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COATINGS AND ANTI CORROSION ENGINEERING REVIEW

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India aims to be one of top five shipbuilders by 2047

Interview

Mr Amit Choudhary

Chairman, International Advisory Committee, Asia Pacific Carbon Black Conference 2024

Case Study

6,000 hours of real world anti-corrosion coastal testing

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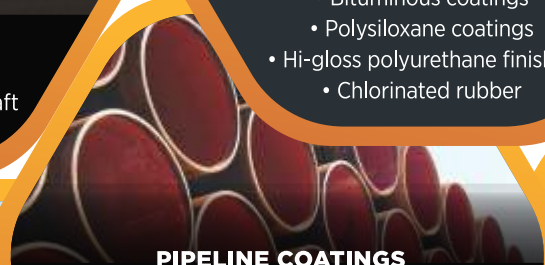

PIPELINE COATINGS

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- Food grade epoxy linings
- Gas flow epoxy coatings
- Jet Fuel coatings

OEM COATINGS

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- Hi gloss polyester top coats
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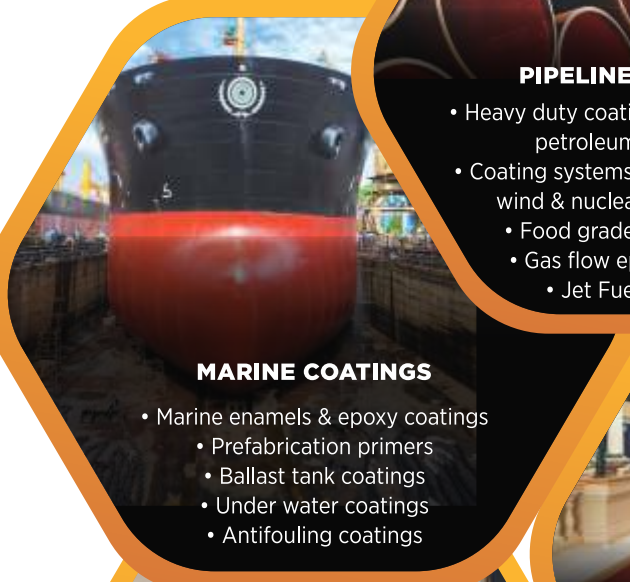

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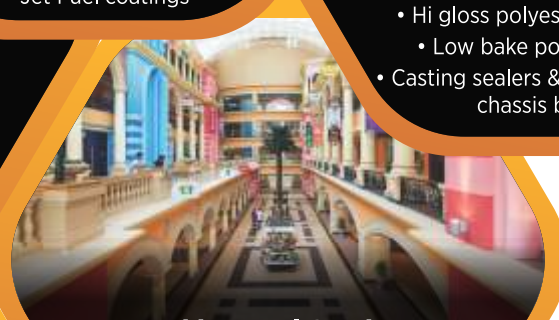
- Marine enamels & epoxy coatings
- Prefabrication primers
- Ballast tank coatings
- Under water coatings
- Antifouling coatings



Architectural Coatings

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- Internal coatings
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Asia Pacific dominates paints and coatings market, led by China and India

COVER PHOTO:123RF

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From the Editor-in-Chief...

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India currently ranks 20th in the global shipbuilding industry with its 0.06% share in the global shipbuilding market. The story of India's government setting a goal to become a top 10 shipbuilder by 2030 and a top five one by 2047 has been doing the rounds for some time now. Government support and initiatives like the Scheme for Financial Assistance to Shipyards in India (SFAS) are helping the industry grow. India's coastline and proximity to major shipping routes reduce transportation costs and turnaround times. India's labor costs are lower than other shipbuilding nations, which attracts international clients. Indian shipyards are specializing in niche segments like offshore support vessels, dredgers, and ferries. The Government of India is in the process of approving a ₹25,000 crore Maritime Development Fund (MDF) shortly, aimed at advancing India's maritime sector, aligning with the nation's Make-in-India initiative to establish the country as a global manufacturing hub.

Mazagon Dock Shipbuilders Limited (MDL), India's leading warship and submarine builder, has announced a massive expansion project aimed at doubling its shipbuilding capacity over the next 4 – 5 years. The new infrastructure will enable MDL to enhance its production rate, modernize operations, and meet the rising demand for advanced naval vessels in India and abroad.

Cochin Shipyard invested close to ₹3,000 crore recently to complete work on a new dry dock, and another international ship repair facility at Kochi. This is expected to raise ship repair facility from just below 100 ships per year now to over 160 ships, allowing it to take up ships repair work in a big way for the global market. The Adani Group is also planning a major shipbuilding initiative at Mundra Port in Gujarat, with a target of reaching a US$ 62 billion market by 2047.

In this issue, we try and evaluate how all this, would mean a boost for the marine coatings industry. At the same time, stringent environment regulations regarding the use of toxic paint see marine coatings manufacturers introducing low VOC, non-toxic coatings addressing both corrosion protection and pollution prevention and seeing higher acceptance.

Wishing each one of you, our readers, advertisers and well-wishers, a great New Year ahead!!!

Jolly Lonappan
Editor-in-Chief

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Wagner's innovative swivel joints make working with sprayers easier

Wagner (wagner-group.com) is starting the year with two product innovations in the accessories sector: the FlexTwist S and FlexTwist Z swivel joints. These revolutionary accessories have been specially developed to improve hose handling and optimize ergonomics when working with equipment technology, notes a press communique from the company.

PHOTO: WAGNER

The FlexTwist swivel joints are pioneering innovations that sustainably improve the way professionals work in the field of paint spraying.

FlexTwist S is a small, flexible swivel joint that can be mounted either between the airless gun and material hose or between the hose and sprayer. With a 360 degree rotating axis, FlexTwist S makes rolling and unrolling the hose easy and prevents annoying twisting of the airless hose. The product is available in two different thread sizes (outer 1/4", inner 1/4"; outer 3/8", inner 3/8") and is made of high-quality stainless steel. With a maximum operating pressure of 517 bar, this swivel joint ensures a secure connection for airless spraying work and sets new standards in terms of flexibility and user-friendliness.

FlexTwist Z goes even further with three axes that can be rotated 360 degrees for maximum operator comfort. It is mounted between the airless gun and the hose. In addition to easier hose handling, FlexTwist Z excels in flexible gun handling. The reduced strain on the user's wrist ensures fatigue-free spraying. The swivel joint allows the airless gun to be held ergonomically at any angle, providing maximum freedom of movement and comfort during work.

The FlexTwist swivel joints are pioneering innovations that sustainably improve the way professionals work in the field of paint spraying. The products are now available in the market and promise a significant increase in efficiency and user-friendliness when using airless sprayers.

Hempel launches silicone hull paint recharger for the Yacht market, revolutionizing boat maintenance

Hempel A/S (hempel.com) has recently introduced the world's first and only recharger for Hempel's silicone systems, ensuring underwater boat maintenance becomes a pain(t)less experience for boat owners, notes a press communique from the company.

Simply applied on top of an existing Hempel silicone finish at the scheduled maintenance interval, Hempel's Infinity extends the silicone performance of the hull coating for an extra season. Hempel's Infinity removes the need for repainting, resulting in less work, lower overall costs and less paint used, allowing for more time on the water.

"Hempel's Infinity is our most significant innovation in the Yacht sector since the launch of Hempel's Silic One back in 2012," says Thomas Olsen, Marketing Director - Yacht at Hempel A/S. "It has been designed with boat owners' time and money in mind, enabling them to maintain performance excellence year after year, in a more sustainable way. I am excited to introduce this ground-breaking innovation and look forward to following its success and impact in the market."

PHOTO: BIUGED

Hempel's Infinity removes the need for repainting, resulting in less work, lower overall costs and less paint used, allowing for more time on the water.

Hempel's Infinity has an easy application method, requiring no sanding, masking or painting. The underwater area needs to be clean and dry before Hempel's Infinity is applied to the whole underwater surface. After a minimum of 24 hours' activation time, Hempel's Infinity is then rinsed off with fresh water and the boat is ready for another sailing season, in half of the time it takes to apply conventional antifouling.

Hempel's Infinity will be available in 2.4 litre size and is suitable for both DIY and Pro usage.

OptiSense coating thickness sensors that automatically save time

The installation of measuring and monitoring technology on a coating line needs to be carried out as simply and efficiently as possible. Sensor solutions are also available that can help engineers and fitters achieve their goals faster. The industrial sensors made by OptiSense (optisense.com), Germany, are a good example of this. With a brand-new design that no longer needs a mounting fixture, they save time and effort during installation, notes a press release from the company.

The sensor solutions PaintChecker Line and PaintChecker Angle are ideal for speeding up projects. For many plant engineers, time is an important criterion when deciding which sensors to use.

According to OptiSense, its new generation of laser sensors can withstand even the harshest environments thanks to the robust industrial casing.

PHOTO: OPTISENSE

According to OptiSense, its new generation of laser sensors can withstand even the harshest environments thanks to the robust industrial casing.

Furthermore, the sensors can be quickly replaced as they do not have complex fixtures. The light source for the sensors is a diode laser, which brings with it the advantages of semiconductor technology such as a long service life, exceptional efficiency and full resistance to vibration.

The sensors can measure coating thicknesses between 1 and 1,000 μm. The optimized thermal design enables continuous operation with high measuring rates of up to 2.5 Hz. The laser sensors have an IP rating of IP50. The industrial sensors are also available as high-power variants.

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SIOResin transforms zinc rich anti-corrosion coatings with breakthrough high-temperature and salt spray performance

SIOResin® (sioresin.com), a leader in innovative coating solutions, has unveiled its latest product, the SIO-7213 Waterborne High-Temperature Resistant Silicone Resin. This development sets new benchmarks in the performance of zinc-rich anti-corrosion coatings, combining superior heat and salt spray resistance for demanding industrial environments, notes a press release from the company.

PHOTO: GEMA

Capable of withstanding sustained exposure from 200°C to 650°C and short-term peaks up to 800°C, SIOResin's SIO-7213 outperforms traditional zinc-rich coatings, ensuring long-term reliability in extreme heat conditions.

SIOResin® SIO-7213 is designed to meet the rigorous requirements of high-temperature industrial applications. Capable of withstanding sustained exposure from 200°C to 650°C and short-term peaks up to 800°C, it outperforms traditional zinc-rich coatings, ensuring long-term reliability in extreme heat conditions.

One of the standout features of SIO-7213 is its unparalleled resistance to corrosion. A 15-micron coating formulated with this resin achieves over 2,000 hours of neutral salt spray protection, delivering more than three times the durability of conventional inorganic zinc-rich primers.

As a waterborne silicone resin, SIO-7213 offers significant environmental advantages, free of toluene and xylene, and complying with stringent environmental regulations. It cures through self-crosslinking at room temperature, eliminating the need for baking and simplifying application processes.

Additional features include: Excellent film-forming properties; rapid surface drying with superior wetting and leveling performance.

Broad compatibility: Works with spherical zinc powder, flake zinc powder, and zinc-aluminum alloy powder for versatile formulations.

Thick application stability: Resists chalking and peeling even under high temperatures.

SIO-7213 is ideal for industries requiring high-performance zinc-rich anti-corrosion coating solutions, including power plants, petrochemical facilities, and heavy machinery. Its ease of use and robust performance make it a preferred choice for coating professionals worldwide.

"SIOResin's innovative SIO-7213 redefines the limits of zinc-rich anti-corrosion coatings, offering unparalleled heat and corrosion resistance that address critical industry challenges," said Mr Zhang, CEO of SIOResin. "We are proud to provide cutting-edge solutions that support our customers in achieving superior durability and environmental compliance."

SIO-7213 is available in 50kg packaging and offers a shelf life of six months when stored under appropriate conditions.

New heavy-duty abrasive wipes

Arctic Hayes (arctic-hayes.com), a leading supplier of heating and plumbing products, has announced the launch of its newest innovation – Heavy-Duty Abrasive Wipes, branded as "Dirty Scrubbers."

PHOTO: MIPRA

The new Dirty Scrubbers wipes are engineered for maximum durability and versatility, making them ideal for cleaning hands, tools, and surfaces after a long, messy day.

Designed to tackle even the toughest of jobs, these wipes are set to become an essential tool for tradespeople and professionals across various industries. The new Dirty Scrubbers wipes are engineered for maximum durability and versatility, making them ideal for cleaning hands, tools, and surfaces after a long, messy day. Built to handle a wide range of tough substances such as adhesives, caulk, oil, paint, PU foam, silicone, grease, and gutter seal, these wipes provide an all-in-one cleaning solution for professionals on the go.

Featuring a heavy-duty construction, they are not only built to last but can also be washed and reused, ensuring both durability and cost-effectiveness. The dual-sided wipes include an abrasive surface for powerful scrubbing, ensuring maximum cleaning efficiency no matter the task.

Dermatologically tested and rated as "excellent," Dirty Scrubbers are tough on grime but gentle on skin, making them a reliable tool for daily use without irritation. "We're excited to introduce our new Dirty Scrubbers, designed with the working professional in mind," said Lee Parsons, CEO at Arctic Hayes. "These wipes reflect our commitment to providing high-quality, innovative products that solve real-world challenges. Whether in the field or on-site, these wipes will be an invaluable addition to every toolkit."

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PPG launches PPG STEELGUARD 951 fire protection coating

PPG (ppg.com) has announced the launch of PPG STEELGUARD® 951 epoxy intumescent fire protection coating designed for advanced manufacturing facilities, including semiconductor plants, electric vehicle battery facilities, data centers and other commercial infrastructure, notes a news release from the company.

PPG Steelguard 951 coating provides up to four hours of fire protection by expanding from a thin, lightweight film into a thick, insulating foam. This maintains structural integrity, allows more time for evacuation and minimizes damage to buildings and assets.

