



HEMPEL AMERICAS

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Keeping on with the expansion in the region

Hempel Americas continues its growth pattern with the expansion of facilities across the US and Canada. To date in 2014, we have added a total of 14,020 sq. meters (46,000 sq. ft.) across the region. This expansion supports the company’s aggressive growth plans as it strives toward the common goal of “One Hempel – One Ambition Strategy” in the Americas region.

► Texas, USA



Conroe, TX

Construction began on the project to expand the Conroe facility in the summer of 2013 and was completed on-time on May 15, 2014.

The project entailed adding over 1,765 sq. meters (19,000 sq. ft.) including a new warehouse which generated additional space for inventory. Other additions in the expansion included: a grand lunchroom, 28 new offices, new training room, 3 additional conference rooms, 2 oversized file rooms, added restrooms, 5 coffee stations, grand entry into reception area, 45 + cubicle spaces, and vending areas.

Group Vice President Americas, Lars Johansen stated “We are very excited to have this new building where most of the company can now operate under one roof. This large investment enables us to continue our growth and, at the same time, offer excellent working conditions to current employees as well as new talents. With large, new training facilities, we will be able to ensure training of our staff can take place in a modern environment with high-tech equipment. Additionally, this new facility will further offer us similar opportunities to invite customers for training or working forums.”

► Florida, USA



Miami, FL

In Miami, the existing facility was expanded from 617 sq. meters (6,650 sq. ft.) to 1,444 sq. meters (15,540 sq. ft.) and was fully occupied

on March 1, 2014. Office space was increased by 187 sq. meters (2000 sq. ft.) allowing for additional area needed to house employees. It operates with 4 dock doors versus the single dock door in the old facility. This allows for simultaneous loading, unloading, and customer will call capacity. The new Miami facility is strategically located near Miami International Airport. We’ve gained the infrastructure to handle up to 190,000 liters (50,000 gallons) which increases capacity 285% over the prior location. This allows for additional SKUs and stock to support the growing customer base in the southeast US and the Bahamas, Puerto Rico, Dominican Republic, Curacao, Venezuela and Panama as well as many other points in the Caribbean.

► In this edition:

- New products Versiline CUI, Hempel’s 458US & AvantGuard
- HEMPAGUARD® the application of its 100th ship
- Successful projects in the region
- And much more...

► Alberta, Canada



Alberta, Canada

Canada is currently booming in the oil & gas segment, being the number one oil exporter to the United States and in the top 10

worldwide. The demand for supply is increasingly being supported from the Alberta region sourcing from oil sands exploits. In support of this growing business we have built two new office and distribution centers in Alberta. They are strategically located in Edmonton and Calgary. In Edmonton, we opened a 1,254 sq. meters (13,500 sq. ft.) facility in February of 2014. This facility houses distribution, sales, and training rooms to accommodate customers and owners. Early in 2014, the Calgary distribution center of 427 sq. meters (4,600 sq. ft.) began operations. This location will directly support the Calgary and southern Alberta customers. With additional inventory only 3 hours away in Edmonton we can be strategic in the product mix and inventory levels we carry at this location.

Hempel aims to be available to customers at any time, striving to gain greater coverage whilst improving the service and support we provide to our customers across the Americas.





Hempel AMERICAS
Americas' Headquarters

▪ **USA**

Hempel (USA) Inc.

North Houston Office & Plant
600 Conroe Park North Dr.
Conroe, TX 77303
+1 936 523 6000
hempel.us@hempel.com
www.hempel.us

Sales Offices

▪ **ARGENTINA**

Hempel Argentina S.R.L.

Pilar Office & Plant: +54 230 468 7200
Mar del Plata: +54 223 480 5320
Cipolletti: +54 299 477 5805
hempel.ar@hempel.com
www.hempel.com.ar

▪ **BRAZIL**

Hempel Tintas do Brazil Ltda.

Rio de Janeiro: +55 212 603 8990
hempel.br@hempel.com
www.hempel.com.br

▪ **CANADA**

Hempel Canada Inc.

Vancouver: +1 604 536 4275
hempel.ca@hempel.com
www.hempel.ca

▪ **CHILE**

Hempel Chile Ltda.

