



# COATINGS AND ANTI CORROSION ENGINEERING REVIEW

February - March 2024 | Volume 14 Issue 6 | ₹ 100



## Coating life and its selection for industrial applications



Interview

**Ms Mariella Riedel**

*Project Director, PaintExpo*

Technical Feature

Do more for less with Intelli-ion®:

Elevating anti-corrosion coatings with low loadings

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  - Thermosetting acrylics
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Automotive Interior



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Paints & Coatings



Plastics



Powder Coating



Refinish



Yacht Manufacturer



Smartphone, Tablet & Laptop Covers





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COVER PHOTO:123RF

# COATINGS AND ANTI CORROSION ENGINEERING REVIEW

Volume 14; Issue 6  
February - March 2024

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## From the Editor-in-Chief...



Just back from the AMPP + Expo 2024 Annual Conference!!! This event held in New Orleans, USA, brought together more than 6,000 attendees, 381 exhibitors and more than 400 papers presented, providing the backdrop for breakthroughs and enriching discussions aimed at shaping the future of the industry. I would say this would be the largest corrosion related event held anywhere in the world post-Covid-19. Here, attendees had the opportunity to immerse themselves in a packed agenda of technical sessions, hands on workshops and exhibits that highlighted the latest trends, technologies and strategies in the corrosion protection, surface coating and material integrity. It is important to mention that the conference featured an extensive program of symposia, forums, workshops, presentations, networking events, awards and a large exhibition of equipment, products and services from renowned national and international companies. These presentations provided an array of opportunities to learn about and delve deeper into critical issues, explore new technologies and discover innovative practices that are shaping the future of the industry.

Held by the Association for Materials Protection and Performance (AMPP), each year's show represents the industry's largest and most comprehensive event, all while offering an occasion to reconnect with friends and network with industry peers.

Back home, the launch of Aditya Birla Group's Birla Opus brand adds a whopping 40 percent to industry capacity and all set to shake up the sector. Said Mr Kumar Mangalam Birla, Aditya Birla Group Chairman at the launch: "India is today teeming with dynamism, audacity and penchant for disruption. This India finds a reflection in our paint venture Birla Opus. No paint company globally has ever launched in one shot – factories, operations, products and services, at the scale that we are about to undertake."

Surely India is witnessing exciting times and we will keep updating you on the happenings in our industry!

**Jolly Lonappan**  
Editor-in-Chief



Owned, Printed and Published by Franco Lonappan. Printed at Aarya Graphics, Unit No.20, J.K.Incl. Estate, Mahakali Caves Road, Near Paper Box Co, Andheri (East), Mumbai - 400093 and Published from 102, Dattar Mansion, C. S. Marg, Vakola Bridge, Santacruz (East), Mumbai 400055. Editor: Abraham Mathai.  
Coatings And Anti Corrosion Engineering Review is Registered with the Registrar of Newspapers of India under No: MAHENG/2010/37489





# GOOD BYE CORROSION & ABRASION WEAR

Now Increase Equipment life and  
Control Operating Cost

CORROSION, ABRASION & CHEMICAL ATTACKS destroy crores of rupees worth equipment every year. Worldwide research shows that nearly 70%-80% equipment failures are purely due to their surface erosion. The need for effective preventive maintenance therefore is imperative.

The time has arrived for ceramics to finally take centre stage. Jyoti Ceramic Industries has specially developed ceramic filled polymer based coating compounds, "Aluma Coat® -BR" brushable / sprayable and "Aluma Coat® -TW" trowelable.



VERSATILE INDUSTRIAL APPLICATIONS



Motor Shaft  
Coated with  
Aluma Coat - BR



Butterfly Valve  
Coated with  
Aluma Coat - BR

## Aluma Coat® - BR

A brushable / sprayable easy to apply coating designed to protect surfaces from severe turbulence, corrosion, erosion and chemical attacks. It gives a satin smooth, high-gloss surface finish and can withstand maximum service temperature up to 150°C/302°F



## Aluma Coat® - TW

A trowelable, easy to apply protective coating, comprising of sintered sapphire-hard ceramic micro beads, doped in polymer resins designed to resist corrosion, abrasion and moderate surface impact. It gives a rough textured surface finish and can withstand maximum service temperature up to 150°C/302°F.



VERSATILE INDUSTRIAL APPLICATIONS



Mineral Crusher  
Coated with  
Aluma Coat - TW



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Collector Coated with  
Aluma Coat - TW

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## WEG develops innovative coating for offshore use

WEG (weg.net) has developed an innovative coating for use in highly corrosive environments, providing greater durability to assets and increasing the lifespan by up to four times compared to current technologies. This coating technology, already being tested and applied in some offshore platforms, replaces traditional coatings, simplifying equipment and structure maintenance where

PHOTO: WEG



WEG has developed an innovative coating for use in highly corrosive environments, providing greater durability to assets and increasing the lifespan by up to four times compared to current technologies.

applied and offering significantly greater resistance compared to currently adopted protective plans, notes a press communique from the company.

The first offshore maintenance projects with the new technology are already underway, and tests confirm the performance of the new line marketed by WEG under the brand WrapX®. Two years of research and investments exceeding R\$ 1.5 million, in addition to equipment, performance tests, and technical training, have been dedicated to this development.

The WrapX® line uses high-performance elastomeric coatings that extend the integrity of the asset. In the case of valve and flange maintenance, which require

constant interventions, the products can be easily removed and reapplied. According to Rafael Guerreiro Torezan, WEG Tintas Managing Director, WrapX® “allows the release of large areas where it will be applied in a few hours, unlike current processes where asset maintenance extends over several days.” He adds, “it is a sustainable technology with a 100% solid content, and in addition to the oil and gas

sector, it can be applied in other environments with severe corrosion, such as mining, steel, and pulp and paper.”

The application was developed with the support of the Materials & Corrosion Technologies area of Petrobras' Research

and Innovation Center (Cenpes), which encourages technology development in the country by fostering initiatives focused on innovation and sustainability.

## New waterproof polyether product from Wanhua Chemical

A new waterproof polyether product, WANOL® C2020E,

IMAGE: WANHUA CHEMICAL



WANOL® C2020E improves the flexibility of polyurethane and enhances its elongation property, with the result that optimizing its application in waterproof coatings.

## Next generation software to paint-repair with robots

The experience gained from millions of automatically repaired paint defects per year has been incorporated into the next generation of 'Automappps' paint-repair software (SW), by Convergent Information Technologies GmbH (convergent-it.com), Austria. Enhanced learning and self-improvement capabilities,

sanding and polishing and adapters are also supported. Worldwide, more robots are automatically programmed for automotive paint repair with 'Automappps' than with any other software solution, notes the press release from the company. Convergent IT cooperates with and supports leading system integrators. The next



PHOTO: CONVERGENT

'Automappps' supports various sensors for paint inspection – robot-guided and stationary. Various robot manufacturers, tools for sanding and polishing and adapters are also supported.

faster planning and more defects per hour are the most striking features of the next software generation. In addition, the commissioning and optimization of the repair application with robots in particular has been further simplified and accelerated. Car-bodies and components can be repaired even more completely with less effort and with superior quality results, even in the immediate vicinity of edges or even the edges. 'Automappps' supports various sensors for paint inspection – robot-guided and stationary. Various robot manufacturers, tools for

generation will be presented for the first time at PaintExpo 2024 in Karlsruhe from April 9 to 12, 2024. Convergent Information Technologies GmbH is a leading provider of software for automatic and reactive robot programming and a pioneer in surface repair. The 'Automappps' software is used to create millions of robot programs every year.

has been launched by Wanhua Chemical (en.whchem.com). This model is identical for its low viscosity, flexibility, and eco-friendliness, making it ideal for waterproof coating industry, notes a press release from the company.

Based on the WANOL® C2020 series, WANOL®

C2020E reduces viscosity without changing the polyurethane polymerization process, thus improving workability.

Besides, WANOL® C2020E improves the flexibility of polyurethane and enhances its elongation property, with the result that optimizing its application in waterproof coatings.

This product has a lower content of organic volatile compounds, and is particularly suitable for solvent-free systems.



# Trenton offers three Wax-Tape® brand anticorrosion wrap systems.

*High-quality, easy-to-apply wraps that protect irregularly shaped fittings and require minimal surface preparation.*



*Belowground applications*

## **Wax-Tape® #1**

### **Anticorrosion Wrap:**

A very durable wrap that uses a thick, non-stitch bonded synthetic fabric and has no clay fillers, so it stays conformed to irregular profiles. The wrap requires no abrasion blasting, can be backfilled immediately and is compatible with cathodic protection.