"We're excited to expand our offering of PPG Steelguard 951 coating to the commercial infrastructure sector, specifically advanced manufacturing in countries," said Stuart Bradbury, PPG business development manager, fire protection, Protective & Marine Coatings. "This solution offers up to four hours of fire protection, meets stringent testing standards, and supports modern construction methods with its robust, flexible and efficient application properties. We are committed to partnering with our customers to ensure the highest safety and performance in their projects."

PHOTO: BUSINESS WIRE

PPG Steelguard 951 coating provides up to four hours of fire protection by expanding from a thin, lightweight film into a thick, insulating foam.

PPG's global technical team ensures that customers receive expert guidance for optimal application. The product's environmental credentials, including Environmental Product Declarations, underscore PPG's dedication to sustainability.

The coating delivers up to 3,500 microns of dry-film thickness in a single coat and cures rapidly, ready for handling the next day. PPG Steelguard 951 coating is ideal for modular construction projects optimized for off-site and field applications. PPG's patented flexible epoxy technology ensures excellent durability and edge retention, reducing the risk of cracks during handling and transportation, and provides corrosion resistance up to ISO 12944 C5 without a topcoat.

PPG Steelguard 951 coating is tested in accordance with all recognized national and international fire and corrosion standards, including ISO 12944 C5, EN 13381-8, BS 476 standards, GB 51249, GB 14907, ASTM E 119, UL 263 and ULC 5101.

A new, safer solution with exceptional fire performance: Clariant's Exolit™ AP 422 A

Clariant (clariant.com) has launched its next-generation melamine-free flame retardant, a safer and forward-thinking solution that provides superior fire resistance and meets the stringent demands of modern industries.

In 2023, melamine was classified as a Substance of Very High Concern (SVHC) making Exolit AP 422 A a valuable asset for the firestop industry melamine.

In anticipation of the current and future regulatory challenges around melamine, Clariant has been proactively working on this innovative solution for several years, developing an SVHC-free alternative to the existing melamine-containing Exolit AP 422 flame retardant, notes a press release from the company.

PHOTO: CLARIANT

With evolving chemical regulations like REACH, Exolit AP 422 A provides manufacturers a future-proof solution to create more sustainable, superior and fully compliant flame-retardant formulations, ensuring reliability and trust.

"Exolit AP 422 A upholds the trusted reliability that Exolit products are recognized for in the market and ensures that our clients' fire protection offerings remain competitive, particularly in terms of chemical compliance. It allows manufacturers to adapt to evolving legislation while preserving the effectiveness of their fire safety solutions," said Sebastian Moschel, Clariant's Technical Business Development Manager Passive Fire Protection.

The new Exolit AP 422 A addresses the concerns surrounding melamine as a Substance of Very High Concern at the same time as providing superior fire resistance across multiple applications including intumescent coatings, firestop sealing systems, and PIR insulation panels. Its non-halogenated nature helps minimize hazardous emissions, providing safer usage in critical industries.

"Exolit AP 422 A responds to key market trends around tightening fire safety standards, environmental and health concerns, regulatory compliance needs, operational efficiency demands, and the need for versatile solutions across many applications," added Clariant's Global Business Development Manager Polymer Solutions, Christian Battenberg.

Flame retardants are found in many applications around us, including electronic devices; transportation systems and buildings. As e-mobility expands, they provide safer protection for everything from charging points to circuit breakers. With evolving chemical regulations like REACH, Exolit AP 422 A provides manufacturers a future-proof solution to create more sustainable, superior and fully compliant flame-retardant formulations, ensuring reliability and trust.

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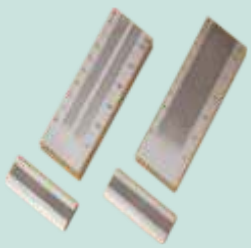
 DVNEXT RHEOMETER	 CTX™ TEXTURE ANALYZER	 FINENESS OF GRIND GAUGES (HEGMAN GAUGE)	 DIGITAL ROTOTHINNER	 AUTOMATIC CUPPING TESTER
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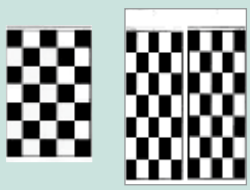
 SKID RESISTANCE TESTER	 TIDAS Automated Grindometer (Hegman Gauge)	 K CONTROL COATER	 CHECKERBOARD CHARTS	 DIGITAL COATING THICKNESS GAUGE (456)
 PULL-OFF ADHESION TESTER POSITEST AT-A	 UV XENON WEATHERING CABINET	 RAL K5 (Matt & Glossy)	 PANTONE FORMULA GUIDE	 ULTRASONIC COATING THICKNESS GAUGE POSITECTOR 200 (FOR PLASTIC, WOOD, GLASS)

CC-3743

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CRISIL Rating : SME 1 'Highest'

Metrohm AG's advanced instruments for electrochemical research

In the dynamic field of electrochemical research, precision and reproducibility are paramount. Researchers strive to explore corrosion mechanisms, analyze coatings, and identify optimal inhibitors while maintaining efficiency and maximizing resources.

Advanced instruments, such as those offered by Metrohm Autolab, empower scientists with state-of-the-art tools to meet these challenges and expand their research horizons, notes a press communique from Khushboo Scientific Pvt Ltd., their agents in India.

PHOTO: METROHM AUTOLAB

Advanced instruments, such as those offered by Metrohm Autolab, empower scientists with state-of-the-art tools to meet these challenges and expand their research horizons.

Metrohm Autolab provides a comprehensive suite of instruments and accessories tailored to corrosion research. These solutions are designed to recreate real-world processes in the lab, ensuring reproducibility and accuracy.

Ideal for laboratories with limited space or those looking to integrate electrochemical techniques into existing workflows, the Corrosion Compact package includes:

☐ Autolab PGSTAT204: A robust instrument for core corrosion measurements.

☐ FRA32M Module: Enables Electrochemical Impedance Spectroscopy (EIS).

☐ 1 L ASTM Corrosion Cell: Fully compliant with ASTM standards, featuring a thermostatic jacket and a sample holder for precise measurements.

☐ NOVA Software: A powerful platform for streamlined data acquisition and analysis.

This package is perfect for researchers requiring ASTM compliance and efficient setup without extensive lab reconfiguration.

☐ Autolab PGSTAT302N: Supports up to 8 modules, with space for additional configurations.

☐ Specialized Modules like FRA32M for EIS; Low current amplifier module (ECD) for ultra-low current measurements; Voltage and pH measurement module (pX1000) for simultaneous pH, voltage, and temperature analysis; and Electrochemical Noise module (ECN) for detailed noise analysis in the frequency domain.

☐ 1 L ASTM Corrosion Cell: Ensures compliance and accuracy.

☐ Pt 1000 Temperature Sensor: Enhances temperature measurement accuracy.

☐ NOVA Software: Seamlessly integrates data from multiple techniques into a unified interface.

This setup is ideal for researchers seeking high efficiency and versatility in executing diverse corrosion studies.

Metrohm Autolab's modular approach ensures compatibility and interchangeability across its product range. Accessories such as specialized electrodes, sample holders, and corrosion cells enhance the adaptability of these instruments, allowing users to scale and modify setups as research evolves.

More details: khushbooscientific.com

OKS launches new series of zinc sprays for permanent corrosion protection

OKS (oks-germany.com), a specialty chemical company based in Germany in a process lasting several years, has developed a new series of zinc sprays for permanent corrosion protection. Compared to their earlier versions, the new product range offers a significant two-fold improvement in corrosion protection. The products also set new standards in work safety, notes a product write-up from the company.

PHOTO: OKS

OKS 2551, the classic zinc protection spray for the initial layer build-up, achieves more than 2,000 hours of protection in the salt spray test at a layer thickness of just 70 µ.

OKS 2551, the classic zinc protection spray for the initial layer build-up, achieves more than 2,000 hours of protection in the salt spray test at a layer thickness of just 70 μ. At the same layer thickness, a normal zinc spray does not even reach 1,000 hours. The new OKS 2561 zinc-aluminum protection also has a protection duration of more than 800 hours, far exceeding previous industry values. The same applies to the two products with decorative corrosion protection in an aluminum or stainless-steel look, OKS 2571 and OKS 2581. And since none of them contain aromatic solvents, all four products have a lower hazard potential.

These products will primarily be used in steel construction, chemical and energy plants, municipal services and air conditioning technology and shipbuilding and offshore applications.

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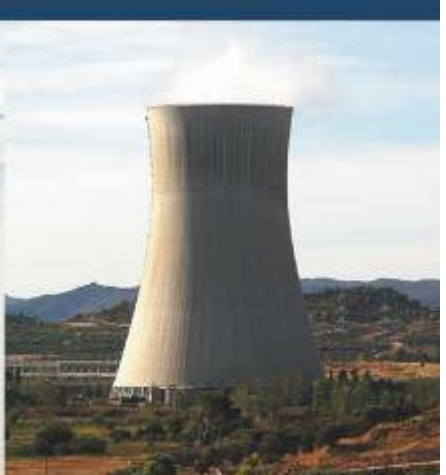

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Protect for Less

The STELLAR-4T Bulk Blaster Pot

The integrated blasting unit is suitable for large blasting areas

Selection of the correct capacity, quality and specification of blasting equipment can have a profound effect on project timelines and quality – eventually affecting the quality of coating applied to the surface.

Specifically, large blasting projects like storage tanks / ship hulls and other steel surfaces can be accomplished in a cleaner, better, faster way if we mobilize the right equipment commensurate with the scope and size of the blasting project at hand.

Large projects with large surface areas call for bulk blast pots which can provide continuous blasting capacity with capacities from 4,000 kg as needed.

The following criteria are important when selecting the right blast pot for large projects:

a. Bulk blast pot capacity (4,000 kg / 6,000 kg / 8,000 kg)

b. Combat moisture from the compressed air supply

c. Mechanized loading of abrasive and reduced labour for non-value adding jobs

d. Multiple independent blasting outlets with specially designed metering valves

e. Electric or pneumatic deadman handle for safety

f. Control panel for control of the blast pot for mechanized refilling and blast pot operations

g. Compatible with robotic crawler for large steel surface area preparation

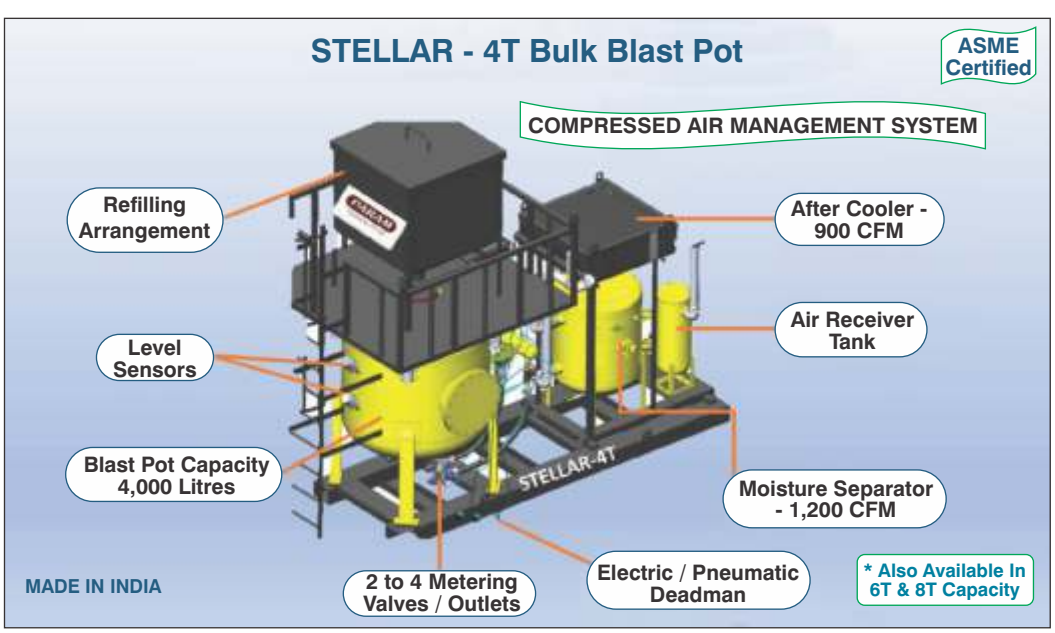
h. Made in India to high quality standards (ASME / CE)

Post Covid it is necessary to re-look at the above criteria while mobilizing for a large blasting project in the overall interest of quality, safety and production.

The STELLAR-4T bulk blast pot.

Control panel.

