrip was chosen for its ability to deform through the joint under compression to form a watertight, flexible seal between the manhole sections.



Above:
After priming the manhole joint face and allowing it to dry, Tokstrip is applied.

Left:
The next manhole section is lowered into place utilising its weight to compress the Tokstrip and form a flexible watertight seal.

Corrosion Prevention - Jetty Sheet Piling

Denso Epoxy CTR Used To Protect Harwich Jetty

Harwich International Port has given extended life to its main jetty by protecting it with Denso Epoxy CTR coating. Constructed from steel sheet piling, the jetty was previously unprotected.

The work was carried out by Shutdown Maintenance Services, who first prepared the 2,500m² piling surface of the jetty to Swedish Standard Sa2½ by wet blasting before airless spray application of the Denso Epoxy CTR.

Denso Epoxy CTR is a non-carcinogenic alternative to to coal tar epoxy coatings. It is used for the long term protection of steel or concrete against fresh or sea water corrosion.

Other advantages of Denso Epoxy CTR include:

- **It can be brush or spray applied.**
- **It is VOC compliant (89% solids).**
- **It becomes touch dry in 2 hours.**
- **It continues to cure (as low as 0°C) when immersed**

Spray application of Denso Epoxy CTR to the jetty steel sheet piling.

Texas DOT Protects Bridge Piles with SeaShield Series 500 System

The Texas Department of Transportation (DOT) approved the SeaShield Series 500 Pile Encapsulation System to protect concrete bridge piles for a major highway in Houston, Texas. The bridge piles have been in service for over 25 years and the integrity of the piles were threatened due to small cracks and spalling concrete.

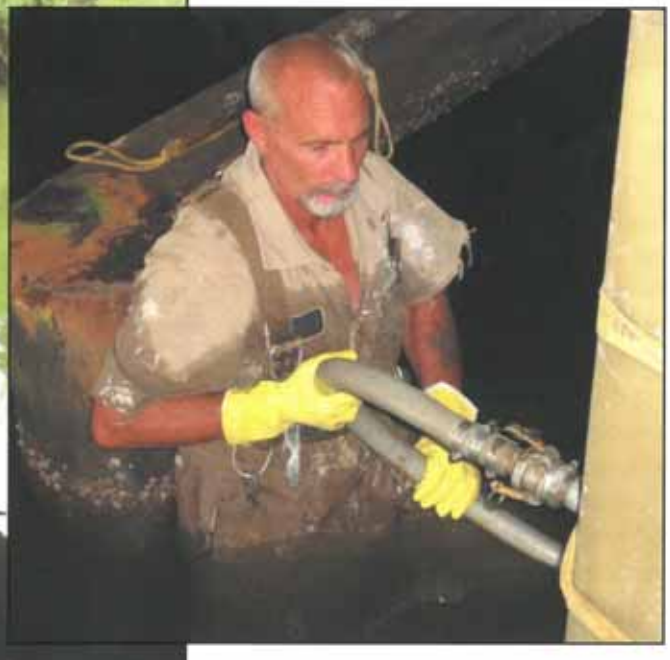
The project involved 332 lf of 16-inch square concrete piles. First the piles were cleaned by water blasting to remove all existing marine growth. The translucent 1/8-inch thick SeaShield Fiber-Forms (hand-laid fiberglass forms) were placed around the piles with a 3/8-inch annulus space. The SeaShield 550 Epoxy Grout was then pumped with a peristaltic pump from the bottom up through 1.25-inch port holes. Once the grout cured for seven days a Modified Elcometer Test was performed in which the SeaShield 550 Epoxy Grout exhibited up to 200% more bond strength to the concrete pile than the specified amount.

View under bridge of SeaShield 500 protected piles

Corrosion Prevention - Bridge Piles

The SeaShield 500 System has many benefits:

- Excellent bond strength to steel and concrete
- Long pot life which allows premixing to assure proper ratio
- Can be pumped with a peristaltic or piston pump (no plural pump equipment required)
- Easy clean up with liquid soap solution (no harmful solvents required)
- SeaShield 550 Epoxy Grout can be pumped or poured



Above: Mixing the SeaShield 500 Epoxy Grout.

Below: Pumping the SeaShield Epoxy Grout into the 3/8" annulus between the SeaShield Fiber-Forms and the pile.

Left: Close up of the completed system.