*Aboveground and belowground applications*

## **Wax-Tape® #2**

### **Self-Firming Anticorrosion Wrap:**

A unique, microcrystalline-wax-saturated wrap that slowly firms up to provide excellent aboveground and belowground protection. Comes in a variety of colors and usually requires no outerwrap.



*High-temperature applications*

## **Wax-Tape® HT-3000**

### **High-Temperature Anticorrosion Wrap:**

Designed for operating temperatures up to 230°F (110°C), Wax-Tape® HT-3000 wrap can be used on high-temperature oil and gas piping, on compressor station discharge piping, beneath thermal insulation and in high ambient temperature conditions.

**Only Trenton offers Wax-Tape® brand anticorrosion wrap systems, with primers, wraps and outerwraps.**

# **TRENTON**

ANTICORROSION MATERIALS

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Trenton Advisor

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## NALZIN® FA 180: a new rust prevention solution for aqueous paint systems

Elementis (elementis.com), a leading specialty chemical supplier of additives for paint, coating & industrial aqueous applications, has introduced the NALZIN® FA 180, an innovative product that addresses the common challenge of flash rust in aqueous paint systems, notes a press release from the company.

acrylics, epoxies, and dispersion paints.

A significant feature is its ability to prevent flash rust, the formation of rust during the drying process of aqueous paint systems on iron-containing substrates. NALZIN® FA 180 effectively addresses this issue, ensuring that surfaces remain rust-free during the drying phase.



A significant feature of NALZIN® FA 180 is its ability to prevent flash rust, the formation of rust during the drying process of aqueous paint systems on iron-containing substrates.

NALZIN® FA 180 presents a special composition that presents extended protection against rust and corrosion. Commencing as a water-dispersible solution, NALZIN® FA 180 seamlessly transforms into a non-water dispersible, insoluble zinc compound during the film drying process. This property contributes to its effectiveness in delivering enduring rust protection and a durable finish.

Designed to blend with a wide range of water-dilutable paint systems, NALZIN® FA 180, an organic zinc complex with a low nitrite addition, can be easily incorporated into various applications, including water-dilutable alkyds,

Additionally, NALZIN® FA 180 significantly enhances the rust-resisting capabilities of the dry paint layer, thus preventing in-can corrosion during storage.

NALZIN® FA 180 boasts several features that contribute to its effectiveness as a corrosion prevention solution:

Strong affinity for iron substrates: NALZIN® FA 180 forms a robust bond with iron substrates, effectively preventing flash rust and preserving the appearance of painted surfaces.

Decreased water sensitivity: NALZIN® FA 180 remains effective in the presence of water, ensuring durability in various conditions.

## LUXAN CFX B604 Midnight Silver: “Diving effect” with high radar transparency

LUXAN CFX B604 Midnight Silver, introduced recently by Eckart (eckart.net), complements the effect pigment manufacturer's range of pigments for autonomous driving. This range of special pigments with a metallic look has a high radar transparency, which is essential for applications such as autonomous driving and where conventional metallic effect pigments reach their limits.

ers are optimally prepared for future mobility technology," explains Thomas Schneider, Head of Automotive Coatings, Product Evaluation. "LUXAN CFX B604 Midnight Silver significantly expands the range of achievable effects for individual, radar-transparent styling."

The new LUXAN CFX B604 Midnight Silver impresses with its extraordinary sparkle with the innovative "diving



The range of special pigments with a metallic look has a high radar transparency, which is essential for applications such as autonomous driving and where conventional metallic effect pigments reach their limits.

Even a small amount is sufficient to visually enhance basic colors. The new pigment adds sparkling silver highlights to the coating and can be combined with other pigments - in particular with aluminum effect pigments and from the special SYMIC OEM Opaque Silver product range for autonomous driving.

"With these innovative pigments, paint manufactu-

effect": the elegant silver transitions smoothly into a deep dark-down flop. The interaction of the deep sparkle with a light source reveals a mysterious 3D depth effect.

LUXAN CFX B604 Midnight Silver is characterized by excellent resistance to weathering and chemicals. It also has excellent shear stability and intercoat adhesion.

Anionic passivated layer: This product forms an anionic passivated layer that inhibits corrosion after the film has dried, ensuring long-term rust protection.

In-Can Rust Inhibitor: NALZIN® FA 180 can serve as

an in-can rust inhibitor, prolonging the shelf life of paint systems.

Improved weathering: NALZIN® FA 180 empowers paint systems to withstand the test of time and weather, preserving their appearance.





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## Black&Light: New black UV epoxies

Panacol (panacol.com) presents its first series of new, UV curable, black epoxy resin adhesives. These “Black&Light” adhesives, Vitralit® BL UC 1101, Vitralit® BL UC 1102 and Vitralit® BL UC 1103, can be cured in thicker layers using only UV light, eliminating the need for a secondary curing mechanism, notes a press release from the company. Another major benefit from those Black&Light adhesives is room temperature shipping and storage. Conventional single-component, black-colored epoxy adhesives must be transported and stored cold or deep-frozen.

PHOTO: PANACOL



Black epoxies being cured with UV LED light.

The black color in a conventional UV adhesive absorbs a high percentage of the UV curing energy. This means that the UV light energy required to fully polymerize an adhesive only penetrates a few micrometers. This phenomenon leads to the formation of a superficial “skin,” while the adhesive underneath remains uncured. The new black Vitralit® BL UC adhesives from Panacol can be cured to greater than 1mm in thickness, purely with UV LED light. UV LED curing systems from Dr Hönle are

perfectly matched to the absorption wavelengths of the Black&Light technology, ensuring optimal curing of the black adhesives.

Vitralit® BL UC 1101, Vitralit® BL UC 1102, and Vitralit® BL UC 1103 are Panacol's new Black&Light adhesives and they cover a wide range of applications. They are suitable for component encapsulation, glob top, or edge bonding in electronics production. They can also be used as optical adhesives in applications requiring high OD (optical density) values.

Vitralit® BL UC 1101 is the perfect choice if a thick layer of adhesive is needed. It cures reliably in thick layers up to 1.3 mm, resulting in an optical density of up to 3.9. If a high optical density in lower layer thickness is needed, Vitralit® BL UC 1103 with OD values of up to 6 is the best option. In optoelectronic

component assembly, Vitralit® BL UC adhesives minimize reflections and can safeguard the sensitive transmission values required for automotive sensors.

All three new adhesives offer outstanding mechanical properties including high glass transition temperatures, low shrinkage, and low coefficient of thermal expansion. Those characteristics ensure reliable bonding results with an excellent thermal and positioning stability. As the

## PPG launches PPG DP7000 Air-Dry Primer in EMEA automotive refinish markets

PPG (ppg.com) has launched the PPG DP7000 Air-Dry Primer and a range of dedicated ancillaries across automotive refinish markets in Europe, the Middle East and Africa (EMEA). PPG DP7000 primer saves bodyshops time and energy, thanks to fast air drying, helping to increase productivity and profitability and reduce environmental impact, notes a press release from the company.

when air drying is not appropriate.

“Air-drying processes have the potential to generate substantial energy savings for bodyshops and repair centers,” said Valentina Chiappa, Product Manager EMEA, Automotive Refinish. “The advanced acrylic technology in PPG DP7000 Air Dry Primer means that it dries rapidly and is completely unaffected by humidity, so users can

PHOTO: PPG



PPG DP7000 primer saves bodyshops time and energy, thanks to fast air drying, helping to increase productivity and profitability and reduce environmental impact.

PPG DP7000 Air-Dry Primer is a premium two-pack acrylic primer that is fully compliant with European VOC regulations. It is suitable for use with PPG ENVIROBASE® High Performance basecoats, PPG DELTRON® Progress UHS topcoat and all other PPG topcoat systems. It dries up to twice as fast as competing air-dry technologies and works in all humidity conditions. Baking or infrared curing can be also carried out

achieve excellent results whatever the humidity in their region. It can also be successfully applied in varying temperature conditions thanks to a range of ancillaries launched alongside the core product.”

PPG DP7000 Air-Dry Primer is available in three grey shades to allow optimization of the topcoat color. It is easy to prepare, mix and apply, and offers flexible dry film thickness and superior sanding properties.

Black&Light technology is compatible with many Vitralit® epoxy resin adhesives from Panacol, individual adhesive

solutions matching specific curing conditions and/or mechanical properties are possible.