The STELLAR-4T is a bulk blast pot with the following features that has been designed and developed by Param Hydraulics Pvt Ltd., Navi Mumbai:



a. 2.2 KL volume of blast pot (4 KL / 6 KL available on request)

b. Integrated with 900 CFM after cooler, 1,200 CFM (Moisture Trap)

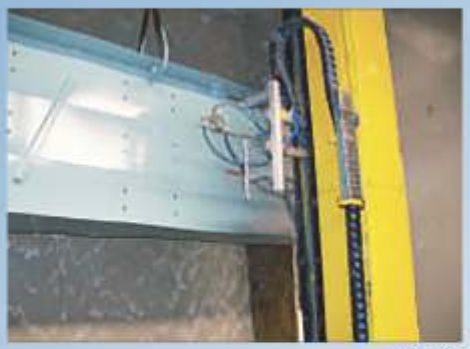
c. Refilling systems – suitable for large 1 ton or more abrasive jumbo bags

d. 3 outlets

e. 3 inlet air receiver

f. Independent metering valves allow for measured abrasive flow to 3 manual outlets

VR Coatings offers Corrosion Protection Painting systems



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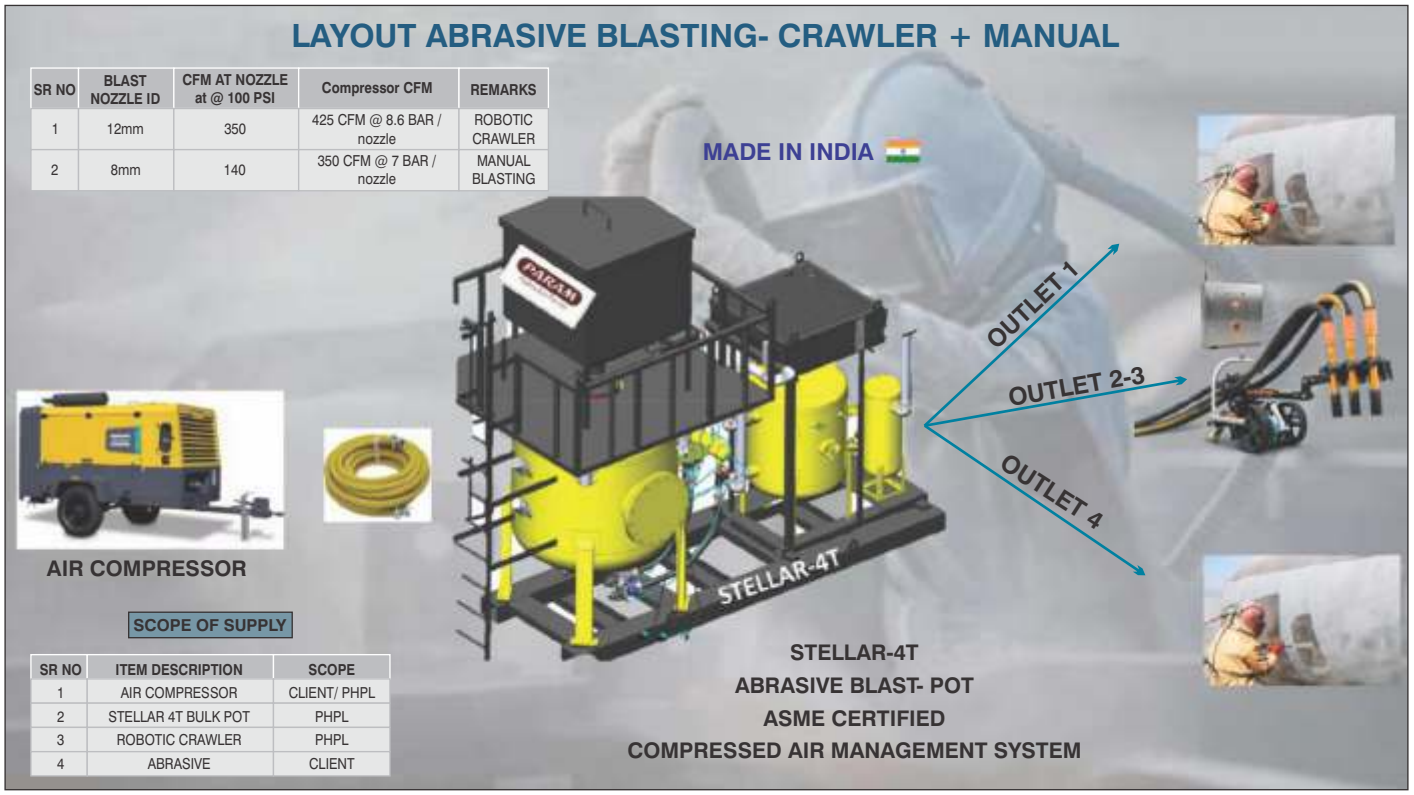

g. Electric DMH (deadman handle) / pneumatic available on request

h. Sensor for low level abrasive

i. Sensor for high level abrasive

j. Centralized control panel for operation of the blast pot including filling of abrasive

k. ASME / CE certification

l. Made in India to excellent design and quality standards

Advantages of using bulk pots with air management system for large projects:

a. Integrated blasting machine suitable for large blasting areas.

b. Blast continuously for 4 to 6 hours (depending on nozzle ID and outlets used)

c. Can use 1 or 2 or 3 outlets – independently from the STELLAR bulk blast pot

d. Avoid frequent refilling stops which can occupy as much as 30% - 40% of available blasting time

e. Less abrasive usage (due to correct metering valves and air preparation system integrated on the same skid)

f. Correct metering avoids dust generation due to excess abrasive being used – more than necessary

g. Significantly reduce labour for refilling – as refilling will be done by hydra and is significantly faster

h. Cleaner / less messy – reduction in number of hoses and connections and reduction in air leakage possibility

i. Electric deadman / pneumatic deadman for safety

j. Central control panel – with sensors – for opening the actuator valve for re-filling

k. Compatible with robotic crawler for blasting large open surface areas

l. Easy to operate maintain

m. A long term investment.

Large projects with large surface areas call for bulk blast pots which can provide continuous blasting capacity with capacities from 4,000 kg as needed.

More details:
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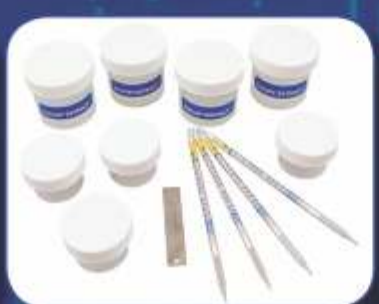



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Jasmino Corporation acquires two German firms

The acquisitions of HAW Linings and GBT Buecolit, elevates Jasmino's position in the industrial corrosion protection sector

Jasmino Corporation Pvt. Ltd., Navi Mumbai, a leading player in India's chemical process equipment engineering and corrosion protection industry, has achieved a significant milestone in its global expansion. The company has acquired HAW Lining and GBT Buecolit, two German pioneers in corrosion protection, positioning itself as the third-largest global provider of industrial anti-corrosion solutions, notes a press communique from the company. This move aligns seamlessly with Jasmino's vision to become a comprehensive global leader in corrosion protection, extending its reach across domestic and international markets.

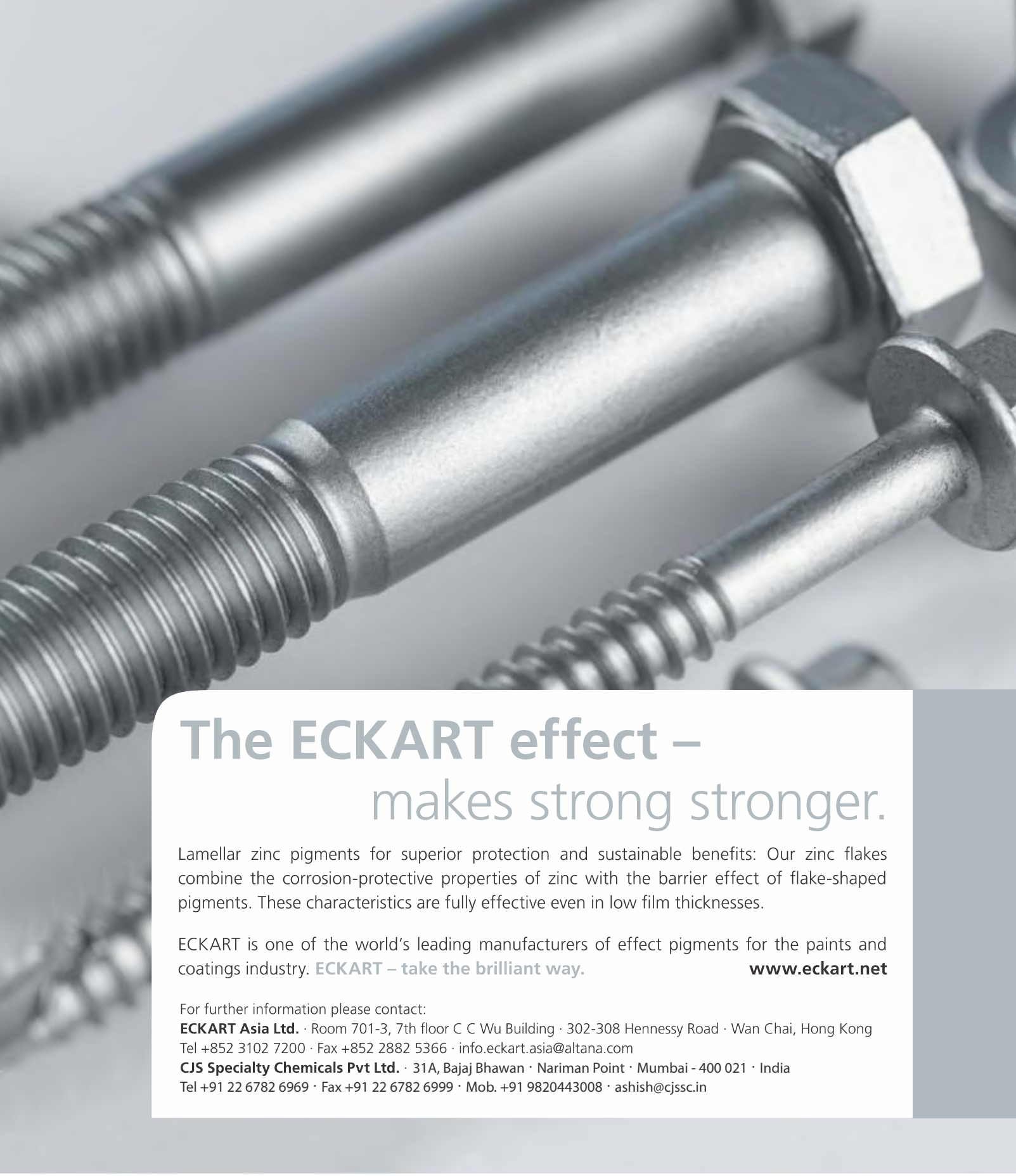
HAW Linings, a pioneer in rubber linings, has been instrumental in industrial corrosion protection for over 125 years, offering critical solutions to global industrial powerhouses. As the inventor of industrial rubber lining, patented in 1920, HAW's technology has been fundamental in enabling the chemical industry revolution. With this acquisition, Jasmino now has access to the world's largest shop floor for anti-corrosive lining and one of Europe's largest equipment manufacturing facilities spanning over 120,000 sqm, located in Bockenem, Germany. HAW's expertise and legacy in anti-corrosion solutions further strengthen Jasmino's position as a global leader in the field.

Mr Ramani Seshadri, CMD, and Mr Adheesh Ramani, CEO, Jasmino Corporation.

GBT Buecolit is one of Germany's leading companies in heavy-duty corrosion protection, specializing in coatings, plastic lining, and turnkey solutions. A renowned brand across Europe, GBT operates with subsidiaries in Poland and the Netherlands, and partners in Belgium, France, Switzerland, Luxembourg, and Jordan. Known for its comprehensive engineering solutions, including design, manufacturing, anti-corrosive linings, and maintenance, GBT's acquisition enhances Jasmino's European presence. This will further strengthen its capabilities with an experienced team of technicians and engineers, boosting its ability to deliver efficient solutions and minimize equipment downtime globally.

HAW Linings, a pioneer in rubber linings, has been instrumental in industrial corrosion protection for over 125 years, offering critical solutions to global industrial powerhouses.

Adheesh Ramani, CEO, Jasmino Corporation, said, “The acquisition of HAW and GBT marks a significant milestone in our international expansion strategy. It strengthens our ability to offer comprehensive turnkey solutions, covering everything from concept to commissioning for all types of industrial plants. This includes design,



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engineering, equipment manufacturing, anti-corrosive linings, and on-site commissioning. With these acquisitions, Jasmino has established a solid foundation, fortified by respected international brands, positioning us for aggressive growth and enabling us to capture a larger share of the market in our core verticals."

Strategic synergies: Building a foundation for long-term growth

Ramani Seshadri, CMD, Jasmino Corperation, said. "We are excited to welcome HAW and GBT to the Jasmino family. Both companies have a stellar reputation for innovation and quality. Having partnered with them on key global projects since 2018, we see strong synergies between our organizations, and together, we will deliver best-in-class solutions to our clients worldwide."

Germany's reputation for engineering excellence, renowned for its quality, reliability, and innovation, further elevates Jasmino Corporation's global standing. With these prestigious brands now part of its portfolio, Jasmino has not only added value to its revenue stream but also enhanced its technological capabilities and product offerings, solidifying its leadership in corrosion protection through world-class expertise and cutting-edge technology, the press communique notes.

GBT Buecolit is one of Germany's leading companies in heavy-duty corrosion protection, specializing in coatings, plastic lining, and turnkey solutions.

Elevating Jasmino's position in the industrial corrosion protection sector

The acquisition of HAW Lining and GBT Buecolit is a transformative step for Jasmino Corporation, reinforcing its leadership in the global corrosion protection market. By integrating German engineering excellence, 125 years of innovation, and a vast network of partnerships, Jasmino is set to redefine industry standards. This strategic move not only enhances Jasmino's portfolio but also sets the stage for aggressive growth in a highly competitive industrial sector.

Jasmino Corporation specializes in chemical process equipment engineering and corrosion protection solutions. With its latest acquisitions, the company now stands as a global leader in heavy-duty industrial anti-corrosion technologies, offering unmatched expertise and innovation.

The acquisition of HAW Lining and GBT Buecolit is a transformative step for Jasmino Corporation, reinforcing its leadership in the global corrosion protection market.

Opportunity beckons!