Viña del Mar: +56 322 790 200
Antofagasta: +56 55 210 991
Concepción: +56 412 469 755
Santiago: +56 226 591 126
hempel.cl@hempel.com
www.hempel.cl

▪ **ECUADOR**

Hempel Ecuador S.A.

Guayaquil: +59 342 656 122
hempel.ec@hempel.com
www.Hempel.com.ec

▪ **MEXICO**

Pinturas Hempel de México SA de CV

Veracruz: + 52 229 923 4860
sales.mx@hempel.com
www.hempel.com.mx

EDITORIAL

Dear Readers,

Welcome to the mid-year edition of the Hempel newsletter. We have many exciting things to discuss with you this month and look forward to sharing the latest updates from the Americas region.



Our research and development team in Conroe, Texas has been working tirelessly to continue bringing new products forward at our customers' request. A great example of this is Hempel's 458US which is being introduced to the market this Fall, and it promises to out

shine the competition everywhere.

As you may have read in our past editions the Americas region has the largest share of growth in the One Hempel, One Ambition Strategy. In support of the strategy we have increased our strategically located distribution centers and expanded office space to house more employees. We are proud of the accomplishment of opening an additional 4,274 sq. meters (46,000 sq. ft.) across the region in 2014.

We also celebrated a fantastic milestone in the marine segment with the application of HEMPAGUARD® on the 100th ship. This ship is the EVEREST SPIRIT operated by Teekay, who also has many other active Hempel projects in the pipeline as we highlight on page 10 of this issue.

Continuing to push forward to new frontiers, we have developed exciting and ground-breaking technology and you will see an overview of a few of those products in this newsletter as well. From our Versiline product range we introduced the CUI 56990 for protection against corrosion under insulation. Coming on September 23rd is another very exciting product, AvantGuard which ensures to redefine anti-corrosion in the market.

Hempel has many other exciting topics in this newsletter and we hope that you enjoy reading about the upward growth and opportunities gained in our region.

Until next time.

Best Regards,

Lars Johansen
Group Vice President, Americas



B&H Joins Hempel as Distributor

We are happy to announce the incorporation of B & H distributors to the Hempel distribution network in the Americas.

B&H Distributors, Inc. is an oil and gas repair / corrosion control company specializing in today's leading polymer technology and corrosion control. They represent manufacturers of specialty coatings, linings, sealants and repair compounds - affording them the complete capability to provide solutions to nearly any repair situation or capital project. Their strength is that by drawing from their extensive warehouse inventory, they serve the industrial, commercial and residential markets with immediate product availability. They work closely with an extensive network of approved specialty contractors to provide quality installation. They are especially well versed in CUI control, secondary containment and interior linings, which will supplement growth in our new product developments. Through our partnership, we will leverage over 25 years of experience from B & H, especially in the growing market of Louisiana, considered a major center of the petrochemical and refining industry. We have already taken a step forward with the signature of a contract of 750,000 USD a year for supplying needed

coatings or maintenance purposes in one of the largest petrochemical companies in the area, displacing one of our major competitors after more than 20 years.

The next six years will bring unprecedented change to Southwest Louisiana, especially at Lake Charles. It will be a time of development and economic opportunity, one that is expected to bolster the lives of thousands in the area. Eight petrochemical companies - and possibly more - will build new plants or expand their existing facilities in Calcasieu and Cameron parishes. Some will build new liquefied natural gas plants; others will expand their LNG production and begin exporting. One company will refine natural gas into gasoline; another will harness the science of "cracking" ethane molecules to



produce ethylene, a gas compound found in many of the products we use every day. 56 Billion USD in capital investment is expected over the next 6 years.

Along with B&H, we look forward to further growth in Sales within the region. "We are very excited with the possibilities of our partnership with B&H Distributors, particularly with their experience and relationship in this area of hydrocarbon processing. I want to welcome B&H to the Hempel network" stated Martin Miller, Downstream Sales Manager at Hempel USA.





Backfire

Tank linings are a vital part of any Oil & Gas Operator's plan to protect steel tanks from corrosive fluids and gases. With over 1,000,000 API 12F tanks currently in service in North America, understanding the dynamics that cause tank linings to perform (or not) is more complicated than it may seem.

