

Cargo handling equipment

Trusted protective coatings



Up to the challenge

The Cargo handling equipment faces many challenges to protecting assets in some of the world's harshest environments.

At Hempel we have over 100 years experience in Marine and Protective coatings and understand these complex needs. We offer tailored anti-corrosion solutions that provide reliable, long-term protection for every aspect of your business, whether upstream or downstream, offshore or onshore, new build or maintenance.

Our extensive product range offers advanced protection for all primary asset elements within the Cargo handling equipment. From structural steel in new build construction to internal operating and process equipment, and extending beyond that to ongoing maintenance solutions - we protect your assets for a lifetime.

Hempel delivers trusted solutions for the Cargo handling equipment.

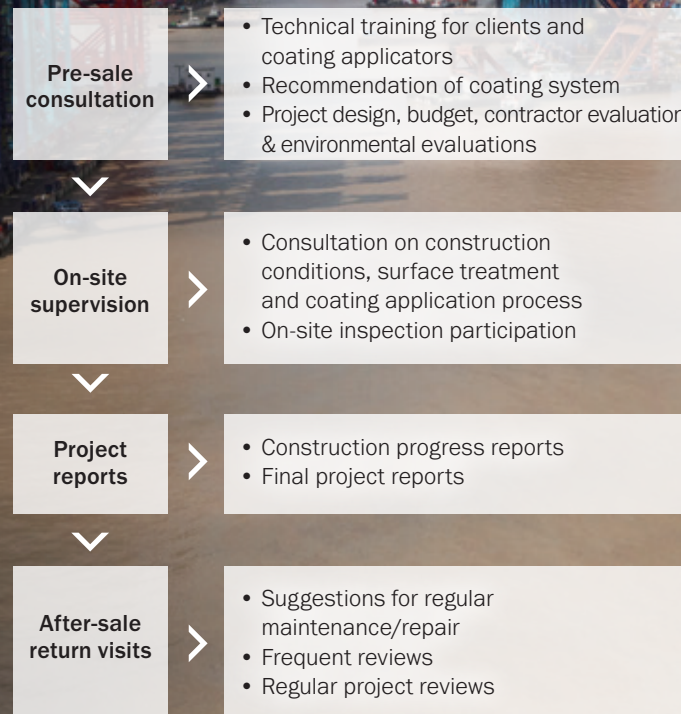
- Proven performance** > Our coating systems use proven technology to give advanced protection for all your assets, and are extensively tested to current standards including ISO 12944 and NORSOK M-501.
- Global service** > We give you the right products on site, on time, every time, with the support of our 26 manufacturing plants and over 350 stock points worldwide.
- Professional support** > Our multinational coordination teams and over 450 FROSIO/NACE certified coating advisors are on hand to ensure that your coating project runs smoothly from start to finish and beyond.
- Innovative solutions** > With 15 global research and development facilities, we work locally with you to provide the right solution for your project, ensuring environmental responsibilities are met.



A structured approach

Our structured approach towards technical service ensures that clients are supported in the best way possible throughout the application process. Our state-of-the-art technical service process offers our clients support and advice prior to application.

During the application, Hempel can offer on-site supervision and consultation and documentation on progress and results. Finally, our after-sale support package offers follow-up visits to inspect coating systems and suggest repair and maintenance actions.



Hempel CraneCare

Our Solution for Cranes Maintenance

Intelligent Condition Survey	
Detailed visual corrosion and coating inspection supported by	<ul style="list-style-type: none"> • Advanced UAV • Anomaly assessment • Dropped object assessment • Conventional NDT such as DPI / MPI
Personnel	<ul style="list-style-type: none"> • Coating and integrity inspection specialists with FROSIO / NACE / ASME / API certifications and familiarity with port cranes
Deliverable	<ul style="list-style-type: none"> • Risk-based inspection report, detailing corrosion and coating condition in specific areas mapped to GA drawings
Benefits	
<ul style="list-style-type: none"> • Accurate assessment of external mechanical and coating condition, in specific areas mapped to GA drawings of cranes • Risk-based prioritisation of needed maintenance & repair 	