Our readers are from diverse verticals like Shipping & Ports, Oil & Gas, Heavy Industry, Infrastructure, Automotive... and others
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The Color Chemist's Handbook: Excelling in Paint and Coatings Lab Operations

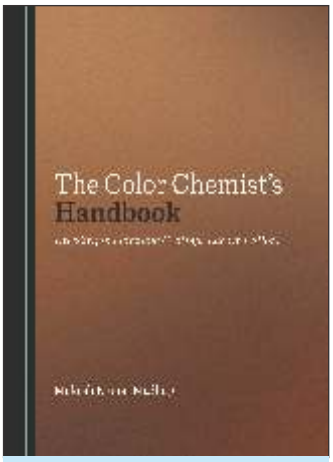
In this book, *The Color Chemist's Handbook: Excelling in Painting and Coatings Lab Operations*, the author shares his valuable experience gained from working with three renowned multinational companies: 3M, AkzoNobel, and Asian Paints in the paints & coatings laboratory. Having dedicated his career to research and development (R&D) from 2006 to 2021, the author delves into his involvement in the development of various paint & coating products and the management of laboratory operations. With Asian Paints, the author focused on industrial and floor coating programs, while at AkzoNobel, he specialized in automotive specialty plastic (SP) coatings. His most extensive tenure was at 3M, spanning 12 years from 2009 to 2021, during which he contributed to numerous product development programs, from concept to tangible realization, requiring meticulous program management and comprehensive laboratory testing. The author's responsibility included the overall management of the coating laboratory, providing him with invaluable insights. By addressing the existing knowledge gap in the field, the author aims to assist college students studying surface coatings and paint technology, recent graduates entering paint laboratories, as well as professionals already working in this domain. Throughout the book, the author draws upon his practical experience in laboratory management during the development of various coating materials, making it relevant and beneficial to all individuals working or aspiring to work in paint and coating laboratories.

In this book, the reader will discover a comprehensive range of topics, including R&D and quality laboratories, best practices for paint and coatings laboratories, common instruments found in such laboratories, effective management of laboratory equipment, meticulous record-keeping, test methods and their interpretations, internal test methods (ITMs), testing standard operating procedures (SOPs) and result documentation, compliance with environmental, health, and safety (EHS) regulations, fire hazards and evacuation protocols, management of laboratory chemicals and raw materials, a brief overview of laboratory project management, and adherence to Good Laboratory Practices (GLPs).

Why delve into the contents of this book? Within these pages, you will gain a deep understanding of various aspects of paint laboratory management, ultimately transforming you from an ordinary laboratory worker into an efficient laboratory manager. You will learn about testing procedures, instrument management, test methods, as well as the organization and management of your testing protocols, instrument calibration, EHS compliance, and fire hazard prevention within the laboratory. Since the materials used in paints can pose hazards, a significant emphasis has been placed on labelling and compliance with health and safety standards. At the end of each of its nine chapters, practical exercise questions are provided to assess your knowledge and reinforce the concepts covered.

So, what are the benefits of acquiring knowledge in laboratory management? As a professional in the "paint and coatings" industry, it is crucial to efficiently and safely manage your laboratory, generate reliable and reproducible data, and maintain accurate records. Upon completing this book, you will possess the skills to prioritize, maintain, and align your laboratory with internationally accepted standards for laboratory management. A well-managed laboratory can lead to increased work efficiency, optimized resource utilization, and enhanced productivity, resulting in greater revenue for your organization. Additionally, an impeccably managed laboratory will elevate your company's brand value when customers visit and witness the reliability of your laboratory operations.

The author, Dr Mukesh Kumar Madhup boasts over 20 years of industrial experience in developing and commercializing high-performance organic coatings, adhesives, and sealants (CAS). He is



The Color Chemist's Handbook: *Excelling in Paint and Coatings Lab Operations*
Hardback
Launched: *December 2024*
Author: *Dr Mukesh Kumar Madhup*
Publisher: *Cambridge Scholars Publishing, UK*
Pages: *192*
Price: *GBP 66.99*

renowned for his profound knowledge and work in polymer chemistry and surface coatings technologies in the Paint & Coating industry. Dr Madhup specializes in epoxies, silicones, acrylics, alkyds, and polyurethanes (PU). Currently the CEO of Amatech Innovation Pvt. Ltd, previously at 3M, he served as a New Product Introduction (NPI) leader for Infrastructure protection [IsPD]. His accolades include numerous awards, notably the 3M Green Innovator award (2019) and the 3M Circle of Technical Excellence & Innovation (2020). Dr Madhup holds a PhD in Chemistry, with significant contributions recognized through patents, publications, and awards, demonstrating his commitment to advancing high-performance coatings. He has previously authored the book *Concept to Reality*.

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Carbon black has now replaced azo dyes as the preferred black pigment in coatings

Mr Amit Choudhary, Chairman of the International Advisory Committee, Asia Pacific Carbon Black Conference 2024, and Executive Director of Himadri Speciality Chemical Limited in a chat with C&ACER

The 15th edition of the Asia Pacific Carbon Black Conference has evolved into an instrumental force in the carbon black industry. Over the past three decades, the conference has traversed the Asia-Pacific region, with events held in Taipei (1995), Phuket (1997), Tokyo (1999), Gold Coast (2001), Agra (2003), Suzhou (2005), Seoul (2007), Bangkok (2009), Singapore (2011), Taipei (2013), Yokohama (2015), Chennai (2017) and Bangkok (2019). Each conference served as a nexus. The 15th edition in Kolkata in October 2024 was a testament to the conference's significance in promoting thought leadership, driving growth, and facilitating collaboration in the global carbon black realm.

Carbon black is a conductive fillers or additives used in cathodic protection systems. In these systems, black carbon's conductive properties help distribute electrical current, which is used to prevent oxidation (and thus corrosion) of metal surfaces.

Mr Amit Choudhary, Chairman of the International Advisory Committee, Asia Pacific Carbon Black Conferencce 2024, and Executive Director of Himadri Speciality Chemical Limited in a chat with C&ACER.

How is black carbon related to the coatings and corrosion mitigation sectors?

Previously, the coating industry commonly used azo dyes to achieve black pigmentation. However, recent findings have linked azo dyes to carcinogenic properties, leading to a shift away from their use. Carbon black has now replaced azo dyes as the preferred black pigment in coatings. Unlike azo dyes, which can degrade under high UV exposure—causing color fading and increasing corrosion—carbon black is a stable element that does not dissociate. It offers durable protection against corrosion without fading, making it a more reliable choice for long-term applications.

Additionally, carbon black enhances the mechanical resilience of coatings, making them more effective for long-term applications on metals and alloys that are exposed to harsh conditions, as demonstrated in automotive, industrial, and architectural applications.

Recent research supports that coatings utilizing carbon-based nanomaterials, including carbon black, provide superior corrosion resistance. This resistance is especially relevant in "smart coatings" where carbon-based materials are combined with other elements to improve conductivity and form protective films that actively repel corrosive agents, contributing to extended material lifespan and reduced maintenance costs.

How big is the black carbon industry and an estimate of how much percentage of the production goes into coatings / corrosion mitigation purposes?

Global consumption of carbon black market is 11 million MT. The paint & coating industry constitutes 5% of the total consumption in the carbon black market.

The industry is expected to grow with a CAGR of around 4.8% through 2031. Specialty grades, like conductive and specialty carbon black, are also seeing increased application across electronics, plastics, and high-performance coatings, especially for corrosion resistance in industrial and marine settings.

Asia-Pacific leads in carbon black consumption, driven by vehicle production, infrastructure development, and construction projects, especially in China and India. Additionally, environmental regulations are impacting production processes as companies focus on sustainable practices and circular economy goals.

For companies, challenges include volatile raw material prices and regulatory requirements around emissions, which are pushing for cleaner, sustainable production. We have heavily invested in R&D to create high-quality, eco-friendly carbon black products that align with regulatory expectations and customer needs in emerging applications, such as EV batteries and specialty coatings.

PHOTO: 123RF

Carbon black is a conductive fillers or additives used in cathodic protection systems.

Mr Amit Choudhary, Chairman of the International Advisory Committee, Asia Pacific Carbon Black Conference 2024, and Executive Director of Himadri Speciality Chemical Limited.

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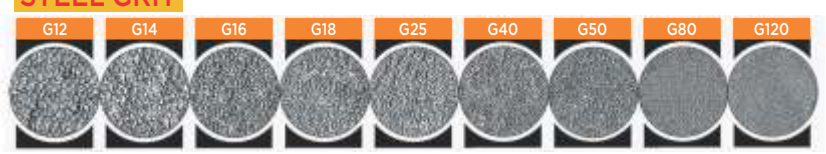

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Recent advances in black carbon technologies...

Advancement in carbon technology is an ongoing evolving process with continuous and conscious innovation.

One major shift is in emission management, with industries increasingly adopting circular methods to minimize environmental impact. AI-driven innovations are also becoming mainstream, especially in process optimization, demand forecasting, and predictive maintenance. Supercapacitors is another emerging technology in energy storage systems, particularly in the context of renewable energy sources like solar and wind power. There is an opportunity for specific Carbon Black (CB) grades designed for supercapacitors used in these energy storage systems.

The sustainability / circular economy angle of black carbon...

Tyre pyrolysis produces black carbon that can be recycled into virgin carbon black, offering a sustainable solution for various industries. This recovered carbon black (rCB) is increasingly recognized as an eco-friendly alternative to virgin carbon black. Its applications are expanding beyond tire manufacturing to include sectors such as masterbatch, rubber belts, and plastic films, particularly in India, where the demand for sustainable materials is on the rise.

What were your takeaways from the 15th APCBC and what according to you should be the priority of the next conference?

One of the key takeaways from the 15th APCBC was the emphasis on the next technological advancements for non-ASTM black and special black materials, particularly in their applications within electric vehicle (EV) tires, paints, coatings, and batteries. The discussions highlighted the growing demand for innovative carbon black formulations that meet the specific requirements of these emerging sectors.

PHOTO: 123RF

Carbon black enhances the mechanical resilience of coatings, making them more effective for long-term applications on metals and alloys that are exposed to harsh conditions.

For the next conference, I believe the focus should shift towards the role of carbon black in the development of EV tires. As the market for electric vehicles continues to expand, understanding the unique performance characteristics and sustainability considerations of carbon black in this context will be crucial. This includes exploring advancements in material properties, enhancing durability, and improving energy efficiency.

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India aims to be one of top five shipbuilders by 2047

Indian shipyards are specializing in niche segments like offshore support vessels, dredgers, and ferries

With a projected value of $8,120 million by 2033, India's shipbuilding industry is on a rapid growth path. This is a significant increase from its 2022 valuation of $90 million. The story of India's government setting a goal to become a top 10 shipbuilder by 2030 and a top five one by 2047 has been doing the rounds for some time now. There are many factors contributing to this sustained growth. Government support and initiatives like the Scheme for Financial Assistance to Shipyards in India (SFAS) are helping the industry grow. India's coastline and proximity to major shipping routes reduce transportation costs and turnaround times. India's labor costs are lower than other shipbuilding nations, which attracts international clients. Indian shipyards are specializing in niche segments like offshore support vessels, dredgers, and ferries.

Some of India's top shipbuilding companies include: Mazagon Dock Limited (MDL) which constructs warships for the Indian Navy and Coast Guard; and the Cochin Shipyard Limited (CSL) that specializes in offshore vessels, oil tankers, and aircraft carriers. The Adani Group is also planning a major shipbuilding initiative at Mundra Port in Gujarat, with a target of reaching a US$ 62 billion market by 2047.

India currently ranks 20th in the global shipbuilding industry with its 0.06% share in the global shipbuilding market. The global market is dominated by China, Japan, and South Korea, which collectively have 85% of the share in the market.

India to approve ₹25,000 crore for shipbuilding and infrastructure

PHOTOS: 123RF

The Government of India is in the process of approving a ₹25,000 crore Maritime Development Fund (MDF) shortly, aimed at providing long-term, low-cost financial support for indigenous shipbuilding and blue water infrastructure projects. The fund will play a crucial role in advancing India's maritime sector, aligning with the nation's Make-in-India initiative aimed at establishing the country as a global manufacturing hub.

The fund will provide various forms of financial support, including debt, equity, viability gap funding (VGF), and buyer credit. It will be similar to the National Bank for Financing Infrastructure and Development (NaBFID), but will have a dedicated focus on the maritime sector.

India's fleet currently stands at 1,526 vessels with a gross tonnage (GT) of 14 million as of December 2023. However, about 44 per cent of these vessels are over 20 years old, indicating a need for replacement in the coming years.

The MDF will promote domestic shipbuilding of all types and sizes to reduce India's dependence on foreign ships. Currently, India spends close to $75 billion annually on leasing ships and

controls only two percent of the world's total tonnage. From the less than one percent of the global ship-building market, the MDF aims to boost India's share to five percent in the coming years. It will also support the development of cruise tourism, expand port capacity, promote coastal shipping, and develop inland waterways through public-private partnerships (PPP).

India to set up two mega shipbuilding parks by 2030

India is also on the way to setting up two operational mega shipbuilding parks by 2030, according to Mr Sarbananda Sonowal, Minister of Ports, Shipping and Waterways, Government of India. The immediate target is to have four mega ship-building parks with two each, Odisha and Andhra Pradesh on the East and Gujarat and Maharashtra on the West coast.

In the meanwhile, Mazagon Dock Shipbuilders Limited (MDL), India's leading warship and submarine builder, has announced a massive expansion project aimed at doubling its shipbuilding capacity over the next 4 – 5 years. With an investment of ₹75,000 crore (approximately $600 million), the expansion will include constructing a state-of-the-art dry dock facility measuring an impressive 180 meters in length and 60 meters in width. The new infrastructure will enable MDL to enhance its production rate, modernize operations, and meet the rising demand for advanced naval vessels in India and abroad. It will significantly increase MDL's flexibility and allow the shipbuilder to work on multiple projects simultaneously.

With this expansion the new dry dock facility will be capable of accommodating some of the largest ships and submarines in the Indian Navy's fleet. This new dry dock will complement MDL's existing infrastructure, enabling it to handle more complex projects, such as advanced stealth destroyers, frigates, and larger submarines. With this facility, MDL will be able to assemble, inspect, and service larger vessels without impacting the production flow of other projects, thus reducing wait times and improving project timelines.

PHOTO: PRESS INFORMATION BUREAU

By doubling its capacity, MDL will also be better positioned to secure export orders, strengthening India's presence in the global defense market. With growing demand from friendly foreign nations for Indian made warships and submarines, MDL's expanded facility could enable it to supply vessels to key allies, thereby supporting India's geopolitical influence.