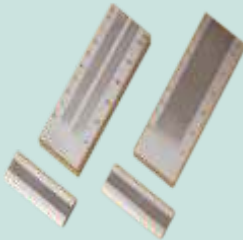






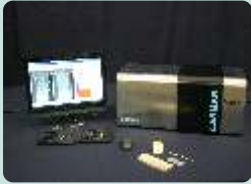
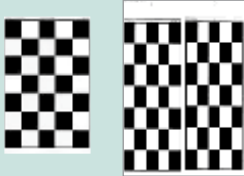







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 <p>SKID RESISTANCE TESTER</p>	 <p>TIDAS Automated Grindmeter (Hegman Gauge)</p>	 <p>K CONTROL COATER</p>	 <p>CHECKERBOARD CHARTS</p>	 <p>DIGITAL COATING THICKNESS GAUGE (456)</p>
 <p>PULL-OFF ADHESION TESTER POSITEST AT-A</p>	 <p>UV XENON WEATHERING CABINET</p>	 <p>RAL K5 (Matt &amp; Glossy)</p>	 <p>PANTONE FORMULA GUIDE</p>	 <p>ULTRASONIC COATING THICKNESS GAUGE POSITECTOR 200 (FOR PLASTIC, WOOD, GLASS)</p>



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CRISIL Rating : SME 1 'Highest'

## Carboline launches new urethane mastic for emergency maintenance

Carboline (carboline.com) has launched the Carbothane DTM Mastic, a game-changing one-coat solution for emergency maintenance or quick-turn coating projects, notes a press release from the company.

PHOTO: CARBOLINE



*Carbothane DTM Mastic offers excellent corrosion protection, and as a urethane, it retains its color and gloss longer and weathers far better than competing epoxy mastic maintenance coatings.*

Carbothane DTM Mastic is a urethane-based hybrid that exhibits exceptional performance over minimally prepared steel surfaces. Its mastic properties offer excellent corrosion protection, and as a urethane, it retains its color and gloss longer and weathers far better than competing epoxy mastic maintenance coatings.

“The value of Carbothane DTM Mastic in the market is clear: Better corrosion protection and great visual appeal in a single coat. It performs exceptionally even over marginal surfaces, so it’s ideal for unplanned spot maintenance or emergencies,” said Jeff Anderson, Executive Vice President of Quality, R&D, and Commercial Resources.

In July 2023, Carbothane DTM Mastic was trialed on an emergency pipeline coating project at a liquid terminal in Philadelphia, PA, after corrosion and discoloration were found. The terminal owner needed the piping repainted quickly to remain

compliant with regulations from the U.S. Environmental Protection Agency (EPA).

“This field trial, and other recent success stories like it, demonstrate the immediate impact Carbothane DTM Mastic has had on unplanned or emergency coating project outcomes,” said Justin Manuel, Director of Global Product Line.

## Eco IC system from Metrohm

The Eco IC system from Metrohm breaks down barriers to entry for ion chromatography (IC) analysis. This robust and reliable instrument caters to a diverse user base, notes a press release from the company:

**Routine water analysis:** For researchers and professionals performing regular water analysis, the Eco IC provides a dependable and dedicated solution. Its user-friendly interface and robust design ensure efficient and reliable workflows.

**Educational institutions:** The Eco IC offers a cost-effective platform for teaching IC principles. Its user-friendly design simplifies learning and allows educators to focus on core concepts. Furthermore, the system serves as a perfect entry-level instrument, enabling future upgrades to

PHOTO: METROHM



*The Eco IC system’s compact footprint minimizes bench space requirements, making it ideal for laboratories of all sizes.*

## POWERCRETE launches a brand new ARO Coating – DD 410

Seal for Life Industries (sealforlife.com) has announced that POWERCRETE, a trusted brand name for more than 30 years, has launched a new ARO coating – DD 410. This new product joins a strong product line up of Liquid Epoxy Polymer Concrete coatings designed to protect the vital pipeline industry, notes a press communique from the company.

directional drilling, thrust (slick) bore, and pull-through applications. It is specifically designed to be applied directly on the FBE mainline coating of a pipeline to withstand rough terrain conditions.

“This product has exceptional abrasion, strength, hardness, impact resistance, and adhesion properties, making it the

ideal choice for directional drilling projects,” says Mario Moreno, Product Specialist for POWERCRETE. “With the growing reliance on horizontal directional

drilling to support urban and infrastructure development, liquid epoxy polymer concrete remains a first-choice technology in the engineer’s toolbox. DD 410 will join the POWERCRETE portfolio as a robust material for tackling the most demanding applications.”

PHOTO: SEAL FOR LIFE



*The new ARO coating – DD 410, joins a strong product line up of Liquid Epoxy Polymer Concrete coatings designed to protect the vital pipeline industry.*

POWERCRETE DD 410 offers: 150% faster gel time; 60% improved transfer efficiency; and excellent in industry gouge resistance.

This new generation solvent-free epoxy ARO polymer concrete coating provides high-performance protection to the FBE coated pipe for

automation as needs evolve.

**Upgradable Entry-Level System:** The Eco IC functions as an ideal first step into IC analysis. Its user-friendly interface lowers the barrier to entry, while its modular design allows for future upgrades to automation, maximizing flexibility as analytical needs grow.

The system delivers straightforward analysis of anions, cations, and polar substances; smart system monitoring safeguards operation and ensures data integrity; additionally, the accompanying MagIC Net

software eliminates language barriers with its user-friendly interface available in 16 languages.

Finally, the Eco IC readily accommodates automation for up to 36 samples, maximizing efficiency in high-throughput environments. Its compact footprint minimizes bench space requirements, making it ideal for laboratories of all sizes. The Eco IC’s combination of affordability, performance, and user-friendliness positions it as a game-changer, democratizing access to powerful IC analysis. More details: [khushbooscientific.com](http://khushbooscientific.com)





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# New preservation line optimally integrated into existing manufacturing process

*Perfectly integrated into an already existing building containing an overhead crane, the new preservation line allows not only a higher material throughput but also improves the entire production flow resulting in shorter lead times*

In order to meet customer demands faster and more efficiently, the Carl Spaeter Hamburg company expanded its range of manufacturing equipment with a preservation line KON 34/6-HD from Rösler ([www.rosler.com](http://www.rosler.com)) that combines shot blasting and painting in one single system. It is designed to handle steel components, up to 3,200 mm wide, 400 mm high and a max. length of 21.2 meters. The line is equipped with two paint systems. Perfectly integrated into an already

existing building containing an overhead crane, the new preservation line allows not only a higher material throughput but also improves the entire production flow resulting in shorter lead times.

Founded in 1905 in the city of Hamburg as hardware store, the Carl Spaeter Hamburg company became one of the leading steel suppliers for retailers, mechanical contractors and industrial manufacturers in Northern Germany and beyond. The company's

success is based on a broad line of steel products with an inventory of more than 25,000 tons, short delivery times, high operational flexibility and numerous steel processing and refinement services. Mike Barz, general manager at Carl Spaeter Hamburg, explains: "Since our existing shot blast and painting line had reached the end of its usable life, and because we wanted to improve our customer support, we purchased the KON 34/6-HD from Rösler."

The equipment supplier from Untermerzsbach in Southern Germany won this substantial purchase order against two competitors for the following reasons: Rösler adapted its equipment concept to the customer's requirements. At the same time the customer was impressed by the quality and sturdy equipment design

and Rösler could show several reference plants in the field. Reyk Hagelberg, plant manager at Carl Spaeter Hamburg, continues: "Within a very short time period Rösler, with input from us, developed a viable equipment concept that was perfectly adapted to our existing building and our technical requirements."

## Fully automatic, energy-saving shot blasting

A critical customer demand was that the line must be able to handle steel components, up to 3,200 mm wide, 400 mm high and a length of up to 21.2 meters. Moreover, Rösler had to make sure that steel plates with a thickness of 4 mm could be shot blasted with the same high-quality cleaning results as plates with a thickness of 100 mm. An additional requirement was that all surface areas and edges of steel beams were perfectly blasted and received optimal paint coverage. Since the steel components have a max. weight of twelve tons, the design of the roller conveyors and cross transport systems had to be extra sturdy.

Special sensors measure the height of the steel components – in the case of steel plates also their width – that have been placed on the inlet roller conveyor of the



PHOTOS: RÖSLER OBERFLÄCHENTECHNIK GMBH



The preservation line with shot blast machine and automatic paint system can handle work pieces weighing up to 12 tons. The design was adapted to the existing building containing an overhead crane.

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preservation line. The PLC then automatically determines how many turbines must be turned on to clean the respective components. Other parameters like travel speed, paint type and paint thickness are also part of the processing programs, which are stored in the PLC and can be called up from the operating panel. In a first step the steel components are passing through a pre-heater that prevents moisture from being carried into the shot blast machine. The exhaust air from the pre-heater is guided to the paint drier, which helps to reduce the drying time of the applied paint.