In the oil and gas production industry, shop or field application of tank linings is a common practice. Tanks store everything from acids, salt water, crude oil, etc. It's crucial that all lined areas perform as intended to protect the environment from unscheduled releases as well as to increase asset life and minimize production losses.

Lately, there has been an enormous increase in the number of API 12F tanks & separation vessels that are failing due to corrosion. Why is this happening? Is the industry using lower quality steel? Are the production fluids more corrosive than in decades past?

Hempel is working with several oil & gas producers to help answer these questions and develop long term solutions. We came to the conclusion that the problem was not originated by steel quality, mills today are producing the most consistent quality of carbon steel known. Nor are we dealing with more corrosive fluids in fracking or development of new oil reservoirs, while fracking chemicals can be found in produced fluids, the concentrations are so low, they are not seen as problematic. The found high levels of chlorides and increasingly high levels of corrosion causing bacteria are not the answer either, as operators have been dealing with corrosion causing bacteria for decades and high chloride water is something we've seen since oil was first produced.

The recurring theme with operators that have high failure rates can inevitably be traced back to accelerated project timelines and cost cutting measures during fabrication. Some of these failures are happening within months of commissioning. This has caused many Operators to re-think their corrosion protection strategies. The usual more common corrosion protection methods that we see fail quite often is using

chemical treatments to protect steel. This may come in the form of chemical treatments mixed with the fluid or treatments that are applied on the steel without surface preparation. These methods are used effectively in pipelines and downhole environments, and the costs of surface preparation and application of coatings is eliminated. But this has proven not to be the best course of action for un-lined tanks & vessels. Chemicals don't perform so well in static fluids, or under sediment. The sediment layer that settles in the floor of the tank or vessel, prevents batch applied chemical from ever contacting the steel to create a thin film corrosion barrier. Research has shown that inhibitors are ineffective at penetrating sediment layers to prevent under-deposit corrosion. Biocides are also ineffective at penetrating the chemical-solids interface in order to perform a bacteria kill sufficient to reduce pitting corrosion.

The lining of tanks, where static storage environments cause sediment layers to develop, is common practice because chemical treatments prove ineffective. A key factor in the use of epoxy lining systems, is that they work in static and flowing fluids, and because they are applied before the first drop of production hits the tank. They act as a barrier to prevent the bacteria and water rich sediment layers from ever reaching the steel, no matter how much sediment builds up.

Hempel has created the most comprehensive corrosion protection systems in the industry. In a recent case, Hempel was involved in a six month testing and inspection protocol for API 12F production storage tanks. The operator was having corrosion perforation failure in tanks at the rate of one per day, in a system of 4,000 tanks. It was a top priority for the Operator to identify the cause of the corrosion perforations and implement cost effective solutions to prevent

No Surface prep, Tank Lining Corrosion caused by bacteria



further failures. Once inspections had been completed, and potential failure mechanisms were identified, a rigorous tank lining testing protocol was organized. The main intent of the testing was to qualify tank linings for service under harsh cold wall conditions. The cold wall effect as it is called, can cause tank linings to blister when hot production fluids and cold atmospheric temperatures cool the steel and cause a negative thermal gradient. The water molecules that pass through epoxies with low crosslink densities condense on the cold steel substrate and cause blistering of the lining. After 6 months in testing using simulated conditions seen in the field, Hempel's TL-91S performed flawlessly. Having perfected our coatings formulations for effortless application characteristics, and an outstanding corrosion barrier, our systems ensure asset owners get the best protection in the field. To give our clients added peace of mind, we've successfully performed dozens of tests to recreate some of the most aggressive environments. Call your local Hempel representative and ask about our advanced technology epoxies developed for Unconventional Oil & Gas service.

New test performed for additional applications

TL-91S for Oil & Gas

▶ Crude Oil averaged \$16 bbl in 1995

In the search for a tank lining that redefines industry performance, we look back to 1995. A financially disastrous year for the Oil & Gas business, we saw crude oil prices dip to near \$14 bbl while the rig count sputtered at 700. At a lab in Missouri, formulators begin working on a prototype 100% solids epoxy lining that will become known as TL-91S. It would take nearly 20 years before the full potential for TL-91S would be realized, but it's now setting the stage for Hempel to become an Oil & Gas lining powerhouse.