The newly enhanced shipyard will help MDL meet ambitious project timelines and future requirements for more technologically advanced warships, aligning with the Navy's push for fleet expansion by the late 2030s. The addition of a modern, larger dry dock will allow MDL to cater to the demands for indigenous shipbuilding and overhaul capacities required by an expanding fleet.

Cochin Shipyard has orders for 65 vessels worth ₹22,000 crore

Cochin shipyard invested close to ₹3,000 crore recently to complete work on a new 310-metre-long dry dock, and another international ship repair facility at Kochi. This is expected to raise ship repair facility from just below 100 ships per year now to over 160 ships, allowing it to take up ships repair work in a big way for the global market. Another ship repair facility is being explored on the West Coast to service demand coming from passing vessels.

India's leading shipbuilder Cochin Shipyard Ltd (CSL) is focusing on building modern vessels powered by green energy, as it looks to deliver 65 ships worth over ₹22,000 crore from global and domestic clients, including the India Navy.

The move comes amid global concerns over carbon emissions that exacerbate climate change, with the focus now gradually shifting to building 'green ships' — vessels that run on less-polluting fuels such as methanol, electricity, green hydrogen and hybrid batteries.

According to reports, CSL has an all-time high order book of around ₹22,000 crore, involving building 65 ships, with bulk of the orders for making 14 Naval ships and 22 coastal ships for the European clients including those from Germany, Norway, Cyprus and the Netherlands.

While most of the green ship technologies involving fuel cell, methanol, and electric are being incorporated at present, and CSL uses them to make ships for the western markets, it is now looking at technology transfer agreements with a few European shipping technology companies to scale up and take up complete manufacturing of these new-age ships for both global and Indian markets.

The state-run CSL, which has its main ship manufacturing facility in Kochi, also has subsidiary companies, one based out of Kolkata, and another based out of Udupi in Karnataka that make both coastal and green ships for Indian and European clients. In addition, CSL also has three smaller ship repair units outside Kochi — in Mumbai, Kolkata and Port Blair.

Earlier this month, CSL laid the keel of India's largest dredger DCI Dredge Godavari, marking a significant milestone in the country's maritime capabilities. This trailing suction hopper dredger (TSHD) with a hopper capacity of 12,000 cubic meters is built for the Dredging Corporation of India Ltd. DCI Dredge Godavari is built in collaboration with Royal IHC, Netherlands. Once commissioned, this dredger will be the most sophisticated and technologically advanced dredger ever built in India.

Boost for the marine coatings industry

All this would definitely mean a boost for the marine coatings industry. According to a report by Coherent Market Insights, the marine coating market is estimated to be valued at US$ 4.03 bn in 2024 and is expected to reach US$ 6.10 bn by 2031, growing at a compound annual growth rate (CAGR) of 6.1% from 2024 to 2031.

In fact, Asia Pacific accounts for over 50% of the global shipbuilding orders, making it the nerve center for new ship construction worldwide. The Asia Pacific region has emerged as the fastest growing market for marine coatings globally. The exponential growth of the regional shipbuilding industry presents enormous untapped potential for marine coatings producers. Unlike North America, shipbuilding in Asia Pacific is moving beyond the traditional freight transportation and expanding into diverse offerings like cruise, offshore and naval vessels. This diversification with regional shipbuilding acts as a catalyst for varied marine coatings demand. Along with the shipbuilding, the maritime trading routes through the Indian and Pacific oceans also require extensive marine coatings inputs for anticorrosion and antifouling in Asia Pacific.

Stringent environment regulations regarding the use of toxic paint, further stimulates the demand for environmentally friendly marine coatings. Leading global marine coatings manufacturers are introducing low VOC, non-toxic coatings addressing both corrosion protection and pollution prevention and seeing higher acceptance.

New releases

PPG's launch of PPG SIGMAGLIDE 2390 marine coating marked a significant advancement in the maritime industry. This coating is designed to assist ship owners' lower fuel consumption and carbon emissions and meet demands for higher performance without compromising the marine environment. The biocide-free fouling release coating is based on revolutionary PPG HYDRORESET™ technology, which modifies the coating when it is immersed in water to create a super-smooth, almost friction-free surface that marine organisms do not recognize and cannot adhere to.

“PPG Sigmaglide 2390 coating is a unique formulation that paves the way for ship owners and operators to improve efficiency and reduce CO_2 emissions,” said Jan Willem Tegelaar, PPG global platform director, Marine Coatings. “The speed loss performance of less than 1% helps ships operate at an average one knot higher speed while remaining CII compliant.”

The exceptional fouling control performance of PPG Sigmaglide 2390 coating is achieved with no release of biocides into the oceans.

PPG Sigmaglide 2390 coating is also suitable for electrostatic application, which provides high transfer efficiency, leading to lower paint consumption. In service, the coating can deliver up to 150 days of idle performance and an extended lifetime of more than 10 years with minimal maintenance requirements. These benefits, combined with the power savings, provide an industry-leading return on investment for shipowners.

As the maritime industry faces increasing pressure to decarbonize, Hempel has introduced its groundbreaking new two-layer coating system, Hempaguard Ultima.

"Hempaguard Ultima is our most significant innovation in a decade and an important step forward in our ability to protect and improve our customers' most important assets. It has been designed to safeguard vessels from fouling with a unique two-layer system, enabling our customers to reach their sustainability objectives while also achieving operational excellence. I am excited to introduce this ground-breaking innovation to our customers and look forward to following its success and impact in the market," said Alexander Enström, Executive Vice President and Head of Marine at Hempel A/S.

Hempaguard Ultima combines the tried-and-tested performance of Hempaguard X7 with Hempel's revolutionary new biocide-free silicone topcoat, Hempaguard XL, preventing growth of marine organisms while ensuring long-lasting hull protection. By choosing Hempaguard Ultima, vessel owners and operators can reach their decarbonization goals swiftly whilst benefitting from reduced operating costs.

Diego Meseguer Yebra, R&D Director Marine at Hempel A/S comments "With Hempaguard Ultima, a vessel's hull is able to achieve a more stable surface smoothness, even into the fourth or fifth year of the docking cycle. This reduces the risk of fouling after long service periods, even when the coating's hydrogel and biocide can start losing some effectiveness. At the same time, the Hempaguard XL topcoat acts as a modulator for the release of biocide from Hempaguard X7, allowing a lower biocide amount per sqm to last longer."

CRX Coatings, a Tennessee-based company specializing in graphene-formulated coatings, has entered into the marine coating industry by launching its new X21 Foul Release Bottom Paint.

CRX Coatings has developed a non-ablative, copper free, biocide-free graphene formula specifically for marine applications. Their innovative approach reportedly ensures maximum performance and durability for boat owners.

In addition to performance, CRX Coatings places a strong emphasis on environmental responsibility. Their graphene formulated bottom paint is designed to be eco-friendly, ensuring that it does not harm marine life or contribute to pollution.

"The shift to long-lasting, non-toxic coatings means less frequent need for reapplication, fewer resources consumed, and a reduction in the environmental footprint of the boating industry," CRX Coatings explained.

"X21 bottom paint creates a smooth yet hard surface on a boat's hull which makes it difficult for barnacles, algae, and other marine organisms to attach and grow, thus reducing the time users need to spend cleaning, scraping, and scrubbing."

Nippon Paint Marine's AQUATERRAS coating, released back in 2021, has been touted as revolutionary for its environmentally friendly attributes. Unlike many traditional antifouling coatings, AQUATERRAS does not contain biocides, which means it won't leach harmful chemicals harmful to marine ecosystems. Instead, it utilizes low-VOC (volatile organic compounds) technology to provide sustainable hull protection from fouling.

This coating not only helps preserve marine biodiversity but also leads to substantial fuel savings. Nippon Paint claims users can experience up to 14.7% fuel savings over five years compared to conventional solutions, all thanks to the coating's ability to maintain vessel speeds. This means less energy is required to operate ships coated with AQUATERRAS, which directly lowers carbon emissions.

Marine coatings manufacturers will continue to develop products that can meet the demands of their customers and contribute to improving the performance of ships and reducing their impact on the environment.

6,000 hours of real world anti-corrosion coastal testing

The buoy test panels endured over 6,000 hours of coastal testing, offering a true assessment of the paint systems' ability to withstand harsh environmental conditions

In conjunction with Marine Energy Engineering Centre of Excellence (MEECE), Hexigone embarked on a rigorous real-world test of their anti-corrosion additive, Intelli-ion® AX1. From September 2022 to June 2023, 31 sets of panels were attached to a buoy. Deployed in a unique test location, they endured over 6,000 hours, battling the formidable forces of the Celtic Sea.

The test setup: Panels and preparation

The panels used in this project were constructed from low carbon, cold-rolled steel featuring a matte finish. These panels are typically used in general-purpose sheet metal applications and adhere to ASTM A1008, A-109, and QQ-S-698 standards.

To ensure a thorough evaluation, the panels were coated with various types of anticorrosion coatings:

Solventborne alkyd

Painted with a paintbrush:

4 panels were painted with a co-blend of 3% AX1 & 2% zinc phosphate

4 panels were painted with 5% AX1 only

Solventborne 2-pak epoxy

Spray-painted with a compressed air paint gun:

4 panels were painted with 0% AX1

4 panels were painted with a co-blend of 5% AX1 & zinc phosphate

All solventborne 2-pak epoxy primers contained zinc phosphate anti-corrosive pigments, resulting in all epoxy-coated panels possessing a blend of anti-corrosive substances - for comparing co-blend panels against industry standards.

Waterborne acrylic

8 panels were painted with a co-blend of 2% AX1 & 2% polyphosphate

These panels were also intentionally damaged. An 'X' was scribed into the coating to expose the bare metal using a 0.5mm Elcometer scratching tool, simulating damage to the paint system that can occur in real world applications.

The testing rig: A bespoke solution

To withstand the rigours of the Celtic Sea, a custom-designed test rack was engineered, by the skilled engineers at MEECE, to securely mount the panels onto the buoy.

The panels were fixed flat against a drilled plastic backing board, held in place by plastic bolts, washers, and nuts with additional support from a holding strip at the bottom. This setup ensured

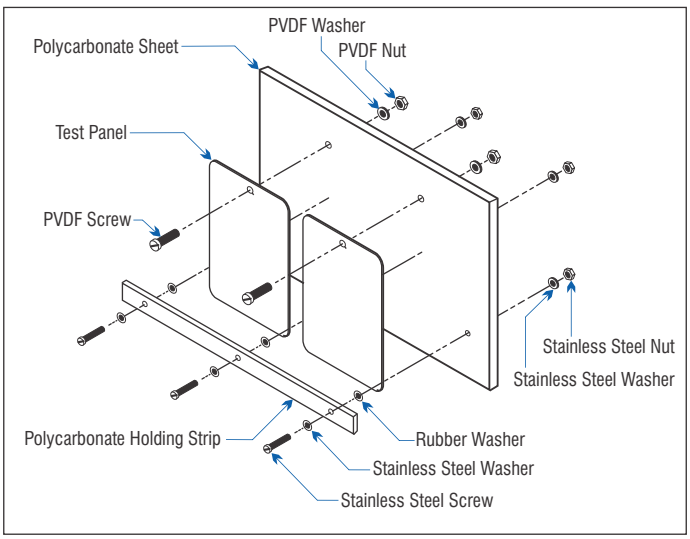

Figure 1: Exploded assembly view of the basic panel mounting concept, for two adjacent panels.

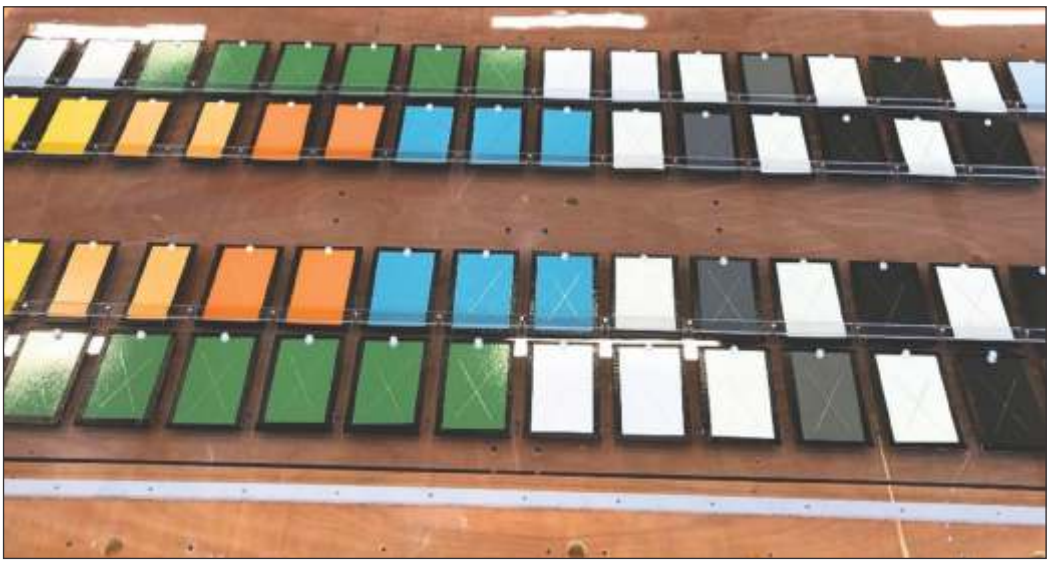

Figure 2: The initial assembly of the panels onto the test rack.

the panels remained secure throughout the test duration, even under extreme weather conditions.

Figure 2 and 3 captured two key stages: the initial assembly of the panels onto the test rack, followed by the final installation of the test rack onto the buoy.

Monitoring

The panels were monitored over a period of nine months, with inspections at key intervals to assess damage and track the progression of corrosion.