From the pre-heater the work pieces are transferred to the shot blast machine. The machine housing is made from manganese steel. In addition, the blast chamber is lined with overlapping liners made from manganese steel. Eight high-performance Gamma 400G turbines, each with a drive power of 22 kW, ensure that the specified cleanliness of SA 2,5 is consistently and safely achieved at a travel speed of up to 4 meters/minute. Compared to conventional blast wheels, the Gamma turbines with curved throwing

blades in “Y” design achieve an up to 20% higher blast performance and, at the same time, reduce the energy consumption. Residual blast media and dust on the shot blasted components is removed with a combined brush-off/blow-off system at the exit of the blast chamber.

**Low paint usage and minimal overspray**

To meet individual customer requirements for the coating operation utilizing a water-based primer, the integrated automated spraying equipment is equipped with two independent paint application systems. Prior to the paint process special sensors precisely measure the work piece dimensions – down to the last mm. The gantry holding the spray guns is then programmed for these measurements. This ensures that the primer is only applied onto the surface of the respective steel components. The result is a minimum of overspray and the prevention of unnecessary waste of the valuable resource paint. The



The eight Gamma 400G high-performance turbines with “Y” shaped throwing blade guarantee consistent high-quality shot blasting results.

paint filter with air extraction points on both sides of the transport system collects any residual paint overspray. The filter is extremely effective! The residual dust load in the clean air is only 0.2 mg/m<sup>3</sup> and, therefore, considerably below the official standard specifying a maximum of 1 to 2 mg/m<sup>3</sup>.

The residual dust in the clean air coming from the dust collector of the shot blast machine amounts to 1 mg/m<sup>3</sup>, well below the legal limit of max. 3 mg/m<sup>3</sup>. Reyk Hagelberg explains: “With the new Rösler preservation line we can run our surface treatment operations for steel plates, beams, pipes/tubes and steel bars not only with an excellent finishing quality but also in a highly eco-friendly manner.” Heating the paint drier with exhaust air from the pre-heating system is a further contribution towards resource-saving operations.

**Optimized manufacturing processes and material flow**

The work piece transport system of the new preservation line was integrated into a building with overhead crane already existing at Carl

Spaeter. The roller conveyors with forward and reverse transport direction cover all four bays of the building with an area of over 42,000 square meters. This arrangement guarantees a highly flexible material handling operation. For example, it allows the transport of steel components from anywhere in the building to the preservation line, to other areas in the building or to the truck load station. The cross-transport systems, placed to the left and right of the roller conveyor, offer plenty of capacity for the intermediate storage of steel components. “With the new preservation line and the resulting further steel processing and refinement possibilities we can fulfill customer requests faster and more efficiently. This helps to reduce our lead times. In addition, the new line, in combination with the roller conveyors and cross-transport systems, improves our logistical setup with shorter walking distances for our employees and streamlines our entire workflow,” concludes Mike Barz.

Author: **Doris Schulz**, Journalist, Germany



At the entrance to the automatic paint system special sensors measure the dimensions of the work pieces – down to the last mm.

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# PaintExpo, a wealth of information about new developments innovations, applications and trends

*At this year's PaintExpo, more than 400 exhibitors will cover the entire range of international products and services in the supply chain for industrial coating technology, notes Ms Mariella Riedel, Project Director, PaintExpo, in a chat with C&ACER*

## How is PaintExpo different from any similar events happening around the world?

PaintExpo is the world's leading trade fair for industrial coating technology, which serves as a showcase for innovations, applications, future technologies and trends in all areas of the coating industry. The trade fair covers the entire range of international products and services in the industrial coating technology supply chain. This global get-together of companies from the industry is unparalleled worldwide, making it highly attractive for coating service providers and in-house coating companies from around the world. At PaintExpo, a wealth of information about new developments can be gathered in one place.

## What paradigm shifts do you see happening in this industry?

The topics of sustainability

and energy efficiency are currently dominating the industrial coating technology sector. The increasing focus on sustainable and energy-efficient processes is also reflected in numerous technological developments presented by the exhibitors at PaintExpo 2024: With energy-saving system concepts, resource-saving applications and modern software, among other things, users of the technology consume less energy and can save valuable resources in the coating processes in the long term.

Visitors to PaintExpo 2024 can find out about such a development at the booth of plant manufacturer AFOTEK, among others: "AFOTEK Clean" is a biological exhaust air purification system that converts gaseous, organic pollutants into harmless or odorless products by oxidizing them into carbon dioxide and water. Another example is that WAGNER will be presenting wet paint application systems that focus

on sustainability and saving solvents, materials and energy. In addition, the products and systems increase productivity in the coating process thanks to their ease of operation and optimized process control.

When it comes to sustainability and energy efficiency measures, the exhibitors at PaintExpo always consider the aspect of optimizing the coating processes in terms of economy and production technology.

## What are some of the outstanding new technologies / products being launched at PaintExpo 2024?

A large number of world, German and trade fair premieres will inspire visitors to PaintExpo 2024. The products and services presented at the trade fair cover the full range of industrial coating. As the world's leading trade fair for industrial coating technology, PaintExpo unites coating solutions for all industrial sectors, applications and materials under one roof and covers everything from wet coating and powder coating to coil coating. Products and services on show range from surface treatment products, paints and paint systems to final quality assurance.

A world première can be discovered at the OPTISENSE booth, for example: The PaintChecker Line and



*Ms Mariella Riedel, Project Director, PaintExpo.*

PaintChecker Angle laser sensors have been redesigned to eliminate the need for an additional housing bracket, thereby saving time during installation and simplifying assembly. According to OPTISENSE, its new generation of sensors can withstand even the harshest environments thanks to the robust industrial casing.

Furthermore, WALTHER TROWAL will be showcasing for the first time the new Rotamat R 100 designed for coating elastomer sealing components with bonded and decorative coatings. The latest addition to the Rotamat series can coat three times as many parts per batch as the next-largest system.

Numerous new developments can also be seen in the paint manufacturer sector: For example, trade visitors to the GEHOLIT + WIEMER booth can find out about a new single-layer textured coating, which guarantees reliable protection and an outstanding appearance thanks to its high



*This global get-together of the industry at PaintExpo makes it highly attractive for coating service providers and in-house coating companies from around the world.*



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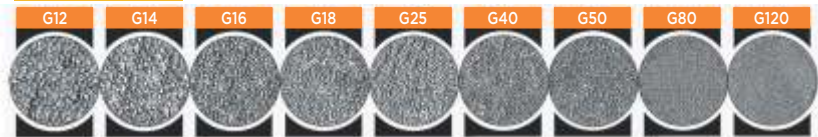


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PaintExpo focuses on the latest products, applications and future technologies in the coating industry and serves as a trend indicator for both visitors from Germany and those from abroad.

chemical and scratch resistance with a uniform texture. The coating adheres to different substrates and is applied in a single operation, saving energy and process costs.

These are just a few examples of the innovative power of the exhibitors at this year's PaintExpo, which awaits visitors from 9 to 12 April 2024 in Karlsruhe.

#### **What are some of the interesting programs / events you have lined up for PaintExpo 2024?**

Despite the very good and harmonious concept of PaintExpo, we are of course constantly developing the content of the trade fair. Exhibitors and visitors can look forward to an innovation this year: special interest topics will be introduced as part of PaintExpo 2024.

The new offering will focus on sustainability, careers and live experiences and will enable exhibiting companies to digitally present their thematically relevant offerings in the exhibitor and product directory in the run-up to the trade fair. With the help of the digital supplement, visitors can make targeted discoveries about these focal points at PaintExpo in Karlsruhe.

#### **Why is PaintExpo a must-go-to event for the industry?**

PaintExpo is the most important platform for all aspects of industrial coating technology. Numerous market and technology leaders will be exhibiting at the trade fair. For example, important industry players from Germany and abroad such as Axalta, DeFelsko, Dürr, Eisenmann, FreiLacke, Gema Switzerland, WAGNER, Krautzberger, Louis Schierholz, Nordson, PPG and Venjakob are registered as exhibitors. In addition, many interesting new exhibitors will also be there: among others, the specialist for heating industrial containers Neybo will be presenting their range of services for the first time at PaintExpo.

At this year's PaintExpo, more than 400 exhibitors will cover the entire range of international products and services in the supply chain for industrial coating technology. The portfolio of products and services ranges from pre-treatment, coatings, plant and application technology to final inspection and packaging. PaintExpo focuses on the latest products, applications and future technologies in the coating industry and serves as a trend indicator for both

visitors from Germany and those from abroad.

The trade fair is a globally unique get-together of industry players. This makes it highly attractive for coating service providers and in-house coating companies around the world and has established the event as the number one platform for information and procurement. Over the four days of the trade fair, PaintExpo offers plenty of scope for intensive technical discussions and networking with industry players from all sectors of the international coating technology industry.