▶ Here's the Proof

NACE International's rigorous testing standards have historically been the yardstick by which tank linings are measured for immersion service. The tests range from Cathodic Disbondment to Autoclave tests that employ temperatures in excess of 93°C/200°F in H₂S and CO₂ conditions with higher pressures. In late 2012, Hempel began compiling the required testing protocols for severe duty immersion lining service. During this period, Devon Energy asked that we include the TL-91S in a battery of tests they had chosen to determine a suitable tank lining for their service. The purpose of the testing was to determine viable tank lining candidates for the Devon specification. Hempel was a little late to the party, as Key oil and gas competitors had already submitted their products. We worked diligently to get the samples to the lab knowing it would be at least 6 months before the tests were completed.



▶ Best in Class

On August 6th, 2013 Hempel received the final report from the third party lab for the Devon testing. TL-91S DOMINATED the testing, with major advantages to all samples presented by competitors, demonstrating poor performances. Exciting, right?

One of the tests in particular, uses electrical impedance measurements pre and post-test to determine changes in the coating specimen's barrier properties after 6 months of immersion in brine water and toluene/kerosene. An excerpt from the lab report sums it up best, "EIS measurements showed that the electrochemical impedance curves were almost straight and identical for the untested area and all three (3) phases of the panel after the six (6) month test. The impedance value at 0.1 Hz was approximately in the order of magnitude of 10, indicating excellent electrical barrier properties of the coating."

Hempel is receiving other positive results with respect to our own testing protocol and we expect to have those results compiled into a tank lining testing brochure packet this quarter. If you have been searching for a severe duty tank lining with piles of data to back up its performance, look to TL-91S.

Hempel Canada awarded - Teekay Tankers 2014 Dockings

Hempel has secured two separate dry dock contracts for 2014 with Teekay Tankers, reaching an important milestone in the execution of our One Hempel, One Ambition Strategy. Awarded were a total of twenty three vessels with two carrying over to 2015, totalling roughly 320,000 liters (84,535 gallons)

The customer was looking for two systems to meet their fleet's needs. One was a cost effective anti-fouling that would guarantee a reliable performance for 60 months. The second system was to be high performance that resulted in best in class fuel savings.

Both systems had to have the flexibility to meet their worldwide trading patterns. Hempel first applied the Globic system to Teekay's vessels 6 years ago. Last year, Globic 9000 and Globic 6000 were also applied with good results. This made the choice clear to move forward with the Globic system for their cost effective anti-fouling.

Teekay carefully considered the Hempel product range and selected the high performance system of HEMPAGUARD X7 with Teekay awarding Hempel one vessel in January 2014, for full flat/vertical X7 application after full blasting. The result

of this application was favourable with Teekay electing to apply this to further selected vessels going forward. After application, HEMPAGUARD's hull roughness readings have been exceptionally low, conditions which are expected to result in excellent hull performance.

Teekay and Hempel have been working together for many years on everything from dry dockings to sea stocks. Teekay has acknowledged receiving good service and quality products from Hempel and sees the added value that pairing with Hempel brings forth.



HEMPAGUARD® continues growth with the application of its 100th ship

On May 1, 2014, the milestone of the 100th ship coated with HEMPAGUARD® was reached with the application of the 115,000 DWT crude oil tanker EVEREST SPIRIT operated by Teekay.

HEMPAGUARD® is an extremely effective fouling defence coating offering exceptional fuel savings and long idle periods, making it the perfect choice for the entire underwater hull on all ship types with any trading pattern.

Having reached the landmark achievement of the application of HEMPAGUARD® on 100 full ship vessels in just 8 short months, shows just how well HEMPAGUARD® has been received. When we made the launch in September 2013 we had applied 27 full ship vessels and since then we have on average applied two full ship vessels per week. This introduction rate is fantastic and unprecedented when compared to other silicone based fouling control products introduced in the marine market.

The application of EVEREST SPIRIT took place in Dubai dry docks with a team including seven coating advisors and two project managers. EVEREST SPIRIT was full blasted on both vertical bottom and flat bottom and applied with a complete new coating system including anticorrosive epoxy, tie-coat and HEMPAGUARD® X7 top-coat.

HEMPAGUARD® can be applied both on full blasted surfaces, on old silicone and on old antifouling as long as the procedures designed for each situation are followed. We suggest contacting your Hempel coating advisor for further details.