Figure 3: The final installation of the test rack onto the buoy.

Figure 4: Installation day: September 21, 2022; Day 1 | 24 hours.

Figure 5: November 14, 2022; Day 54 | 1296 hours.

Figure 6: Last day - June 8, 2023; Day 260 | 6240 hours.

The results

After 6,000 gruelling hours of tirelessly battling the elements, it was time to recover the panels for analysis – the results were both surprising and promising.

The results from both formulations are strikingly similar, demonstrating high performance for both the co-blend of 3% AX1 and 2% Zinc Phosphate (left) and the AX1-only formulation (right). When stripped with solvent, their performance remains consistently high and a like with corrosion localised at the scribe line and minimal overall. The full metal substrate beneath the coating remains fully protected, highlighting the effectiveness of the anti-corrosive formulation.

Formulated with a 5% addition of AX1, the panels on the (right) clearly showcase enhanced durability and coating adhesion compared

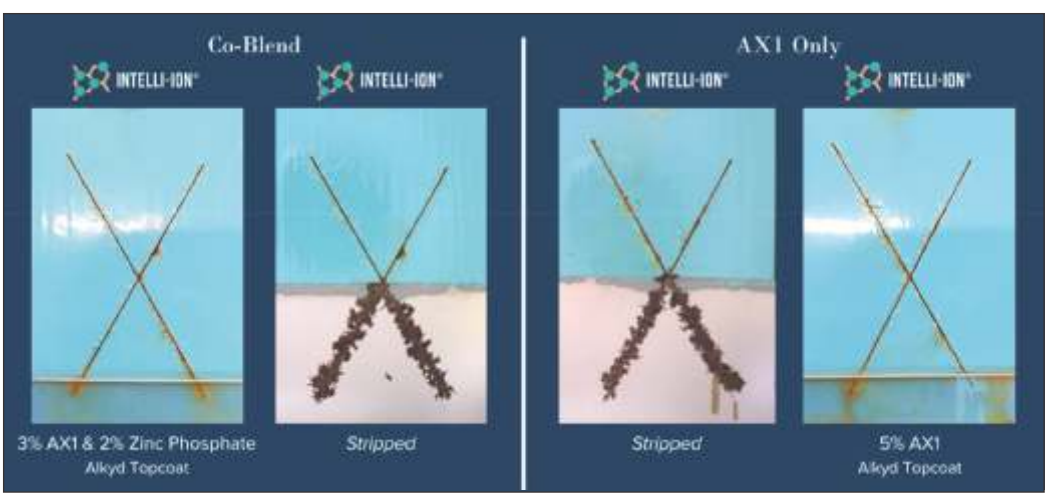

Figure 7: Solventborne alkyd - 6000 hours of live coastal testing.

Figure 8: Solventborne 2-pak epoxy - 6000 hours of live coastal testing.

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to the panels on the (left), with 0% AX1. Despite being coated with alternative anti-corrosive pigments, the (left) panels show significant degradation – nearly completely destroyed.

The waterborne acrylic panels have demonstrated remarkable performance under real-world conditions – showing consistent results across all panels even after being stripped with solvent to reveal the underlying results. Notably, only the primer contained AX1; the topcoat did not.

Among all the results, the performance of the waterborne acrylic panels is particularly noteworthy – exceeding expectations and even surpassing the solventborne 2-pak epoxy coatings in real-world conditions.

Even after stripping both sets of panels with solvent to reveal the underlying results, the contrast remains striking – the waterborne acrylic panels containing AX1 dramatically outperform the solventborne 2-pak epoxy panels.

The waterborne acrylic formulation was developed in collaboration with Xyntra.

David Graham, the Managing Director of Xyntra commented: “We are highly impressed with the performance of AX1 and have been collaborating closely with Hexigone to design a polymer system that leverages its capabilities in a water-based application. The results so far have been very encouraging.”

The addition of AX1 also significantly improved the adhesion of the waterborne acrylic paint system. During the pull-off test, only the topcoat could be removed, while the primer layer remained firmly fastened to the metal substrate. The dolly's were removed at 450 psi and 300 psi.

Conclusion

The outcomes of this investigation have provided Hexigone with valuable, actionable insights. The buoy panels endured over 6,000 hours of coastal testing, offering a true assessment of the paint systems' ability to withstand harsh environmental conditions.

As expected, the panels treated with Intelli-ion® AX1 demonstrated a significant improvement in corrosion resistance compared to those without AX1. However, the most unexpected finding was the exceptional performance of the waterborne acrylic panels.

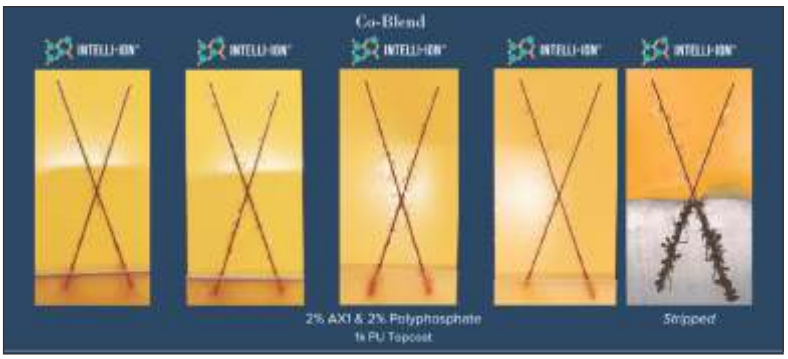

Figure 9: Waterborne acrylic - 6000 hours of live coastal testing.

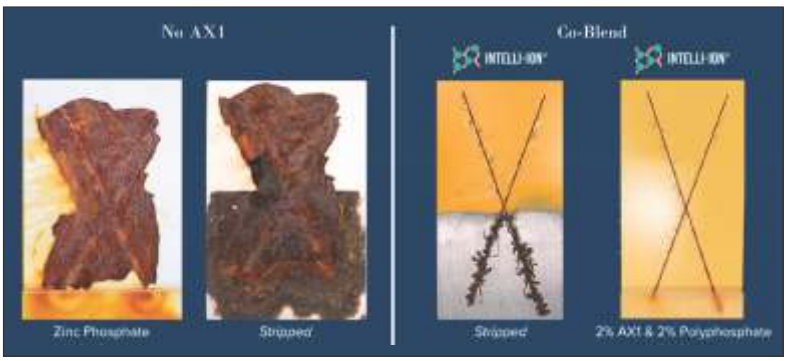

Figure 10: Solventborne 2-pak epoxy vs waterborne acrylic – 6000 hours of live coastal testing.

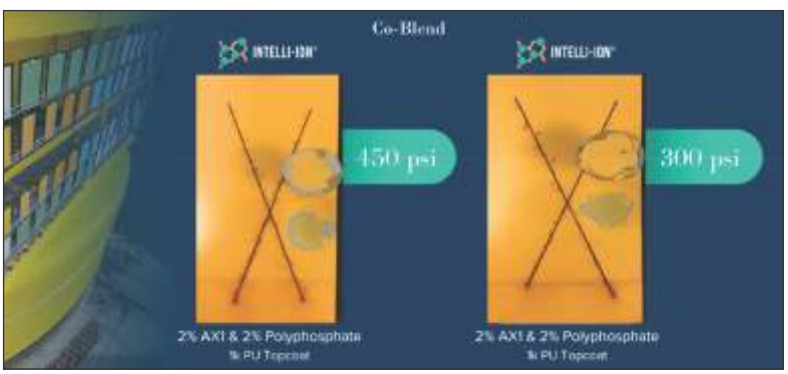

Figure 11: Waterborne acrylic adhesion – 6000 hours of live coastal testing.

With the industry increasingly shifting towards more sustainable solutions, and away from those that include volatile organic compounds (VOCs) and other health-hazardous chemicals, the demand for waterborne acrylic coatings is rapidly growing. Based on these findings, Intelli-ion® AX1 has the potential to accelerate the broader adoption of waterborne acrylic coatings in marine applications.

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AMPP Chennai Chapter launch marks significant expansion of the organization's footprint in India

The AMPP Chennai Chapter's inaugural event at Hotel Ramada Plaza, Chennai, on August 31, 2024, marked a significant expansion of AMPP's footprint in India. The event, attended by over 72 distinguished guests from a wide array of industries, academia, and research institutions, was a resounding success. The event not only introduced the chapter's objectives and vision but also laid a strong foundation for future collaborations that will significantly contribute to advancing materials protection and performance in the region.

The evening began with the distribution of specially curated kits to all attendees, including the "Impact India 2019" publication of NACE International. This resource was strategically chosen to raise awareness among stakeholders about the critical issue of corrosion in India.

Prof M. Kamaraj, Chairman of the AMPP Chennai Chapter, delivered an inspiring speech that underscored the importance of addressing corrosion, a pervasive issue that costs industries billions annually. He introduced the chapter's office bearers and highlighted the collective expertise they bring to the chapter, setting the stage for a collaborative effort in tackling corrosion challenges.

Dr U. Kamachi Mudali, the Chapter Delegate of the AMPP Chennai Chapter, in his presidential address. articulated the chapter's mission to foster collaboration between industry, academia, and R&D, aiming to position the Chennai Chapter as a leading force in corrosion control and mitigation. "Chennai is the Detroit of India and the hub for South Asia connecting all industrial sectors. The focus of AMPP Chennai Chapter is in South India where significant developments are happening with industrial growth and GDP," said Dr Mudali. Dr Mudali's emphasis on the synergy between these sectors was particularly well-received, as was his announcement of three new corporate members joining AMPP on the day of the inauguration – an early indicator of the chapter's appeal and potential for growth.

The event's highlight was the keynote speech by the Chief Guest, Mr Juan Caballero, Chair of the AMPP Global Center, USA. He expressed AMPP HQ's strong support for the chapter and shared the organization's broader vision for India, emphasizing the strategic importance of the region in AMPP's global initiatives. His words of encouragement were a testament to the chapter's promising future.

Following the keynote, the event proceeded with the formal induction of the new board members and executive committee. This segment of the event not only recognized individual contributions but also reinforced the collective responsibility of the team in leading the chapter toward its goals.

Dr Radhakrishna G. Pillai, Secretary of the AMPP Chennai Chapter, then opened the floor for discussion, inviting input from attendees. The response was overwhelmingly positive, with representatives from the newly joined corporate members expressing their enthusiasm for future collaborations.

The event concluded with video messages from key AMPP HQ members – Ms Kimberly-Joy Harris, Prof Amir Eliezer, Ms Helena Seelinger, etc., – who conveyed their best wishes and reiterated the strategic importance of the new chapter. The session was formally concluded by the Treasurer Dr T. M. Sridhar, who summarized the key takeaways: the need for increased awareness, stronger industry-academia-research collaboration, and the chapter's role in spearheading these efforts.

The evening ended with a cocktail dinner, providing a relaxed environment for attendees to network and discuss potential collaborations.

Moving forward, the chapter plans to organize workshops, seminars, and collaborative research initiatives to further its mission of combating corrosion and enhancing materials performance. The chapter's early success has already garnered attention from potential new members and stakeholders, positioning it as a key player in the region.

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Asia Pacific dominates paints and coatings market, led by China and India

With strong industrial and economic growth, urbanization, and increasing consumer demand for both decorative and industrial coatings, the region is poised for continued expansion

The global paints and coatings market is projected to reach US$ 242.9 billion by 2032, growing at a CAGR of 5.8% from 2025 to 2032. Growth is driven by rising construction activities, particularly in developing economies like India and China, urbanization, and infrastructure projects. Key trends include a shift toward eco-friendly waterborne coatings, advancements in resin technology, and innovations like self-healing and anti-microbial coatings. The market faces challenges such as fluctuations in raw material prices, regulatory pressures on VOC emissions, and intense competition. The Asia Pacific region, led by China and India, is expected to dominate, while North America focuses on renovation and maintenance projects, notes a press release from Persistence Market Research, UK.

The paints and coatings market has experienced remarkable growth over the past few years, with the Asia Pacific region standing out as the dominant player. The market in this region has witnessed an impressive surge in demand, driven by rapid industrialization, urbanization, and increasing consumer spending. Within Asia Pacific, China and India have emerged as key contributors to this growth. This article explores how Asia Pacific's leadership in the global paints and coatings industry is shaped by the growing influence of China and India, as well as the factors driving this market expansion.

Booming industrialization and urbanization in Asia Pacific

The Asia Pacific region has become the global powerhouse of industrial and economic growth, significantly impacting the paints and coatings market. Rapid industrialization has led to increased demand for high-performance coatings used in infrastructure projects, automotive manufacturing, and consumer goods industries. The construction sector, particularly in China and India, has been a major driver of the demand for paints and coatings, as both countries undergo large-scale urbanization efforts.

PHOTOS: 123RF

Urban development initiatives, including the construction of residential and commercial buildings, have driven the demand for decorative paints, while industrial coatings are required to meet the needs of manufacturing sectors such as automotive, aerospace, and heavy machinery. These industries require coatings that offer superior durability, resistance, and aesthetic qualities.

China: The world's largest paints and coatings market

As the second-largest economy in the world, China continues to hold a dominant position in the global paints and coatings market. The country's rapid infrastructure development, booming real estate sector, and increasing demand for vehicles have directly contributed to the growth of the coatings industry. The demand for architectural paints and coatings is on the rise, as China's urbanization continues to progress, with a surge in residential and commercial construction.

Moreover, China's thriving automotive industry is a significant contributor to the

coatings market. The need for high-quality automotive coatings that provide protection against harsh environmental conditions and improve the aesthetics of vehicles has fueled market demand. With the country's focus on environmental sustainability and innovation, eco-friendly and water-based coatings are gaining popularity.

The government's stringent regulations concerning environmental protection and VOC (volatile organic compound) emissions have pushed the industry towards the adoption of more sustainable coatings. As a result, China's paints and coatings market has evolved to accommodate the demand for eco-friendly alternatives, driving further market growth.