#### **What are the key takeaways you are hoping for at this year's PaintExpo?**

PaintExpo provides numerous impulses for exhibitors and visitors and thus for the international coating technology sector. For example, the visitors can get a representative overview of the market. Current industry trends will also be highlighted. As part of PaintExpo 2024, the exhibitors will impressively demonstrate how they will optimize the painting processes of the future.

Thanks to its high degree of internationality, PaintExpo offers ideal opportunities to network globally. Important investment decisions are also prepared and made at the trade fair, to name another example.

#### **A brief about PaintExpo 2024...**

As already mentioned, PaintExpo 2024 will feature over 400 exhibitors from Germany and abroad. The exhibition space for this year's PaintExpo has already increased - several weeks before the start of the trade fair - compared to the previous edition in 2022. This

makes us proud, as the economic and global political conditions are currently particularly challenging.

Beyond that, we are currently still in contact with numerous interested companies regarding participation in the trade fair. We are convinced that we will be able to attract even more companies for the upcoming PaintExpo by the start of the trade fair in April.

Furthermore, PaintExpo once again has a lot to offer internationally: The proportion of international exhibitors - as of today - is over 40 percent. In addition to Germany, most of the exhibitors currently come from Italy, Turkey and Switzerland. And not only from Europe, but also from far beyond. For example, exhibitors from India include Prism Surface Coatings, Robmove Systems and Techexpert Engineering.

We have also noticed a great deal of interest on the part of visitors. The ticket shop for visitors has been open on the PaintExpo website since the end of January this year. For PaintExpo 2024, we are expecting at least as many visitors as at the last edition of the trade fair, where over 9,000 visitors came to find out about the latest industry developments.

However, the most important thing for us is to bring our high-quality exhibitors together with the right trade fair visitors again. Because our most important goal is that our exhibitors and visitors are very satisfied with the trade fair at the end.

---

*For information on exhibiting and visiting PaintExpo contact our India representative: **Bindiya Verma**  
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# Aditya Birla Group set to disrupt paint industry with 40% addition to industry capacity

*“Defining moment for the Aditya Birla Group, Birla Opus’ launch embodies the spirit of aspirational India,” notes Aditya Birla Group Chairman, Mr Kumar Mangalam Birla*

Aditya Birla Group Chairman, Mr Kumar Mangalam Birla, recently announced the launch of products and services under its new decorative paints brand, “Birla Opus,” aiming for Rs 10,000 cr gross revenue within three years of full-scale operations. This marks the Aditya Birla Group’s entry into the rapidly expanding Rs 80,000 cr Indian decorative paints market, with an unprecedented level of upfront investment of Rs 10,000 cr. Birla Opus business is being set up by the group flagship company, Grasim Industries Ltd.

Mr Birla said, “India today is teeming with dynamism, audacity, and a penchant for disruption. This India finds a reflection in our paints venture, Birla Opus. The Aditya Birla Group’s deep insight into the building materials ecosystem, honed

over the years, offers us a unique vantage point. Birla Opus, therefore, is poised to transform the paint industry with a 40% addition to current capacity. No paint company globally has ever launched in one shot— factories, operations, products, and services, at the scale that we are about to undertake.” He added, “Birla Opus should be seen as a scale start-up incubated by the Aditya Birla Group. It uniquely combines the agility, energy, and frugality of a start-up with the muscle, reliability, and brand strength of a storied and dynamic conglomerate.”

Birla Opus products will be available in Punjab, Haryana, and Tamil Nadu from mid-March 2024 and across all one lakh population towns in India by July 2024. The company aims to expeditiously expand its distribution to over 6,000 towns by the



Mr Kumar Mangalam Birla, Chairman, Aditya Birla Group.



*Birla Opus promises to simplify the consumer journey making the experience of painting enjoyable and contemporary.*

fiscal year end. This will be the fastest and widest pan-India launch by any paint brand.

The Aditya Birla Group Chairman also unveiled the brand logo of ‘Birla Opus.’ The name ‘Birla Opus’ embodies the trust that underpins the Aditya Birla brand, with ‘Opus’

signifying beauty personified. The word ‘Opus’ is derived from the Latin phrase “magnum opus,” which represents a great work of art.

“Birla Opus is all set to redefine standards on creativity, scale, transparency, technology, and sustainability. We are confident that the

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benefits of the competitive advantage built on the interplay of futuristic technology and pioneering chemistry will be passed on to the consumers through lower costs and consistency of superior quality. Birla Opus promises to simplify the consumer journey making the experience of painting enjoyable and contemporary,” stated Mr Himanshu Kapania, Director, Aditya Birla Group.

Birla Opus will offer the widest range in the industry, with 145+ products and 1200+ SKUs across water-based paints, enamel paints, wood finishes, waterproofing and wallpapers. The products offered will be across consumer segments – economy, premium, luxury, designer finishes and institutional clients. In addition, Birla Opus will present the largest range of 2,300+ tintable color choices including 216 iconic Indian colors.

The brand is also set to delight consumers through its direct painting services, PaintCraft. This one-stop-shop for a comprehensive range of products and services, at launch, is an industry-first.



Birla Opus will offer one of the widest range in the industry, with 145+ products and 1200+ SKUs across water-based paints, enamel paints, wood finishes, waterproofing and wallpapers.



Birla Opus has six strategically located, fully automated, integrated, and global scale manufacturing plants with a total commercial capacity of 1,332 MLPA (million litres per annum) - a quantum leap of 40% addition to the current industry capacity.

Mr Rakshit Hargave, CEO, Birla Opus, said, “On the back of strong in-house R&D, and extensive field validations, Birla Opus is committing to a higher product warranty than the leading players across most of water-based products. Birla Opus is also setting a benchmark by offering first-time warranty on enamels and wood finish products. As a customer-centric organization, Birla Opus is poised to introduce a unique and pathbreaking customer assurance program shortly. As part of the inaugural offer, consumers will get an additional 10% volume on water-based products and contractors will get loyalty benefits across most of our products.”

Birla Opus has already enrolled over 300,000 painting contractors and is starting the largest-ever sampling program.

To service the length and breadth of the country, Birla Opus is building the “second largest network” of dealers within the first year, with an aim to create win-win partnerships with dealers. Birla Opus is installing for free, new age compact tinting machines with 40% reduced footprint enabling easier colour adoption. Birla Opus is committed to meet industry standard of 4-hour delivery of its 1200+ SKUs to dealers in depot-towns through the largest network of 150+ depots integrated with the latest warehousing systems.

At the launch event, Mr Birla invited the entire spectrum of 100,000+ paint dealers pan India to participate in this industry revolution and transform consumer experience.

Birla Opus has six strategically located, fully automated, integrated, and global scale manufacturing plants with a total commercial capacity of

1,332 MLPA (million litres per annum) - a quantum leap of 40% addition to the current industry capacity. Panipat (Haryana), Ludhiana (Punjab) and Cheyyar (Tamil Nadu) Birla Opus plants were dedicated to the nation recently. Chamarajanagar (Karnataka), Mahad (Maharashtra) and Kharagpur (West Bengal) units will commence production over the course of FY25. All six manufacturing plants are fully sustainable with zero liquid discharge and equipped with 4<sup>th</sup> generation manufacturing technology to manage supply chain processes at lightning speed, zero defects and end-to-end traceability.

The Aditya Birla Group's entry into the paints market signals its confidence in the sector's future bolstered by the government's push for infrastructure development and housing for all. India's economy is expected to reach 10 trillion US\$ by 2034, with the paints sector set to surpass the Rs 3,00,000 crore mark by that time. Birla Opus is uniquely positioned to capitalize on this dynamic landscape.

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Statement about ownership and other particulars about COATINGS AND ANTI CORROSION ENGINEERING REVIEW to be published in the first issue every year after the last day of February.

- Place of publication: Mumbai
- Periodicity of its publication: Bi-monthly
- Printer's name: Franco Lonappan  
Nationality: Indian  
Address: 102, Dattar Mansion, C. S. Marg, Vakola Bridge, Santacruz (East), Mumbai 400055. Maharashtra
- Publisher's name: Franco Lonappan  
Nationality: Indian  
Address: 102, Dattar Mansion, C. S. Marg, Vakola Bridge, Santacruz (East), Mumbai 400055. Maharashtra
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Address: 3, Questend Apt., I.C. Colony, Cross Rd No. 1, Borivali (West), Mumbai 400103, Maharashtra
- Names and addresses of individuals who own the newspaper and partners or shareholders holding more than one percent of the total capital:  
Franco Lonappan, 102, Dattar Mansion, C S Marg, Vakola Bridge, Santacruz (East), Mumbai 400055, Maharashtra.