The SeaShield 500 Pile Encapsulation System will add many more years to the life of the bridge structure. The contractor and Texas DOT were extremely satisfied as the project was completed on budget and ahead of schedule.

Corrosion Prevention - Buried Concrete Pressure Pipe

Calgary Cement Diaper Alternative

The City of Calgary, Alberta, Canada has had a huge increase in population over the past ten years. With the increase in population there has been an increase in construction, both industrial and residential. The city of Calgary's rapid growth has placed a large strain on their infrastructure for both potable water and wastewater.

The city proposed a new 60" feeder main to accommodate some of the additional load on their system. They started construction in the summer of 2002.

The expansion of the waste water system included construction of a large 60" feeder main to be built parallel to a large main expressway. The 60" pipe to be used was steel pipe externally coated with concrete, commonly known as Concrete Pressure Pipe.

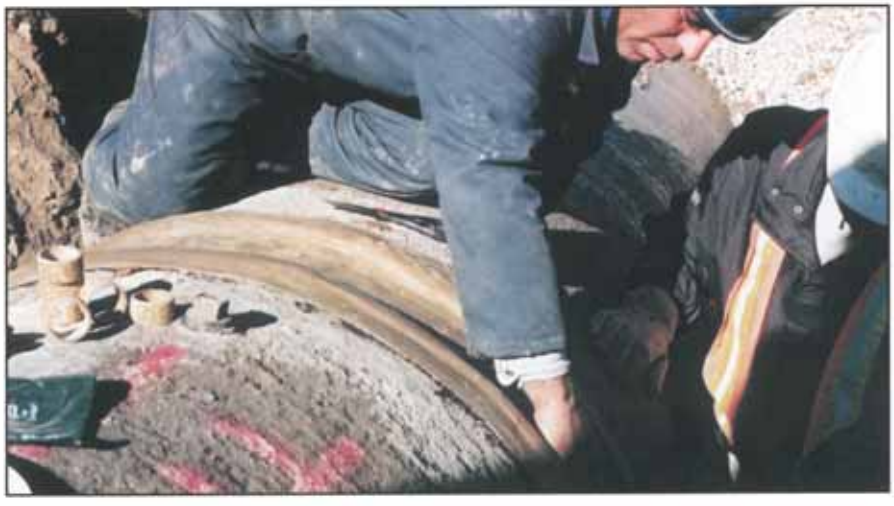
This type of pipe is used because of its strength, high resistance to abrasion and corrosion, the result of the combination of both steel pipe and a concrete exterior.

Since the early 1900's, Concrete Pressure Pipe has been used extensively throughout North America and overseas. It has long been recognised that CPP offers high tensile strength from the steel and high compressive strength from the concrete, combined with the inherent corrosion inhibiting properties of concrete and cement mortar. Longevity, rugged construction, durability, corrosion resistance and low maintenance are the reasons that most municipalities and cities specify CPP exclusively for their water and wastewater systems.

In Calgary, the 60" Concrete Pressure Pipe was lowered into place and then welded at each joint. The conventional process for coating the girth weld is to use a diaper fastened around each joint to receive a cement grout. Diapers are usually made of closed cell polyethylene foam fastened to the pipe using two steel straps. An opening is left in the top of the diaper so the mortar may be poured into the diaper and allowed to flow around the circumference of the pipe. The mortar is comprised of a one-part cement to two parts sand and mixed with water to a consistency of cream. When applied under ideal conditions this system performs quite well.

The construction of this feeder main extended into the late fall and it was soon discovered that because of the freezing temperatures, the mortar used for the girth welds was actually freezing before it was able to cure. This created a major problem when the line was backfilled. The backfill material was dropped onto the pipe and was damaging the uncured mortar. The one alternative was to hoard each weld area and heat the ambient conditions until the mortar cured but this was a timely and expensive process.

The City of Calgary Engineering department contacted Denso North America Inc. in Canada for assistance. We



Corrosion Prevention - Buried Concrete Pressure Pipe

recommended coating the weld area with Denso Petrolatum Products.

First, Denso Paste was applied with gloved hand over the entire 8' wide girth weld area extending about 2' onto the concrete coating. As the concrete coating is approximately ½" thick, we recommended applying Denso Mastic Blankets over the girth weld to fill this void. The Denso Mastic Blanket was then covered with 6" Denso LT Tape with a 55% overlap.