Hempel is committed to constant improvement of its performance with regard to energy efficiency and environmental impact. The development of ActiGuard® technology arose out of a wish to pursue an entirely new concept that would set the bar way above current standards. Fouling control was no longer enough.

The goal now was a Fouling Defence solution that effectively protects against fouling throughout the service interval. Hempel's new patented ActiGuard® technology introduces a new and unique way of producing an underwater hull coating containing a silicone-hydrogel that not only enables controlled biocide release, but also has the necessary long-term stability and mechanical properties. Hempel's latest hull coating product, HEMPAGUARD®, is the first to be based on this patented technology, offering substantial economic and environmental advantages.

We want to thank all our customers who have once more trusted in us and supported new product development by Hempel. We are proud to say that HEMPAGUARD® continues to demonstrate the ground breaking technologies introduced by Hempel to the market.

SUCCESS CASE STORY

HEMPAGUARD® X7

► **Application of HEMPAGUARD® X7 on “Vision of the Seas”**

Royal Caribbean International has selected HEMPAGUARD® X7 for its cruise vessel Vision of the Seas based on the benefits of flexible trading, fuel savings and fouling defence at any speed or during idle periods, offered by the product.

“Remarkable fuel savings and excellent performance throughout the 5 year docking interval are premium goals for us. Furthermore, HEMPAGUARD® X7 is an environmentally friendly product due to its ability to lower fuel consumption thereby reducing the CO2 emissions during the entire service interval.

Last but not least, Hempel’s Certified Coating Advisors supported us in every step of the process professionally and reliably”.

► **The Challenge**

Vision of the Seas arrived at Navantia on September 26th 2013. During the dry docking vertical sides, flat bottom, boottop, and topsides were to receive new full coatings of Hempel paint. The areas below the waterline including the boottop were full blasted prior to the application.

► **Solution**

HEMPAGUARD® X7 was used on the Flat Bottom and Vertical sides and only 4,185 liters (1105 gallons) of tiecoat and HEMPAGUARD were required to ensure another 60 months of fouling-free cruising.

HEMPAGUARD® X7 has been chosen because it offers up to 60 months of extremely efficient fouling defence. It even provides a fuel performance guarantee and a product performance guarantee for the 60 month period, including up to 120 idle days of fouling resistance.

Vision of the Seas is cruising all over the world and HEMPAGUARD® X7 with its unique patented ActiGuard® technology can retain its effectiveness when switching between slow and fast speeds anywhere in the world as well as during extended idle periods.

With HEMPAGUARD® X7, the owner will have a significant reduction in fuel consumption and no fouling organisms on the vessel. HEMPAGUARD® X7 is based on silicone-hydrogel and biocide science and releases 95% less biocide than a standard SPC antifouling coating.

The biocide is retained at the surface and so the need for polishing is eliminated. The surface of the vessel has the same smoothness as conventional biocide free silicone based fouling release coatings. Thus, by using HEMPAGUARD® the operator will experience fuel savings due to the high protection against fouling organisms, which retain the surface in perfect condition.

Company: Royal Caribbean International

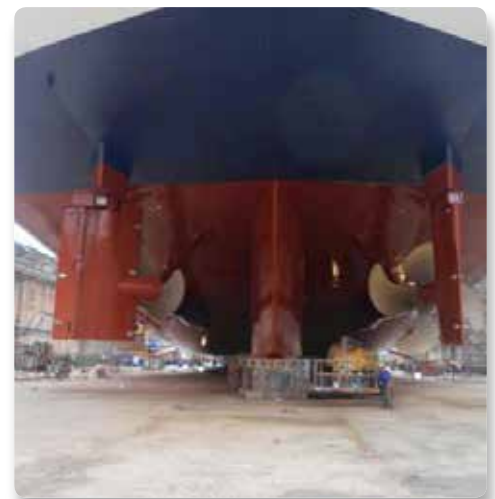
Vessel’s name: Vision of the Seas

IMO Number: 9116876

Date of Application: 17-10-2013

Location: Navantia Cadiz Shipyard, Cadiz, Spain

Vessel areas: Vertical Bottom, Flat Bottom





What you don't know can hurt you

▶ Resistant in even the most challenging conditions

Unexpected accidents, mechanical failures, operational shutdowns. Corrosion under Insulation (CUI) can be a colossal headache for people in the oil and gas production, refining and petrochemical, power and other thermal processing industries. It is ever present wherever water and insulation combine and often hidden from view.