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-sd/  
Franco Lonappan  
Date: March 1, 2024



# Coating life and its selection for industrial applications

*A thorough approach to selection, preparation and application helps to ensure that decorative coatings provide long-term satisfaction – Prof. A. S. Khanna, Retd. IIT Bombay, Chairman SSPC India*

## Introduction

One of the easiest techniques of material protection is paint and coating, which serves primarily two purposes: aesthetics and corrosion prevention. Based on this, paint coatings can be broadly categorised into two terminologies: decorative coatings and industrial coatings. The primary purpose of decorative coatings is to improve the aesthetics of a surface while also making it look attractive and colourful. In some instances, other advantages such as increased strength and durability may also be realized.

A thorough approach to selection, preparation and application helps to ensure that decorative coatings provide long-term satisfaction. Just to give one example – the inside walls and external surfaces of buildings and structures have quite distinct requirements. Water proofing, a glossy finish, and anti-graffiti protection are some needs for indoor surfaces, whereas exterior walls and roofs need paint coatings that are long-lasting, anti-fungal, UV light-resistant, hydrophobic, anti-dust-pickup, and quickly changing colours.

Now let's examine several criteria needed to select a decorative finish. It is crucial to realize that selecting paint only based on colour is not

the greatest option. Instead, decorative paint should be selected first based on the substrate, which can be either concrete, steel, plastic, or wood. The second crucial decision is whether to choose an inside wall or an external wall, depending on where the object is located. Even inside walls, it makes a difference if they are the main drawing room, bedroom, kitchen, or bathrooms. In terms of colour, atmosphere, and durability, all may have a slightly different option. For example, bathrooms and kitchens may have more moist environments than other walls.

## Market for decorative paint

It has been discovered that the decorative paint market is significantly bigger than the related industrial sector on a global scale. According to a 2018 industry analysis, the decorative paint market accounts for around 68% of the overall US\$ 158 billion paint market, and the remaining 32% being industrial. The proportion of decorative paints is now estimated to be between 75 and 78 percent by various surveys<sup>[1,2]</sup>.

## Industrial coatings split-up

The break-up of Industrial coating was as follows: Transportation, which includes the automotive industry, accounts for 19% of the market. General industry,

which essentially implies painting steel structure in any industry, accounts for 16% of the market. Maintenance coating (14%) includes the application of surface-tolerant coatings, coatings for moist and wet surfaces, etc. Powder coating and automobile refinishing are the next (both at 9%). Marine still accounts for 5% of the market and mostly consists of naval constructions, ships, jetties, and offshore structures.

In a significant portion of the market (5%) for coil coating, steel is directly coated with various paints on thin foils. The packaging industry has a much smaller market share of approximately 3%. According to the current market research estimates, the global paint market has reached US\$ 184 billion with a CAGR of 4.6% in the present, and consequently, changes in the other industrial sectors would be comparable<sup>[3]</sup>.

As was already said, the first criteria used to select industrial paints is the type of

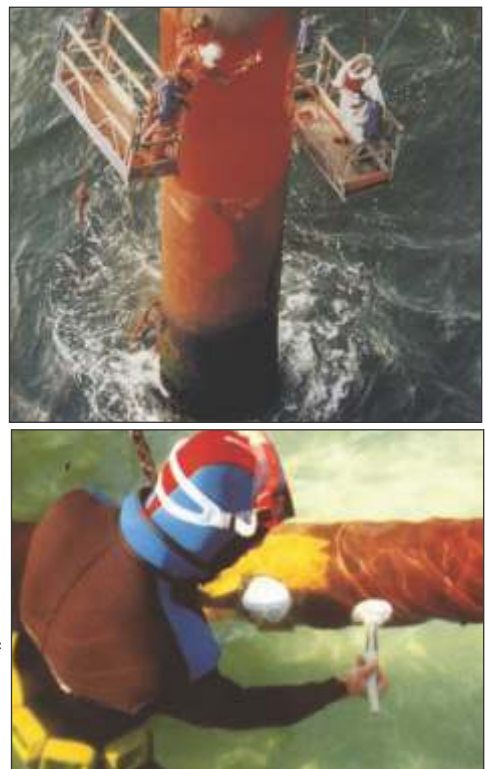


Fig. 1: Example of high performance coating (a) glass flake reinforced polyester coating to achieve 1000µm in one coat (b) underwater coating on the tidal zone.

resin used as the binder, which is classified into alkyd, acrylic, polyester, epoxy, and polyurethane based resins. For each, there are hundreds of formulations available to satisfy the functional requirements of the particular industrial challenge. The various paint coatings are separated into conventional and high performance coatings based on the modifications they have undergone. The latter category includes paint systems that may produce large coating thicknesses, such as several solvent-free

PHOTOS: AUTHOR

paint systems that have been strengthened with unique pigments like MIO (mica iron oxide), glass flakes, and fibre, among many others. Such high performance coatings can be used in harsh conditions with high humidity levels and impart greater strength in addition to prolonged endurance. Isophthalic ester-based polyester glass-flake coating is one such paint system that has gained a lot of popularity. It has the advantages of quick drying (due to radical-based mechanism), toughness (because of glass flakes), and increased thickness (due to lack of solvent). Such coatings are used on the splash zones of the piles of offshore constructions, which are the most corrosive locations in the C5M environment. (C1 to C5 are corrosion categories as defined by ISO 12944-2. See also Table 2.) The under-water coating, which employs the idea of water repellence during application, is another illustration of a high performance coating. A basic epoxy and an amine hardener with several amine groups, such as cycloaliphatic amine, are used to create this coating<sup>[4]</sup>.

The carbon to fluorine (C-F) bond provides the foundation for high performance coatings that can withstand environments that are strongly acidic, alkaline, or sewage-related. Resins with a fluoro-polymer basis are necessary to create coatings that can withstand very acidic environments. The most corrosion-resistant coatings are those made of PVDF. Aluminium-Composite Panel (ACP) facades, which have a lifespan of 20 years or

more, are used on the majority of multi-story structures have a thin 25 micron PVDF coating that protects the building from UV rays and acid rain. With the proper selection and blending of epoxy resin and nanoparticles, a high performance coating that can withstand all acids and be applied on storage tanks for acids and alkalis is also possible. Very small nanoparticles distributed in a two pack epoxy system were used to provide a highly acid resistant covering for battery pit areas in ships and submarines. Such a covering can withstand temperatures of 250°C while also resisting all acids<sup>[5]</sup>.

Using the silicon-oxygen (Si-O) bond is another way to provide a high performance coating, particularly for high temperature applications. From 300 °C and above, silicon base paint begins to resist temperature. Nevertheless, coatings made of poly-siloxane can withstand temperatures of up to 650 °C<sup>[6]</sup>.

The endurance of the coating is one of the factors considered while choosing industrial coatings. Many industrial applications have requirements of corrosion protection in the range from a few years to 25 years or even longer. What contributes to the coating's increased durability? The coating system, which essentially consists of surface preparation, primer application, intermediate coat, and final top coat, must be examined in order to fully comprehend that. The longevity of paint is determined by a proper combina-

tion of four along with appropriate thicknesses.

Let's use the straightforward example of an external steel structure in a C3 environment that has a zinc base primer coat, epoxy as an intermediate coat, and aliphatic polyurethane as the top coat to demonstrate this. The choice of zinc primers can provide a life of between 1-2 years to 25 years for a set thickness of top aliphatic polyurethane (50 microns) and intermediate epoxy coating (100 microns).

A composite coating that comprises of a priming layer that is mostly a zinc-based coating and provides the coating with cathodic protection determines how long a painted structure will last. The next step is to apply an intermediate coat of epoxy coating, which serves primarily as a barrier against the elements, moisture, and contaminants such chlorides, carbon dioxide, and sulphur dioxide. The top polyurethane layer shields the intermediate epoxy coat from environmental elements like UV rays from the sun, rain, and snow. Figure 2 depicts this schematically.

Now let's change the primer

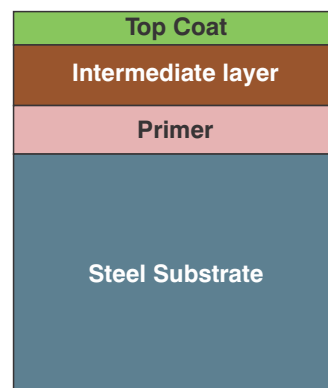


Fig. 2: Protection of steel structure using a three coat composite coating system.

layer by switching from one primer to another in a way that changes the amount of zinc in the coating, which essentially increases the coating's cathodic protection of steel and increases the coating's longevity. Table 1, column 2 lists the corresponding zinc levels for each zinc-based primer, and the last column lists the coating's durability. Thus, it is abundantly clear that a thermally sprayed zinc coating that provides 150 microns of 100% zinc or hot-dip galvanized steel, where a chemical layer of zinc is formed, can provide a life as high as 25 years or even longer than an inhibited epoxy coating with a zinc concentration of just less than 10-15%.