To provide additional protection from the backfill, a rockshield was installed on top of the petrolatum and strapped into place with ½" steel strapping.

The City of Calgary engineers were impressed with the rapid application times of the petrolatum system (2 men completing a weld in 15 minutes), compared with the required 4 men and long curing times of the cement diaper approach.

Because of the encapsulation sealing ability of the petrolatum and no need for cure times the process was a complete success.

The City of Calgary completed the feeder main using the Denso Petrolatum System and has now added it to their coating specifications as an approved system for coating girth welds.

This is another example of the fantastic sealing properties of petrolatum and its ability not only to be applied in harsh, cold conditions but also its ability to be put into immediate service without any extensive curing times.

Corrosion Prevention - Exposed Bridge Steelwork

Denso Steelcoat 1000 protects the 'Auld Hoose' Bridge

The confined space under the 'Auld Hoose' bridge at Auchterderren, near Cardenden, Fife, presented a major challenge to painters from contractors McClean & Spears of Glasgow.

However Fife Council had specified Denso Steelcoat 1000 System for this renovation project, which means that the bridge will not require repainting for at least two more decades.

The bridge, which carries the B981 over the Kirk Burn, is of steel deck troughing construction. Between the bridge soffit and the invert of the Burn there was only a metre space, which made the work extremely restrictive.

The painters laid down on two thicknesses of pallets to be above the surface of of the river, giving them only about 600mm of head space to carry out the work. This entailed gritblasting to the Swedish Sa2½ Standard with enclosed equipment to ensure no debris fell into the river.

Application of Steelcoat Primer was followed by the Denso PGF 1000 topcoat. All work was undertaken in accordance with the Confined space Regulations 1997.

The Denso Steelcoat 1000 System is based on polyester glass flake (PGF) and is the toughest and most corrosion resistant Denso coating available for this type of application.

The protected bridge steelwork showing the confined access conditions.

Corrosion Prevention - Flange Linings

BP Coryton Flange Faces get Archco-Rigidon Protection

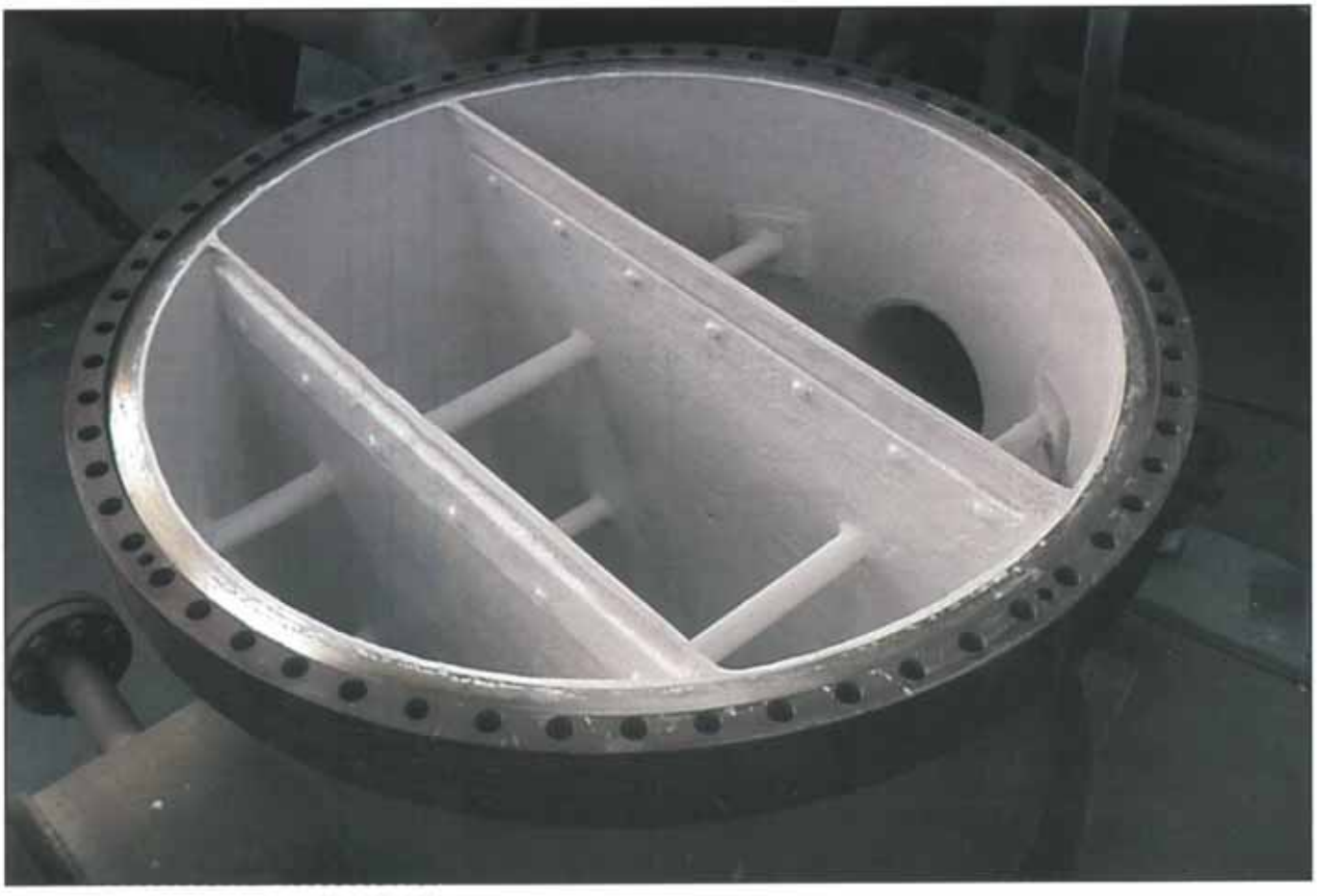
When sections of process lines, flange faces, nozzles, water boxes etc were suffering corrosion attack at the BP coryton, Essex refinery, the practice had been to send them away for anti-corrosion erosion coating. This was expensive and time consuming.