*UAV = Unmanned Aerial Vehicle (i.e. flying drones); NDT = Non-Destructive Testing; DPI = Dye Penetrant Inspection (a form of NDT); MPI = Magnetic Particle Inspection (a form of NDT), GA = General Arrangement (Drawing)

Bespoke Maintenance & Repair

Project Management	<ul style="list-style-type: none"> • Full management and coordination throughout the entire project to ensure excellent surface preparation and application, minimum resource use and faster project completion • Pre-project inspection, including specification verification, staff training and equipment/coating preparation • Ongoing quality checks • Selection of most appropriate coating and maintenance solutions • Working with selected application partners
Personnel	<ul style="list-style-type: none"> • Full-time and dedicated project manager(s) to be stationed on-site
Deliverable	<ul style="list-style-type: none"> • Daily progress reports • A full report at the end of the project

Benefits

- Maintenance & Repair which is tailored to specific issues identified during inspections
- Project managed by Hempel so customers can focus on their core business
- Reduced annual maintenance-related spending on steel replacement, labour and coating
- Reduction of materials waste and emissions

Avantguard®

Challenging the standard for corrosion protection

When it comes to protecting assets in harsh environments, you need a high-performance anti-corrosion system that will last, whatever nature or industry throws at it. You need Avantguard technology with Triple Activation.

Avantguard outperforms equivalent zinc-rich epoxies in almost every area of application. Its superior performance allows a reduction in typical system dry film thicknesses to achieve the required protection. Challenging the standard for corrosion protection in tough environments, our Avantguard activated zinc epoxy primers protect assets for longer and with less maintenance.

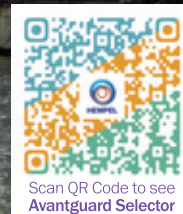
Avantguard coatings are better during application, too. You get unbeatable ease of application, even in high ambient temperatures and humidity, and the shortest overcoating intervals on the market. The result? Your production moves faster, your maintenance work is quicker and coating quality is more consistent.

Increase asset longevity with longer corrosion protection in the toughest conditions

Reduce application and construction costs with lower paint consumption and faster application

Reduce maintenance costs with longer maintenance intervals and less rework































Improve sustainability with less maintenance and fewer emissions



C5 H

Take your corrosion protection to a higher level

In industrial areas of high humidity and aggressive atmosphere and inshore areas of high salinity. Coating systems using Avantguard outperform conventional zinc epoxy systems in terms of Sustainability, Productivity and Durability.

Focus Area	System Comparison*	Reference 60-140-60	Avantguard 750 40-120-60	Avantguard 750 60-0-200
 Environmental Impact Reduced environmental impact resulting from less consumption, reduced solid waste and fewer emissions.	CO2 Emission - Embodied [g CO2e / m ² . year]	 209-125	 148-85	 169-101
	VOC Emission [g / m ²]	 128	 110	 99
	Paint Consumption [%]	 100	 85	 79
 Application Time Fast track construction with faster drying times and fewer coats.	Application Time [hours]	 9	 6.45	 1.45
	Number of layers	 3	 3	 2
	Total DFT [µm]	 260	 220	 260
 Coating Maintenance Reduce frequency of maintenance with longer maintenance intervals and less work.	Effective Durability [years]	 15-25	 15-25	 18-30
	Corrosion Creep	 Medium	 Low	 Very Low
	Mechanical Resistance	 Better	 Excellent	 Excellent

* The "Benchmark system" is calculated as the average of 5 zinc-rich epoxies; a pool that includes one Hempel and four other standard market primers.

For more information, please visit www.hempel.com or contact your local Hempel representative.

A coating system with a global track record



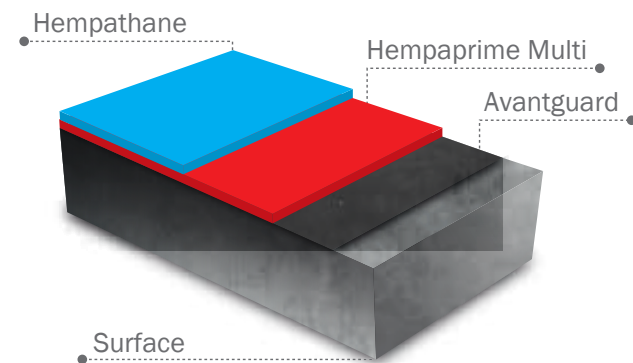
We have been supplying heavy-duty coating solutions for cargo handling equipment in coastal areas for many years. Our recommended coating systems has a proven track record globally.