Now let's talk about a specific

Zn Coating	% Zn on Dry Film	Corrosion Effect	Durability
Inhibited Zn Coating	5-15	Very Little (No Cathodic Protection)	2-3 years
Organic Zinc Rich Coating	70-78	Reasonable Cathodic Protection	4-6 years
Inorganic Zinc Silicate	82-85%	Good Cathodic Protection	6-8 years
Cold Galvanized Coatings ZRC / Zinga	95-96%	Excellent Durability	10-12 years
Metallized Zinc Coating	100% (3 Times Coating Thickness)	Very Very Long Life	25-50 years
Hot Dip Galvanization	100% (Thickness 20-50 µm)	Long Life	35-60 years

Table 1: Showing the coating durability in terms of primer zinc content.



coating system, such as an epoxy intermediate coat of 100 microns and a top polyurethane coating (PU) of 50 microns that is appropriate for a C3 environment and has a life expectancy of 6–8 years. Now, if the environment changes from C3 to C4 or C5, all you need to do to get a life of 6–8 years is increase the coating thickness of the intermediate epoxy coat to 200 microns for C4 and 250–300 microns for C5. Table 2 provides an overview of the durability attained in different systems with coating thickness and type for C3-C5 settings for externally exposed utilities and internally exposed utilities<sup>[7]</sup>.

The choice of coating for various internal and immersion systems as well as for underground pipelines is similarly shown in Table 3. If the fluid is more corrosive, like sewage water or glycol, a high-performance epoxy coating with glass flake is

Environment Category as per (ISO-12944-2)	Surface Preparation Required as per ISO 8501	Coating System	No. of Coats	DFT in (µm)
<b>C 3</b> Non-immersion Medium Corrosion (Temperature up to 120°C)	Sa 2.5	<b>Medium Durability</b> 1 coat of Alkyd 1 coat of Alkyd modified with urethane	1 1	50 50
		<b>Long Durability</b> Primer: Zinc-rich Epoxy Intermediate: 2 Pack Epoxy Top Coat: 2 pack Aliphatic PUR	1 1 1	50 100 50
<b>C 4</b> Non-immersion (High Corrosion)	Sa 2.5	<b>Medium Durability</b> Primer: Zn-rich Epoxy Intermediate: Epoxy MIO Top Coat: 2 pack Aliphatic PUR	1 1 1	50 50 50
		<b>Long Durability</b> Primer: Inorganic Zn- Silicate Intermediate: Epoxy MIO Top Coat: 2 pack Aliphatic PUR	1 2 1	75 150 50
<b>C 5</b> Non-immersion Very High Corrosion (Temperature up to 120°C)	Sa 2.5	<b>Medium Durability</b> Primer: Inorganic Zn- Silicate Intermediate: Epoxy MIO Top Coat: 2 pack Aliphatic PUR	1 2 1	50 150 (2x75) 50
		<b>Long Durability</b> Primer: Inorganic Zn- Silicate Intermediate: high Build Epoxy MIO Top Coat: 2 pack Aliphatic PUR	1 2 1	50 200 (2x100) 50
<b>C 3</b> Non-immersion Medium Corrosion (Temperature up to 400°C)	Sa 2.5	<b>Medium Durability</b> Aluminum Coating	2	250
		<b>Long Duration</b> Primer: Inorganic Zn- Silicate Top Coat: Silicon Based Coating	1 2	50 200
<b>C 3</b> Non-immersion Medium Corrosion (Temperature up to 600°C)	Sa 2.5	<b>Medium Durability</b> Primer: Silicon Based Top Coat: Polysiloxane	1 2	50 250

Table 2: Description of the type of coating required and number of coats required for different corrosive environments <sup>[7]</sup>.

more durable. Nevertheless, for immersion service, such as the storage tank for oil,

crude, and process water, a simple solvent-less epoxy coating of thickness 500

microns is sufficient. As was already said, a sturdy 3 LPE system is preferable for



Environment Category as per (ISO-12944-2)	Surface Preparation Required as per ISO 8501	Coating System	No. of Coats	DFT in (µm)
<b>Immersion Service</b> Tanks for fuel, oil, crude, chemicals and process water	Sa 2.5	<b>Solvent Less Epoxies</b>	1	500
<b>Immersion Service</b> Sewage lines, water treatment facilities	Sa 2.5	<b>Glassflake Epoxies or Combination of Glassflake and Reinforced epoxies</b>	1 or 2	1000 or more
<b>Immersion Service</b> Splash zone in sea water Underwater	Sa 2.5 HA 2	<b>Polyester Glassflake Water Repellent Epoxies</b>	1 2	1000 2x400
<b>Immersion Service</b> Water Jetties Sea Water	Sa 2.5	<b>Glassflake Epoxy Or Novolac Epoxy</b>	1 or 2	1500-2000
<b>Immersion Service</b> Freshwater treatment facilities, locks and gates	Sa 2.5	<b>Solventless Epoxies</b>	1	1000
<b>Underground Structures</b> Gas Pipelines Water Pipelines	Sa 2.5	<b>External Oil &amp; Gas</b> 3 layer PE (FBE primer, adhesive and PE) <b>Water Pipelines</b> Coal tar or Tar Epoxy, tar-urethane <b>Liquid Epoxy, Elastomeric PU</b>	3  1	2000-3000  3000-5000 700-1000

Table 3: Different coating systems under internal and immersion systems along with underground pipelines<sup>[7]</sup>.



subterranean pipelines while a polyester glass flake is more reliable for splash zone applications. As a result, practically all industrial systems have solutions in Tables 2 and 3<sup>[7]</sup>.

### Conclusions

Paint coating is integrated into our daily lives. In addition to safeguarding our resources and industrial infrastructure, it also makes our homes, offices, and public buildings more attractive, shiny, and colourful. Since it covers our personal living spaces, work spaces, as well as a significant number of consumer durables, such as gadgets, we use in our daily lives, decorative paint dominates the coating market. The industrial market is separated into various segments, each with its own needs and requirements. The automotive industry is quite vast, and in addition to corrosion protec-

tion, some ornamental elements are also necessary. The main goal of new research and novel formulations is industrial application, which is extremely difficult. Because of this, a number of new terminologies are being used in industrial paints. The very basic recommendations in this article might help you visualise the wide range of paint finishes.

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### Author:



**Prof. A.S.Khanna**, is a retired Professor from the prestigious Institute, Indian Institute of Technology Bombay. He is now Chairman SSPC India, a

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# Do more for less with Intelli-ion®: Elevating anti-corrosion coatings with low loadings

## Introduction:

In the coatings industry, achieving optimal anticorrosion protection while being resource-efficient can be a challenge. Traditional approaches often rely on high loadings of corrosion inhibitors, which can lead to increased costs and environmental impact. However, with Hexigone's revolutionary Intelli-ion® technology, a paradigm shift is underway. Let's delve deeper into why our anticorrosion solution requires lower loadings compared to competitor products.

## Understanding loadings in anticorrosion coatings:

The term "loadings" refers to the amount of a particular ingredient, such as a corrosion inhibitor, added to a coating formulation. In the case of zinc phosphate, loadings of about 3 - 20% are often necessary to achieve desired levels of corrosion protection. However, this approach comes with drawbacks such as increased material costs, reduced formulation flexibility, and environmental draw-backs due to the presence of heavy metals.

## The Intelli-ion® difference:

Hexigone's Intelli-ion® technology represents a game-changer in the realm of anticorrosion coatings. Unlike traditional inhibitors, Intelli-ion® operates on a smart-release mechanism, wherein

corrosion inhibitors are released precisely when and where they are needed most.

However, what truly sets Intelli-ion® apart is its lower specific gravity (1.35) compared to conventional inhibitors. This unique characteristic allows Intelli-ion® to occupy more volume within the coating matrix, reducing the overall amount of inhibitor required for optimal performance. For example, the 1% in weight of Intelli-ion® will take-up 3% volume in the dry film thickness. As a result, coatings formulated with Intelli-ion® require 1/3 of the loading vs zinc phosphate (ZnP), leading to environmental benefits while maintaining anti-corrosion performance.

If you have previously

formulated for 3% of anti-corrosive pigment as part of your pigment volume concentration (PVC) in the dry film thickness, incorporating 1% of AX1 into your formulation will seamlessly integrate without compromising the critical CPVC (Critical Pigment Volume Concentration) of the system. This allows for the effective enhancement of corrosion protection while maintaining the integrity and performance of your coating.