India: Emerging power in the paints and coatings market

India, another key player in the Asia Pacific paints and coatings industry, has seen remarkable growth due to its expanding economy and the increasing purchasing power of its middle class. The demand for both decorative and industrial coatings is rising, driven by the booming construction sector, the rise in automotive manufacturing, and growing consumer awareness about quality and aesthetics.

The Indian government's focus on infrastructure development through initiatives such as the 'Housing for All' program has spurred growth in the construction industry. As a result, decorative paints are in high demand, especially in the residential and commercial building segments. In addition, the automotive sector in India is witnessing rapid expansion, requiring specialized coatings for vehicles. India's burgeoning middle class, along with an increasing number of vehicles on the road, is expected to continue driving the demand for automotive coatings.

Furthermore, India's growing industrial base and the rise in manufacturing activities across various sectors, including chemicals, machinery, and textiles, are driving the need for industrial coatings. The growth of India's export markets is also a contributing factor, as high-performance coatings are needed to meet international standards.

Technological advancements and sustainability in coatings

The paints and coatings market in Asia Pacific, particularly in China and India, is witnessing technological advancements that are enhancing the performance and sustainability of products. With a growing emphasis on environmental protection, there is a significant shift towards eco-friendly coatings in both the decorative and industrial sectors.

Water-based paints, which release fewer VOCs, are becoming increasingly popular as consumers and manufacturers alike seek more sustainable solutions. The introduction of advanced technologies, such as nanocoatings, which offer enhanced properties like durability, scratch resistance, and self-cleaning abilities, is driving further innovation in the market. These coatings not only meet performance requirements but also address environmental concerns, making them an attractive option for consumers and businesses.

In addition to eco-friendly alternatives, technological advancements in smart coatings are gaining momentum. Smart coatings, which have the ability to respond to environmental changes, such as temperature, humidity, and UV exposure, are increasingly being used in both industrial and commercial applications. These coatings can extend the lifespan of materials and offer added protection against corrosion, UV degradation, and other environmental factors.

Competitive landscape in Asia Pacific paints and coatings market

The competitive landscape of the paints and coatings market in Asia Pacific is

characterized by the presence of both multinational corporations and regional players. Major global players, such as AkzoNobel, PPG Industries, Sherwin-Williams, and BASF, have a strong presence in the region, offering a wide range of coatings for various applications. These companies are leveraging their technological expertise and extensive distribution networks to capture a significant share of the market.

At the same time, regional players in China and India are also making strides in the market, with a growing focus on innovation, customer-centric products, and sustainability. These companies are increasingly catering to the specific needs of local consumers, offering coatings that are better suited to the climatic conditions and cultural preferences of the region.

The competitive rivalry in the Asia Pacific paints and coatings market is intense, with companies continuously focusing on expanding their product portfolios, improving customer service, and enhancing product performance. The growing demand for eco-friendly products, combined with advancements in technology, presents opportunities for both multinational and regional players to capitalize on emerging market trends.

Challenges and opportunities for the paints and coatings market in Asia Pacific

While the paints and coatings market in Asia Pacific is experiencing significant growth, several challenges remain. One of the primary challenges is the fluctuation in raw material prices, which can impact the cost of manufacturing paints and coatings. The prices of key raw materials, such as titanium dioxide, resin, and solvents, are subject to volatility, which can affect profit margins for manufacturers.

Additionally, the market is facing challenges related to environmental regulations, particularly in terms of VOC emissions and the push for more sustainable products. Companies are under increasing pressure to innovate and adopt more eco-friendly solutions while maintaining performance standards. This shift towards sustainability may require significant investments in research and development, as well as changes in manufacturing processes.

Despite these challenges, the Asia Pacific paints and coatings market continues to offer significant opportunities. The region's expanding economy, increasing construction and automotive sectors, and growing demand for high-performance coatings create a favorable environment for market players. Companies that can adapt to changing consumer preferences, embrace sustainable practices, and invest in innovative technologies will be well-positioned to capitalize on the market's growth.

Conclusion

The Asia Pacific region, led by China and India, continues to dominate the global paints and coatings market. With strong industrial and economic growth, urbanization, and increasing consumer demand for both decorative and industrial coatings, the region is poised for continued expansion. Technological advancements, sustainability efforts, and a competitive market landscape are all contributing factors to the market's growth. As the demand for high-performance, eco-friendly coatings increases, China and India will remain central to the development and success of the paints and coatings industry in Asia Pacific.

Source: Persistence Market Research; persistencemarketresearch.com

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Anti-fatberg coating could help unclog city sewers

Engineers from RMIT University have invented a protective coating for concrete pipes that could help drastically reduce the formation of fatbergs in sewers, notes a press communique from the University in Australia.

Fat, oil and grease (known as FOG) – notorious for solidifying inside pipes and concrete sewers – causes half of all sewer blockages in the United States and 40% in Australia. The cost of these blockages in terms of maintenance and rehabilitation is estimated at US$25 billion in the US and A$100 million in Australia per year.

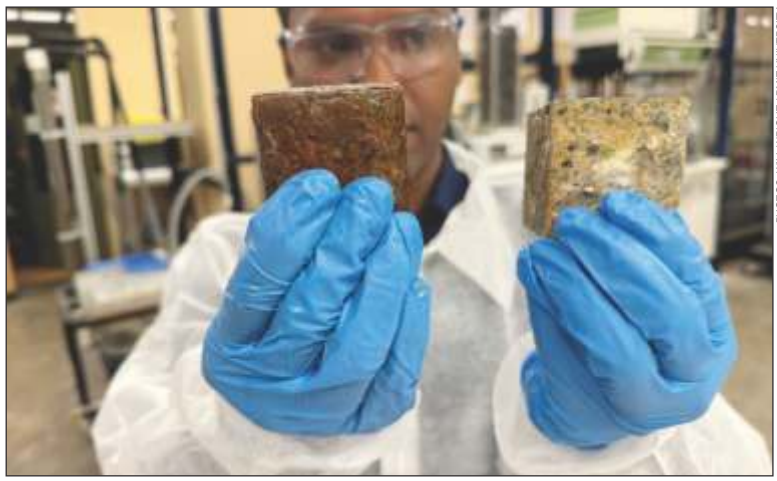
It is the mixture of fat, oil and grease with calcium and water in sewers that often leads to the formation of fatbergs. But the team's zinc-enhanced polyurethane coating offers a promising sustainable solution by reducing the release of calcium from concrete blocks by up to 80% compared with uncoated concrete.

The study led by Dr Biplob Pramanik mimicked a sewer environment under extreme conditions that rapidly sped up the fatberg formation process over 30 days.

It showed the coating reduced build-up of FOG on concrete by 30% compared to non-coated concrete.

"The reduction of fat, oil and grease build-up can be attributed to the significantly reduced release of calcium from coated concrete, as well as less sticking of FOG on the coating surface compared to the rough, uncoated concrete surface," said Pramanik, Director of Water Effective Technologies and Tools (WETT) Research Centre at RMIT.

"Traditional coatings like magnesium hydroxide, widely used for over two decades, are effective in controlling sewer corrosion but can inadvertently contribute to FOG build-up by interacting with fatty acids."



PHOTOS: WILL WRIGHT / RMIT UNIVERSITY

Dr Biplob Pramanik shows the difference between a concrete block coated with his team's anti-fatberg invention compared to a block without any coating after undergoing an experiment that mimicked a sewer environment under extreme conditions to speed up the fatberg formation process. The white coloured blobs on the uncoated block are a mixture of fat, oil and grease (FOG).

Dr Biplob Pramanik in his lab at RMIT University.

The team's invention is stable in water and withstands temperatures of up to 850 degrees Celsius. It is also self-healing at room temperature, meaning it can repair any damage to itself and extend its lifespan.

"We drew inspiration from the regenerative capabilities observed in nature, including human skin's ability to heal itself," Pramanik said.

Co-researcher Dr Sachin Yadav said the team examined the healing performance of the coatings by inflicting surface scratches with a blade.

"The creation of surface scratches on the self-healing polyurethane coating sample triggered the healing process," Yadav said.

"After the healing period, we observed a noticeable improvement in the surface scratches."

Next steps

The team is developing an improved coating to achieve a greater reduction of FOG deposition in sewers by enhancing its self-healing capabilities and mechanical strength.

Pramanik is also the Chief Investigator for a recently announced ARC Linkage Project that will develop an advanced grease interceptor for restaurants and other food service establishments to remove small FOG particles more effectively than current technologies.

His team at RMIT is partnering with South East Water, VicWater, Water Research Australia, Barwon Region Water Corporation, Queensland Urban Utilities and water technology company ACO on the ARC Linkage Project.

Innovative materials design in thermal barrier coatings could boost energy efficiency

Researchers at the University of Virginia and Harvard University have made an exciting discovery in thermal barrier coatings (TBCs) that could significantly enhance the performance and efficiency of gas turbines, key components in power plants and jet engines. Their study examines how substituting iron into yttria-stabilized zirconia (YSZ) impacts the material's ability to absorb radiative heat in the near-infrared region of the electromagnetic spectrum, potentially leading to innovations that improve the efficiencies of energy systems we rely on every day, notes a press communique from the University of Virginia.

Gas turbines, which are essential for generating electricity and powering aircraft, operate under extreme temperatures. TBCs protect metal components from this heat, ensuring turbines can function safely and efficiently. Improving the efficiency of turbines is crucial because these systems consume vast amounts of fuel. Higher efficiency means burning less fuel to generate the same amount of energy, resulting in reduced costs for consumers and lower greenhouse gas emissions — both of which are critical as the world transitions to more sustainable energy practices.

“Our research shows that by substituting iron into YSZ, we can fine-tune the material's optical absorption properties, which has direct implications for controlling heat transfer,” said Ph.D. student and lead researcher Shunshun Liu. “This could lead to turbines that run cooler, last longer and operate more efficiently, contributing to a more sustainable energy future.”

For the average person, this advancement could translate into lower fuel costs for airlines, resulting in more affordable flights and a smaller environmental footprint. It could also lead to cheaper electricity bills as power plants become more efficient and require less maintenance.

Professor Prasanna V. Balachandran, co-author from the Department of Materials Science and Engineering at UVA and Liu's adviser, highlighted the broader applications of this work, “This research, using a combined theory and experimental approach, pushes the boundaries of what's possible in materials science. We've taken a widely used material and uncovered a new mechanism to manipulate its optical properties, allowing us to rethink how we approach heat management, especially at extreme temperatures. It's a step forward not just for turbine efficiency, but for the entire field of high-temperature materials. This work opens exciting possibilities for thermal, environmental, and now, radiation barrier coatings in everything from energy systems to advanced manufacturing, where precision heat control is critical for innovation.”

PHOTO: UNIVERSITY OF VIRGINIA

Prof Prasanna V. Baaalachandran, Department of Materials Science and Engineering, University of Virginia.

The discovery has promising implications for extending the lifespan of critical infrastructure. By managing heat more effectively, it could reduce wear and tear on turbines, resulting in fewer costly repairs and minimizing downtime in power generation.

The study, which combined experimental measurements with advanced computational modeling, identified key optical absorption bands in iron-substituted YSZ that could help engineers optimize turbine performance. These findings lay the groundwork for future developments in materials science, ultimately improving the reliability and efficiency of critical energy infrastructure.

The study, titled “Optical absorption study of iron-substituted zirconia and yttria-stabilized zirconia using experimental measurements and many-body perturbation theory,” was conducted by Shunshun Liu and Prasanna V. Balachandran from the Department of Materials Science and Engineering at the University of Virginia, along with Victor K. Champagne III and David R. Clarke from the Harvard John A. Paulson School of Engineering and Applied Sciences. The research was published in *Physical Review Materials*. The work was supported by the Office of Naval Research.

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Pore-free graphene oxide promises significant advancements in protective coatings for various applications

Kumamoto University's research team, led by Assistant Professor Kazuto Hatakeyama and Professor Shintaro Ida of Institute of Industrial Nanomaterials, has announced a groundbreaking development in hydrogen ion barrier films using graphene oxide (GO) that lacks internal pores. This innovative approach promises significant advancements in protective coatings for various applications.

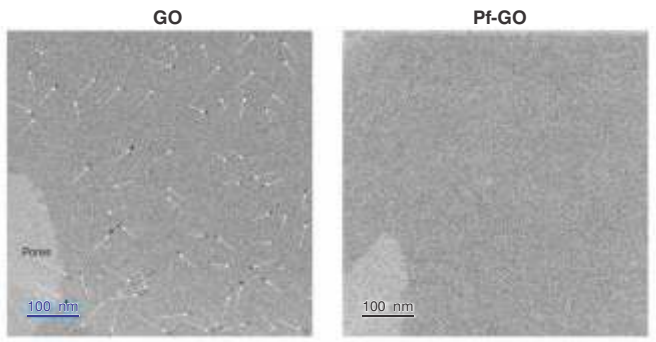
In their study, the Japan-based research team successfully synthesized and developed a thin film from a new form of graphene oxide that does not contain pores. Traditionally, GO has been known for its high ionic conductivity, which made it challenging to use as an ion barrier. However, by eliminating the internal pores, the team created a material with dramatically improved hydrogen ion barrier properties.

The new graphene oxide film exhibits up to 100,000 times better hydrogen ion barrier performance compared to conventional GO films, as demonstrated by out-of-plane proton conductivity results from AC impedance spectroscopy. This breakthrough was further confirmed in experiments where the non-porous graphene oxide coating effectively protected lithium foil from water droplets, preventing any reaction between the lithium and the water.

The study also confirmed that hydrogen ions move through the pores in conventional GO, highlighting the significance of eliminating these pores to enhance barrier capabilities. This advancement opens doors to new applications in protective coatings, rust prevention, and hydrogen infrastructure.