Deborah Services now operate an 'in-house' coating service, using an Archco-Rigidon coating supplied by Winn & Coales (Denso) Ltd.

Following discussions and trials jointly carried out Winn & Coales and Deborah Services, it was decided that archco-Rigidon 503 glass flake vinyl ester was the most effective coating to give long-term corrosion/erosion protection. Deborah Services say that a problem they encountered using the previous coating was that corrosion could attack flange faces behind the coating, leaving the coating itself unaffected.

Since setting up their in-house service using Archco-Rigidon 503 the problem has been solved.

Above: Stripe coating of flange underway. Below: Completed Archco-Rigidon coating protection.



Denso Asian Conference 2003 - Niigata, Japan

In October 2003, representatives from Winn & Coales (Denso) Ltd and Denso agents from across Asia, met in Niigata, Japan, for an exchange of market intelligence and the latest product and technological developments. This annual gathering has become known over the years as the Denso Asian Conference.

Winn & Coales (Denso) Ltd highly value their strong, long-term relationships with their agents in this part of the world and realise the substantial ongoing business potential for this large, fascinating and demanding market.

They have discovered that meeting together in this way every year is the perfect way to maintain excellent contact with their Asian colleagues as well as providing a vibrant forum for new ideas and the chance to listen to and compare many product based observations and experiences from this region.

Above: Delegates take time out for a photograph at the main Conference Dinner.

This years Denso Asian Conference was considered a resounding success with a record attendance of agents from Japan, Taiwan, Indonesia, Hong Kong, Korea, Malaysia and the Philipines.

Above and right:
Site visits during the Conference included a trips to an oil refinery and bridge crossings to examine the progress made in Japan with new Denso Steelcoat Systems.

261.1.2004 Vol 25 No.3 Quarterly Publication

WINN & COALES INTERNATIONAL LTD
DENSO HOUSE, CHAPEL ROAD, LONDON SE27 0TR
TEL: +44 (0) 20 8670 7511
FAX: +44 (0) 20 8761 2456
EMAIL: mail@denso.net WEB SITE: www.denso.net

Certificate No. FM 01548
BS EN ISO 9001:2000

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). ☐

Name: ---------- Title: ----------

Company: ----------

Address: ----------

Phone: ---------- Denso Fax: ----------

FAX NUMBERS UK: +44 (0) 20 8761 2456 • USA: +1 281 821 0304 • CANADA: +1 416 291 0898

AUSTRALIA: +61 39387 6973 • NEW ZEALAND: +64 9274 1258 • SOUTH AFRICA: +27 31 569 4328