The three-coat system for new build consists of a zinc rich epoxy primer, a high build epoxy intermediate, and a strong polyurethane topcoat. It has proven to be ideal for ship-to-shore, quay and yard cranes as well as ship loaders/unloaders, and spreaders. This system offers our customers optimal corrosion protection in a strong system that withstands highly corrosive coastal environments.

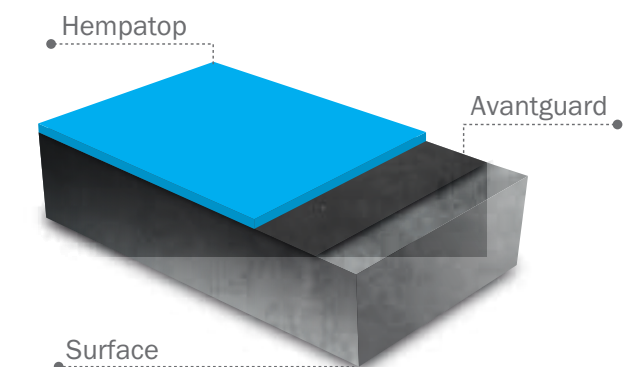
The two-coat system for maintenance consists of a zinc rich epoxy primer, and a strong Hempatop topcoat. This system offers our customers optimal corrosion protection with easy application properties.

With our latest advancements in zinc epoxy primers throughout the Hempadur Avantguard range, our recommended coating systems gives an even stronger all-round performance.

Recommended system	
Primer	Avantguard
Intermediate	Hempaprime Multi
Topcoat	Hempathane



Recommended system - maintenance	
Primer	Avantguard
Topcoat	Hempatop



ZPMC makes the shift to Hempaprime Core 570

ZPMC is the world's largest manufacturer of cargo-handling equipment, from cranes and bulk handling machinery to steel bridges and offshore products.

The challenge

With the tightening of standards on VOCs in recent years, ZPMC has been facing various challenges in terms of applying green coating on port machinery in a new environmentally-friendly way.

- 4% VOC consumption tax on all solvent-borne coatings with VOC above 420g/liter since February 1, 2015.
- VOC emission charge of CNY 20/kg in Shanghai since Jan 1, 2017.
- Requirement to apply all coating products with VOC share of >10% by weight in the formula under closed conditions (GB 37822-2019).
- Outdoor application with limited possibility to control temperature, humidity and ventilation.

The solution

As a trusted partner, Hempel took the initiative to tailor a new solution, i.e. Hempaprime Core 570, for ZPMC, effectively pushing forward the reduction of VOC emission.

The performance of the product was verified by ZPMC laboratory and a third-party testing institution. Then, a dedicated project team from Hempel conducted several rounds of tests on-site to test the application performance of the product under various extreme conditions about which ZPMC was most concerned. After a large number of

application tests, all relevant test data ultimately showed that the product delivered excellent application performance and high tolerance to on-site conditions.

Hempaprime Core 570 not only conforms to ZPMC's anti-corrosion specifications for the interior of a port crane but also fully meets all current standards on solvent-free coatings, thus helping ZPMC set a new benchmark for green coating.

This use of Hempel's new solvent-free epoxy coating for the renovation of a port machinery produced by ZPMC is a practical example of applying low VOC solvent-free epoxy coatings on the market for port machinery. With the new product, the source emission of VOCs from the project was reduced by 91.39% with the project successfully selected as an exemplary project in Shanghai for low-VOC alternatives.

Hempel was highly regarded by ZPMC for our excellent service and high-performance products. Currently, Hempaprime Core 570 has been successfully applied in multiple port machinery projects of the client.