Versiline is a range of tailor-made speciality solutions for highly challenging applications – such as chemical tanks, stack linings, absorbers and other process equipment. Hempel is now adding a new coating to the range, Versiline CUI 56990, which was launched on May 2, 2014, in North America proposing the best solution to CUI.



▶ The impact of CUI

What is CUI? A severe form of localized corrosion due to entrapped water under the insulation layer of piping and vessels. Why is this important?

- CUI takes place out of sight
- Reason for costly unexpected shutdowns/repairs
- Reason for accidents

▶ Hempel presents Versiline CUI 56990

Hempel's new Versiline CUI 56990 ensures a safe, reliable and cost-effective process environment with less risks of unexpected shut downs and lower maintenance costs. Versiline CUI 56990 offers the best combination of anti-corrosion protection, heat resistance and ease of application, making it a practical and versatile solution in the fight against corrosion under insulation (CUI). *"Versiline CUI 56990 reduces the probability of corrosion on pressurized piping and equipment under insulation. Ultimately, the product decreases the probabilities of equipment failure, providing a solid and safe process environment,"* Michael McGlamry, Americas Protective Segment Manager at Hempel explains, adding: "Furthermore, the excellent corrosion resistance of the product effectively increases the time between repainting. By increasing this time and the costs associated with repainting, maintenance costs are lowered."

The excellent heat-resistant properties of the product make it resistant to micro-cracking; a common cause of premature coating failures, micro-cracking occurs when the equipment is exposed to elevated temperatures and then encounters extended corrosive conditions as part of its regular operational cycle. Due to its special formulation, Versiline CUI 56990 can be used both for new building and maintenance, in conditions ranging from cryogenic to elevated temperatures of up to 650 °C/1202 °F.

In addition, the product's documented hardness and excellent adhesion ensures protection against physical impact, which is important for new building. This combination of hardness and adhesion ensures that minimal damage is caused during transport and installation, thus avoiding time-consuming touch up. Michael McGlamry says: *"The process industries are continually looking for new ways to provide effective protection from the effects of corrosion under insulation. The impressive performance of Versiline CUI 56990 across a wide range of conditions allows specification writers to simplify their approach to the coating of high temperature pipework and equipment."*

Further information on this latest development from Hempel can be found at <http://www.north-america.hempel.com/en-us/protective/special-applications/corrosion-under-insulation>

Versiline CUI 56990
The best of both worlds

Effective heat resistance

- Wide temperature range (Heat resistant up to 650 °C/1202 °F)
- Change in temperatures (Cycling)
- No micro-cracking
- Cryogenic capability

Corrosion resistance

- Before exposure
- After heat exposure
- CUI environment

Practical

- Physically durable
- Single-pack system that can also be applied to hot working process equipment, thus avoiding shutdowns
- M & R friendly
- Suitable for use on carbon or stainless steel

Hempel wins new supply order with Estaleiro BrasFELS LTDA, a subsidiary of Keppel FELS Brasil

Hempel confirmed that it has been selected by Estaleiro BrasFELS LTDA to supply coatings for two major Floating Production Storage and Offloading (FPSO) vessel projects.

Estaleiro BrasFELS LTDA has been engaged for the fabrication and integration of the topside modules for two FPSOs, P-66 and P-69. The vessels are owned by Tupi BV, subsidiary of Brazilian oil & gas giant Petrobras.

When completed, the FPSOs will each have a production capacity of 150,000 barrels of oil per day and will operate in the oil fields of the coast of Brazil.

► The perfect partnership

Hempel and Keppel have been working together to improve coating reliability and cost-effectiveness. According to Michael Bak, Managing Director, Hempel Brazil, this was a key factor in winning the contract.

“Hempel has a long-standing relationship with Keppel and we have been working closely to ensure the products we deliver are applied correctly and cost-effective,” he says. “As a result, Keppel

FELS Brasil trusts that we will supply the high quality products and technical service they need for this major contract.”