This research marks a significant advance in materials science and could pave the way for next-generation coatings with enhanced protective properties. “Moving forward, we plan to harness the hydrogen ion barrier performance for practical applications, while also addressing the challenges posed by the 'pores' in the GO structure to unlock additional functionalities,” explained Assistant Professor Hatakeyama as he outlined the next steps in his research.

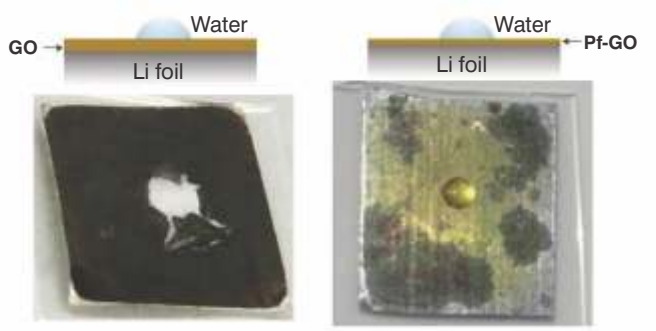
Comparison of scanning transmission electron microscope images of GO and pore-free GO (Pf-GO)



PHOTOS: KUMAMOTO UNIVERSITY

Numerous pores were observed in GO (indicated by white arrows). In contrast, no pores were visible in Pf-GO, even under high magnification.

Comparison of protective performance of GO and Pf-GO films formed on the surface of lithium foil



When water droplets were applied to GO and Pf-GO films on the surface of lithium foil, a reaction occurred between the water and the lithium metal, releasing H_2 gas (left). In contrast, the lithium metal coated with a Pf-GO film showed no reaction with the water (right).

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CORCON, "a landmark event in the international corrosion conference arena"

"CORCON, over the last four decades has emerged as the Asia's largest and most prestigious conference on the subject of corrosion science and engineering. This time it is aptly being held in Chennai, the capital of Tamil Nadu, a State that boasts of a large number of industries and refineries and is the hub of the automotive industry in India," said Dr N. Rajendran, Chairman, CORCON 2024, while speaking at the inaugural function on November 20, 2024, at the sprawling, picturesque and conveniently located Chennai Trade Centre. "This event brings together experts and innovators to address problems that impacts the industry worldwide. Corrosion is often called the silent destroyer affecting infrastructure and even the safety of personnel. Corrosion mitigation is not only about saving materials, but also conserving resources and ensuring a better future for everyone."

The four-day event held November 20 – 23, 2024 had six plenary and keynote sessions, five technical interactive forums, 15 symposia with more than 150 papers presented over four parallel sessions, besides technical workshops, round table conferences, and poster presentations.

Dr A. K. Tewari, Chairman, AMPP India Chapter, emphasized, "India has embarked upon a journey of becoming a US$45 trillion economy within a few years and aspire to be one amongst the developed countries by 2047. With this comes huge infrastructure creation including roads and highways, marine and offshore, oil and gas, petrochemicals, power plants and transmission systems, utilities, fertilizers and chemicals, etc., etc. So when infrastructure is created the challenge is to preserve the assets. It is a national concern. It is at forums such as CORCON where meaningful technical discussions take place where all the stake holders contribute in finding solutions."

PHOTOS: CORCON

Mr H. Shankar, Managing Director and Technical Director, Chennai Petroleum Corporation Ltd, who was the chief guest at the event emphasized that corrosion was a major problem in the petroleum industry he has been associated for the nearly 35 years in his career. "Just to give you an idea of the difficulties we face, a typical refinery uses over one lakh metric tons of structural steel, over 5,000 pieces of equipment, besides the thousands of meters of piping, and the structural steel required for building storage tanks. As the assets age, the kind of costs that come into play is phenomenal. Yes, refineries undergo a lot of innovations and changes, but yet, the cost of replacement still remains a major concern. What we need now is breakthrough solutions, not incremental ones. Take for example, the use of artificial intelligence. We are in fact sitting on a landmine of data. With artificial intelligence we can extract the data and use it to have greater accuracy in predicting maintenance schedules and corrosion."

This year, there were 15 symposia spread across 23 sessions, including the young scientist forum. The symposia on Corrosion in Petrochemical and Refineries; Corrosion Monitoring and Testing; Paints and Coatings; Cathodic and Anodic Protection; Corrosion Control in Water Treatment Utilities; Microbial Corrosion and Inhibitors; New Trends and Innovations in Corrosion Control; Materials and Composites; Corrosion in Marine and Offshore; Corrosion in Power Plants and

Utilities; Corrosion in Tanks, Mounds, Bullets and Spheres; Corrosion in City Gas; Corrosion in Nuclear Industry; and Corrosion in Defense Equipment and Facilities continued to attract a large number of technical papers.

Five technical interactive forums on contemporary corrosion issues like corrosion monitoring and testing, cathodic protection systems, water treatment, corrosion in petrochemical plants and refineries, and pipeline integrity management systems were attended in large numbers.

As is the practice at every CORCON event, this year too Corrosion Awareness Awards were presented to honor and respect individuals / institutions for their contribution to corrosion awareness and development in the field of corrosion science and technology in India.

At a glittering ceremony, the AMPP India Chapter Corrosion Awareness Awards were presented to honor and respect individuals and institutions for their contribution to corrosion awareness and developments in the field of corrosion science and technology in India. Ever since the recognition was instituted in 1995, around 150 scientists / teachers / engineers / professionals, 50 students and 30 public / private sector laboratories have been conferred various awards.

Mr N. Senthil Kumar, Director (Pipelines) Indianoil Corporation Ltd, was the chief guest at the AMPP India Chapter's Corrosion Awareness Awards - 2024 evening.

This year, the Excellence in Corrosion Science and Technology in Research and Education went to Prof Smrutiranjan Panda, IIT Bombay; Distinction in Corrosion Science and Technology in Research and Education, Prof Ambrish Singh, Nagaland University; Distinction in Corrosion Science and Technology in Industrial Organisation, Mr T. Siva, Central Institute of Petrochemical Engineering and Technology (CIPET), Chennai; Excellence in Innovation Award, Krishna Conchem Products Pvt Ltd, Navi Mumbai; Excellent Laboratory award to Gail (India) Ltd., Rajamundry; Student Award for PhD Degree, Dr Ankur Kumar, IIT Roorkee; Meritorious Contribution in Research and Education, Dr M. G. Sethuraman, The Gandhigram Rural Institute, Gandhigram; and the Meritorious Contribution in Industrial Organization, Mr Pankajkumar Dhahjibhai Panchal, Corrosion Protection Specialist Pvt Ltd.

The Expo area boasted over 60 stalls, not only leading names in the industry from across the country, but all over the globe exhibiting their latest innovations, products and processes. Awards were also given to the best designed stalls. Alleima India, was awarded the best stall in the 9 sqm category, whereas BSS Tech CP (I) Pvt Ltd., was the winner in the 12 sqm category. The runners up were Jotun IndiaPvt Ltd, and Electrotherm (India) Ltd, respectively. Besides these, awards were also given to 16 paper and poster presentations at the valedictory function.

The four-day event was not just scientific and serious discussions but also had its share of lighter moments. The cultural dance program by students of a well-known cultural organization in Chennai was a mood uplifter after days of serious discussions.

National Seminar on 'Corrosion and its Prevention – Oil & Gas Industry'

The C. V. Raman Global University in collaboration with AMPP India Chapter, has announced a National Seminar on 'Corrosion and its Prevention – Oil & Gas Industry' that is to be held March 7 & 8, 2025 at the University Campus in Bhubaneswar, Odisha.

The seminar will focus on the various types of corrosion processes that affect equipment, pipelines, and infrastructure in the oil and gas sector, as well as strategies to mitigate these issues. Corrosion is a major challenge in the industry, leading to safety hazards, operations disruptions, and significant financial losses. The seminar is likely to cover the following key topics: Types of corrosion in oil & gas; impact of corrosion on the oil & gas industry; corrosion monitoring and detection; corrosion prevention methods; best practices in corrosion management; case studies and industry standards; and future trends in corrosion prevention.

The target participants are engineers in the oil and gas industry (materials, mechanical and corrosion engineers), research & development professionals working on innovative corrosion prevention technologies; academicians; industrialists; and regulatory and compliance experts ensuring adherence to industry standards and safety regulations.

The seminar will feature expert speakers from the oil & gas industry, material science, and corrosion prevention fields, along with interactive discussions between experts and participants; product displays and demonstrations; and networking opportunities. The idea is that participants would leave with a deeper understanding of corrosion risks in their operations, as well as practical solutions for preventing and managing corrosion.

PHOTOS: 123RF

Technical presentations from invited and keynote speakers would include topics like corrosion and its prevention and cost of corrosion; corrosion in oil & gas sector; corrosion in petrochemical, refinery and fertilizer industries; cathodic protection systems in oil & gas industry; coating and lining in oil and gas industry; corrosion control in pipelines – oil & gas and water pipelines; city gas distribution pipeline network; direct assessment, and case studies.

The host, AMPP India Chapter (formerly known as NACE International India Section) with over 1,000 members is one of the largest and most active sections of AMPP (The Association for Materials Protection & Protection) through its significant efforts in the promotion of corrosion awareness, protection and control of corrosion in India.

AMPP represents the largest global community of corrosion and protective coatings professionals. Their members are dedicated to advancing technical and practical expertise in corrosion prevention and control.

C. V. Raman Global University, located in Bhubaneswar, Odisha, was established in 1997 as C. V. Raman College of Engineering. Accredited by the NBA and ISO 9001:2000 certified, it was ranked 96th among engineering colleges by National Institutional Ranking Framework (NIRF) in 2024.

More details:
manoj@naceindia.org

AMPP CHAPTER INDIA

National Seminar on

"Corrosion and its Prevention - Oil & Gas Industry"

(CPOG - 2025)

C. V. Raman Global University in collaboration with AMPP India Chapter

7th March & 8th March 2025,

Venue: C V Raman Global University,
Bhubaneswar, Odisha, India

Hosted by

NACE INTERNATIONAL INDIA SECTION

C. V. Raman Global University
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Date	Event	Venue	Organizer	Contact Details
FEB 15 – 18, 2025	BIG5 CONSTRUCT SAUDI	Riyadh, Saudi Arabia	dmg events	W: big5constructsaudi.com
FEB 23 – 25, 2025	EGYPT COATINGS SHOW	Egypt International Exhibition Center, Cairo, Egypt	dmg events	T: +971 44453773 E: paddyoneill@dmgevents.com W: egyptcoatingsshow.com
FEB 24 – 26, 2025	CENTRAL ASIA COATINGS SHOW	IEC Astana Expo, Astana, Kazakhstan	United Expo	E: unitedexpo@gmail.com W: centralasiacoatingsshow.com
FEB 25 – 28, 2025	INTERLAKOKRASKA 2025	Expocentre Fairgrounds, Moscow, Russia	Expocentre	E: interlak@expocentr.ru W: interlak-expo.ru/en/
MAR 07 – 08, 2025	CORROSION AND ITS PREVENTION – OIL & GAS INDUSTRY	C. V. Raman Global University, Bhubaneswar, Odisha, India	AMPP India Chapter	M: +91 98206 31320 E: manoj@naceindia.org W: amppindia.org
APR 06 – 10, 2025	AMPP ANNUAL CONFERENCE + EXPO 2025	Music City Center, Nashville, Tennessee, USA	AMPP	W: amp.org
APR 10 – 12, 2025	INDIA PAINT & COATING EXPO	Bangalore International Exhibition Center, Bangalore, India	Media Day Marketing	M: +91 93421 85915 E: expo@mediaday.co.in W: paintandcoatingexpo.com
APR 24 – 26, 2025	EXPO PAINT AND COATINGS – 2025	Eka Club, Ahmedabad, India	Toredo Fairs India Pvt Ltd / Vision Express	M: +91 93419 28011 E: info@expopaintcoating.in W: expopaintcoating.in
MAY 13 – 15, 2025	SAUDI ARABIA COATINGS SHOW	Dhahran Expo, Dammam, Saudi Arabia	dmg events	T: +971 44453773 E: paddyoneill@dmgevents.com W: saudiarabiacoatingsshow.com
MAY 13 – 15, 2025	EASTERN COATINGS SHOW	Harrah's Atlantic City, NJ, USA	The Philadelphia Society for Coatings Technology	E: info@easterncoatingsshow.com W: easterncoatingsshow.com
JUN 25 – 27, 2025	COATINGS EXPO VIETNAM 2025	SECC, Ho Chi Minh City, Vietnam	VEAS	E: info@veas.com.vn W: coatings-vietnam.com
JUL 02 – 04, 2025	WEST AFRICA COATINGS SHOW	Landmark Centre, Lagos, Nigeria	dmg events	T: +971 44453773 E: paddyoneill@dmgevents.com W: westafricacoatingsshow.com
JUL 17 – 19, 2025	CII SURFACE & COATING EXPO 2025	Chennai Trade Centre, Chennai, India	CII	T: (91-44) 42444555 E: surface.coating@cii.in W: ciise.in
SEP 03 – 05, 2025	ASIA PACIFIC COATINGS SHOW	Bangkok International Trade & Exhibition Centre, Bangkok, Thailand	dmg events	T: +971 44453773 E: paddyoneill@dmgevents.com W: asiapacificcoatingsshow.com
OCT 01 – 03, 2025	PAINTEXPO EURASIA	Istanbul Expo Centre, Istanbul, Turkey	Artkim	E: sales@artkim.com.tr W: artkim.com.tr
NOV 03 – 06, 2025	ADIPEC	Abu Dhabi, UAE	dmg events	E: enquiry@adipec.com W: adipec.com
NOV 12 – 13, 2025	USA COATINGS SHOW 2025	MeadowLands Exposition Centre, New York, USA	United Expo	E: unitedexpo@gmail.com W: usa-coatings-show.com

Please note, schedules are subject to last minute changes.

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