Year/ Type of Equipment	STS	RTG/RMG
2023	41	43
2022	39	27
2024	20	42
2020	7	5



Our coatings travel the world

Specialist coatings for the container industry

As one of the world's leading suppliers of protective coatings for containers, our coatings can be found around the globe on containers of all types, protecting them from harsh environments and rough treatment.

As well as coatings for new containers, we also have a range of coatings for repair and maintenance work, and can work closely with you to help streamline your application lines or maintenance intervals.



Designed for the toughest environments

Tailored solutions for mining and metal processing

We have a protective coating range specifically tailored to withstand the harsh conditions found in the mining and mineral processing industry.

We protect infrastructure, buildings and equipment against corrosion for many processing plants around the world, prolonging lifetimes and reducing maintenance requirements with our durable protective coatings.



Recommended system	
Primer	Hempaprime Multi
Topcoat	Hempathane HS

Reference list 2023

Project Name	Owner	Region	Type	Quantity
DPW Caucedo port project	DPW	Dominica	STS+RTG	1+3
DPW Manila port project	DPW	Philippines	STS	2
MTL Hong Kong port project	MTL	Hong Kong	RTG	14
HHLA CTB Terminal port project	HHLA	Germany	STS	5
PSA Portugal Sines port project	PSA International	Portugal	STS	2
Maersk Mobile port project	APMT	USA	STS	2
Maersk Oman Salalah port project	APMT	Oman	STS+RTG	10+12
Maersk Egypt SCCT project	APMT	Egypt	STS+RTG	12+30
Maersk Jordan ACT project	APMT	Jordan	STS	1
Maersk Rejika port project	APMT	Croatia	STS	3
Maersk Elizabeth port project	APMT	US	STS	4
Maersk Barcelona port project	APMT	Spain	STS+RMG	1+3
Guangxi Beihai Ganglong Terminal project	Guangxi Beibu Gulf	China	Stacker reclaimer	4
Taizhou Beibu Gulf port project	Taizhou Beibu Gulf	China	Stacker reclaimer	3
Indonesia port project	Indonesia	Indonesia	Stacker reclaimer	2
Indonesia port project	Indonesia	Indonesia	RTG	3
United Arab Emirates port project	United Arab Emirates	UAE	RTG	5
Eurogate Egypt Damietta Terminal project	Eurogate Germany	Egypt	RTG	40
PSA Turkey Mersin Terminal project	PSA International	Turkey	RTG	9
Brazil port project	Brazil	Brazil	RTG	1
Baofeng Portal cranes project	Guangzhou	China	Portal cranes	2
Guangxi Jinfeng Portal cranes project	Guangxi Jinfeng Port	China	Portal cranes	5
Hengli Portal cranes project	Hengli	China	Portal cranes	6
Konecranes Denmark port project	Konecranes	Denmark	STS	2
Shenzhen MTL Dachanwan port project	MTL	China	STS+Portal cranes	6
Yantai port project	Yantai Port Group	China	STS	2
Fangchenggang port project	Fangchenggang	China	Stacker reclaimer	2
Nantong Wison port project	Nantong Wison	China	STS	1
Taiwan Kaohsiung port project	Kaohsiung Port	Taiwan	RTG	5
Henan Weihua Shandong Yulong Port Machinery Project	Shandong Yulong Petrochemical	China	Port machinery	4

As a world-leading supplier of trusted coating solutions, Hempel is a global company with strong values, working with customers in the decorative, marine, infrastructure and energy industries. Hempel factories, R&D centres and stock points are established in every region.

Across the globe, Hempel's paints and coatings can be found in almost every country of the world. They protect and beautify buildings, infrastructure and other assets, and play an essential role in our customers' businesses. They help minimise maintenance costs, improve aesthetics and increase energy efficiency.

At Hempel, our purpose is to shape a brighter future with sustainable coating solutions. We firmly believe that we will succeed as a business only if we place sustainability at our heart. Not only is it the right thing to do, it will strengthen our competitive position, make ourselves more resilient and reduce our risk.

Hempel was founded in Copenhagen, Denmark in 1915. It is proudly owned by the Hempel Foundation, which ensures a solid economic base for the Hempel Group and supports cultural, social, humanitarian and scientific purposes around the world.

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