Hempel will supply approximately 650,000 liters (171,712 gallons) of coatings for the FPSO projects between May 2013 and April 2016. The coatings supplied include:

► HEMPADUR 15553

A flexible two-component epoxy coating with good abrasion and impact resistance.

► HEMPADUR MASTIC 45880/1:

A flexible two-component epoxy coating with good abrasion and impact resistance.

► HEMPATHANE HS 55610:

A VOC-compliant, two-component polyurethane topcoat for protection of structural steel in corrosive environments .

► HEMPADUR 85671:

A two-component, phenolic epoxy coating with high temperature, water and chemical resistance for interior tank and pipe linings.

Innovative Technology Hempel's 458US for the rail market

Hempel's 458US is a high solids, two component, high gloss epoxy coating. 458US was developed for the exterior of railcars where a high gloss, low chalking epoxy was needed.

458US has excellent resistance to UV exposure with excellent gloss and color retention compared to traditional epoxy coatings. It has been extensively tested in long term QUV exposure and maintained a very high level of gloss (81 to 77) and gloss retention (95%) after 200+ hours. It offers seven times more gloss retained and a 33% improvement in gloss retention versus the closest competition.

458US is a direct to metal (DTM) epoxy which allows faster throughput improving efficiencies in fabrication shops delivering greater savings.

458US will position Hempel ahead, derailing the competition with its innovative features and benefits. *For more information please contact your Hempel sales representative or coating advisor.*





ASMAR OPV 83 “Marinero Fuentealba”

Once again Hempel Chile, has been selected as sole coating supplier for the construction of a new OPV (Ocean Patrol Vessel) at ASMAR.

The contract, was signed between ASMAR and DGTM-MM (Director General of Maritime Territory and Merchant Marine) on December 27, 2011, being christened and thrown into the sea on April 4, 2014. The ship will remain in shipyard until year-end to make the corresponding terminations and installation of equipment, before being delivered to the Chilean Navy.

This project is a continuation of the Danube IV Project started in 2005, which once completed will mean that the Chilean Army will operate one Naval OPV in each area (Iquique, Talcahuano and Punta Arenas). This offshore patrol has similar characteristics to those of two other units constructed ASMAR, OPV 81 “Piloto Pardo” and OPV 82 “Comandante Toro”. However, it has even greater capabilities for marine police and reinforced hull for navigation in cold waters.. It will be commissioned to the Third Naval Zone, with home port in Punta Arenas.

Among the missions of the Chilean Navy OPVs stand: patrolling, monitoring and control of maritime territorial waters, maritime search and rescue, control and combat water pollution, support the maintenance of maritime signaling, logistical support at isolated areas, marine police, boarding and assault ships, and auxiliary transport task.

ASMAR FACTS:

- Founded in 1960
- Independent state company serving the Chilean Navy, national and international ship owning community
- Main shipyard located in Concepción, Talcahuano
- 2 other yards located in Magallanes and Valparaiso
- 2 dry docks, 5 floating docks (two of them roofed)

ASMAR provides shipbuilding services of commercial and military ships up to 50,000 DWT. Also specializes in repair and refit of commercial and military ships up to 96,000 DWT.

ASMAR is in accordance with the most demanding international standard, the ISO-9001:2008, by the Lloyd’s Register Quality Assurance.

PRODUCT INFORMATION:

Hempel supplied the following products:

HEMPADUR 15570, HEMPADUR MASTIC 45880, HEMPADUR 45182, HEMPEL’S ANTIFOULING GLOBIC 90 78950, HEMPEL’S ANTIFOULING GLOBIC 90 78950, HEMPATHANE TOPCOAT 55210, HEMPALIN ENAMEL 52140, HEMPADUR MULTI-STRENGTH 35530, HEMPADUR 15400, HEMPADUR QUATTRO 17634, HEMPEL’S ANTI-SLINT 67500, HEMPEL’S HARD RACING WHITE 76300



TECHNICAL FEATURES:

- Overall length of 80.60 meters (264.44 feet)
- 13 meter (42.65 feet) molded sleeve
- Wärtsilä diesel engines
- 2 12 V 26 as a propulsion system with 1771.6 tons full load displacement
- Maximum speed in sea state 2 of 20 knots at 80% MCR
- 30 days autonomy
- Range of 8,000 nautical miles at 12 knots
- Accommodations for 62 people maximum
- Power plant comprising three 1,314kVA diesel generators plus one additional for emergency

Delivering Education and Quality of Life for Children and Teens

CSR in Argentina

More than 10% of the population in Argentina lives in poverty. Despite free access to education, children growing up within socially-vulnerable families very often experience the lack of a learning environment and support structures to achieve good results and finish their education.

► Improving reading and writing skills in San Juan

Although Argentina has been able to increase school attendance, the quality of education in many schools has been decreasing. Reading and writing levels among children, especially in poor areas, are worsening, and many children lack the capacity to understand what they read or express themselves clearly when writing. As a result, many children drop out of school, continuing a negative spiral into poverty.

“Fundación Leer, a non-profit organization, works across Argentina to give children access to books, so they are able to learn how to read. The Hempel Foundation supports a local school in Calingasta, in San Juan province, where teachers also receive training in order to improve their teaching techniques for reading and writing. Fundación Leer has also set up a school library where the children receive free books and reading games, so that they can practice at home and involve their parents in their literacy development.



► Social Center in Luján



SOS Children’s Villages has set up a social center in the most deprived areas around the big cities. The children come to the center after school, where they are met with a welcoming and caring environment with the necessary support to help the children keep up with school.

The centers provide help to the children and their parents in three areas:

- **Education:** Through recreational and pedagogical games and daily routines.
- **Health and nutrition:** Children receive an additional nutritious meal in the afternoon, in order to optimize the learning curve. Important vaccinations, as well as life skills for daily nutrition and hygiene, are also provided.
- **Family and community:** To insure the children receive support and understanding from their parents, there are parenting classes on children’s rights, conflict resolution, daily life planning, etc.

The Hempel Foundation is supporting the “Aprender a Volar” social center in Luján, which helps 150 children and 73 families. It is also funding the construction of a new and bigger house with a library, giving the children a place to improve their reading ability.



AvantGuard® Redefining anti-corrosion

Hempel introduces AvantGuard®, a new innovative anti-corrosion technology, based on activated zinc and locked into our new range of high performance protective coatings. AvantGuard® reduces the effects of corrosion and offers advanced protection. This increased durability has been proven in extensive tests.

- ▶ **Redefining Durability** with improved mechanical strength.
- ▶ **Redefining Protection** with reduced rust creep and enhanced corrosion protection.
- ▶ **Redefining Productivity** with greater working tolerances in different climatic conditions and with high DFTs.



"This is a huge milestone on the execution of our "One Hempel One Ambition Strategy", demonstrating how innovation is key to delivering our goals. Once more Hempel converts a creative concept into a reality, delivering a breakthrough solution, towards increasing productivity, protection and durability, transforming smart ideas that tackle and address real problems into products and services that customers want"

Michael McGlamry, Americas Protective Product Manager

View our video online to learn more about this exciting technology:

www.hempel.com/avantguard



Have you got a question, or do you want to stay up to date with this technology?

Please don't hesitate to contact our team on: avantguard@hempel.com

Hempel Americas Events 2014

Will you be at one of these events? If so be sure to drop by our booth/stand.

- **COAL-GEN**
Nashville, Tennessee
August 20-22 - USA
- **URTECH**
Denver, Colorado
August 25-27 - USA
- **OIL SANDS**
Fort McMurray, Alberta
September 9-10 - CANADA
- **EXPO PESCA DEL PACIFICO SUR**
Guayaquil, Guayas
September 11-13 - ECUADOR
- **DUG EAGLE FORD**
San Antonio, Texas
September 15-17 - USA
- **RIO OIL AND GAS**
Rio De Janeiro, Rio de Janeiro
September 15-18 - BRAZIL
- **IMEX - International Mining Expo**
Las Vegas, Nevada
September 23-25 - USA
- **OIL & GAS ENERGIA PATAGONIA 2014**
Neuquen, Neuquen
October 1-4 - ARGENTINA
- **PACIFIC MARINE EXPO**
Seattle, Washington
November 19-21 - USA
- **WORKBOAT**
New Orleans, Louisiana
December 3-5 - USA
- **POWER GEN**
Orlando, Florida
December 9-11 - USA