## Salt spray testing: Unveiling the efficacy of low loadings

*Utilizing Intelli-ion® to replace current inhibitors*

The testing imagery next page showcases panel results following 1,000 hours salt-spray testing (ASTM-B117). A leading primer coating containing 5% zinc phosphate

was compared to formulations containing 0.5% and 1% of Intelli-ion®'s quick-release ion-exchange inhibitor – yielding excellent results. Significantly reducing the inhibitor loadings can offer coatings manufacturers lower costs\*, improved adhesion and differentiation in the coatings market [\*savings depend on current inhibitor loadings and currently inhibitor costs].

*Co-blending Intelli-ion® with phosphates*

Intelli-ion® also works alongside zinc phosphate to allow manufacturers to take a 'step-change' in their coatings formulation rather than completely replacing their current inhibitor - as demonstrated by the 1,000 salt spray results below (ASTM-B117).



Manufacturers are optimizing their formulations to at least half the amount of ZnP to add 0.5-2% of Intelli-ion® to take advantage of synergistic protection mechanisms and reduced raw material costs.

**Conclusion:**

In summary, Hexigone's Intelli-ion® technology offers a compelling solution for achieving the highest anticorrosion protection while minimizing material usage. By requiring lower loadings than



competitor products like zinc phosphate, Intelli-ion® can deliver cost savings, enhanced efficiency, and reduced environmental impact. With Intelli-ion®, coatings manufacturers can truly do more for less, ushering in a new era of sustainable corrosion protection.

Hexigone's ([hexigone.com](http://hexigone.com) / [info@hexigone.com](mailto:info@hexigone.com)) Intelli-ion® products are distributed in India by Ankush Enterprise.

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# Belzona cold repair solution for high-temperature corrosion in food industry steam cooker

*Traditional repair methods were deemed time-consuming, costly, and posed safety risks*

A prominent food manufacturing unit in India faced a critical issue with its steam cooker top cover, a crucial component in their food processing operations. The steam cooker's top cover had suffered from high-temperature corrosion, with constant exposure to steam at 130°C. Traditional repair methods were deemed time-consuming, costly, and posed

safety risks, prompting the client to seek a cold-applied solution to restore the equipment.

**The Belzona Solution:** Their experienced service engineer recommended Belzona's high-performance industrial paste-grade composite to efficiently restore the steam cooker top within a minimal outage window, thus saving

substantial costs compared to equipment replacement. For future protection a coating was installed over the rebuilt equipment.

**Pitting Repair**



PHOTOS: BELZONA

*Belzona 1511 is a heat-resistant epoxy paste designed for repairing and rebuilding areas damaged by corrosion or erosion at elevated temperatures.*

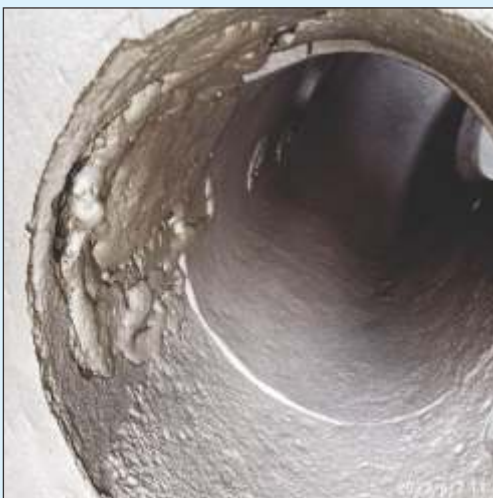
**and Surface Preparation:** Their service engineer found the inner wall of the steam cooker had lost surface integrity due to high-temperature corrosion (as seen in the pictures).

In this case the service engineer choose Belzona 1511 which is a heat-resistant epoxy paste designed for repairing and rebuilding areas damaged by corrosion or erosion at elevated temperatures.

**Surface Preparation:** Surface preparation was done by grit blasting to Swedish Standard Sa2½ with a minimum profile of 3 mils. And maintaining environmental conditions adhering to the Belzona Instructions for Use (IFU).

**Mixing:** Belzona 1511 mixed at a metric ratio of five parts base to one part solidifier, achieving a uniform streak-free grey color.

**Application:** An initial layer was applied with a brush, followed by rebuilding with more product using a Belzona applicator to restore the surface to its original profile.



*The steam cooker's top cover had suffered from high-temperature corrosion, with constant exposure to steam at 130°C.*



Belzona 1511 mixed at a metric ratio of five parts base to one part solidifier, achieving a uniform streak-free grey color.

Even spread to cover the entire damaged area.

**Curing:** Belzona 1511 left to cure for 4 hours, forming a strong and durable repair.

**Belzona 1593, overcoat application:** Belzona 1593, a 2-part hand-applied epoxy coating designed to provide long-term corrosion and chemical resistance to equipment operating in

continuous immersion at temperatures up to 160°C (320°F). This coating has a long overcoat window and its cold curing mechanism with full in-service cure reduces downtime and ensures rapid return of equipment to service.

This solvent-free coating is easy to mix and apply without the need for specialist tools, ensuring a simple and safe



Belzona 1593, a 2-part hand-applied epoxy coating designed to provide long-term corrosion and chemical resistance to equipment operating in continuous immersion at temperatures up to 160°C (320°F).



An initial layer was applied with a brush, followed by rebuilding with more product using a Belzona applicator to restore the surface to its original profile.



The steam cooker was ready to be put back into service after the 24-hour curing period.

application in confined areas.

Since the previous application of Belzona 1511 had a 24 hour over coat window, during this time Belzona 1593 was applied with no additional surface preparation. Using a brush or Belzona applicator, the product was applied directly onto the prepared

surface, ensuring a consistent coating.

**Completion:** The steam cooker was ready to be put back into service after the 24-hour curing period.

Feature courtesy: BELZONA



# Are you counting the cost of corrosion?

*Failure to count the cost of corrosion may leave manufacturers and facility managers blindsided by consequences such as faulty equipment, delayed production, and customer rust claims that must be made right*

The global cost of corrosion was an estimated US\$2.5 trillion in 2016, according to a study published by NACE International. Allowing for inflation, that number could easily surpass US\$3 trillion today. Unfortunately, many are not aware of the high price tag of corrosion even for individual businesses and corporations. Cortec® Corporation therefore encourages manufacturers, maintenance managers, and other decision-makers to consider the potential cost of corrosion and take reasonable measures to avoid it.

## Why count the cost of corrosion?

Failure to count the cost of corrosion may leave manufacturers and facility managers blindsided by consequences such as faulty equipment, delayed production, and customer rust claims that must be made right. Furthermore, without counting the cost, managers may have difficulty getting the approval needed to budget time and money for corrosion prevention. Counting the cost of corrosion helps achieve both the motivation and approval

needed to take corrosion protection measures.

## Identifying corrosion costs in manufacturing

Manufacturers who work with metal must beware of corrosion risks at every stage: receipt of goods, work-in-progress (WIP cycle), and export. Manufacturers can hope that suppliers will make good on any raw materials that arrive rusty on site, but they cannot make up for production delays or time lost negotiating the rust claim. In the WIP cycle, manufacturers lose time and sometimes metal when parts rust in between manufacturing stages and must be restored or scrapped. Export is even more dangerous. Unpredictable, fluctuating conditions inside a truck or shipping container may lead to corrosion from condensation by the time the customer receives the goods. This is perhaps the costliest



PHOTOS: CORTEC ADVERTISING

*Unfortunately, it is not uncommon for large warehouses to be full of rusty spares that are in no condition to use at a moment's notice.*

corrosion stage of all, as the manufacturer must remedy the damage done.

An example of how significant corrosion costs can be for manufacturers is apparent when calculating the price tag of a 1.5% economic loss due to corrosion at a hypothetical steel mill operating 24/7 and producing 100 ten-ton coils per shift, three shifts per day at a nominal material and manufacturing cost of \$300 per ton. In only one week, corrosion losses could be near 100 grand. At a fraction of the cost, manufacturers could avoid most of this loss by implementing Cortec®

VpCI® protective technologies and also avoiding the time lost for rework.

## Hypothetical steel mill cost of corrosion at 1.5% loss

Per Shift	\$4,500
Per Day	\$13,500
Per Week	\$94,500
Per Month	\$410,625
Per Year	\$4,927,500

## Identifying corrosion costs on Greenfield projects

New oil and gas facilities or other large-scale energy projects often take years to build. Meanwhile, custom assets shipped from afar may sit one or two years before



*Manufacturers who work with metal must beware of corrosion risks at every stage.*



Custom assets shipped from afar may sit one or two years before being installed. With inadequate protection, the component may be rusty and unsafe by commissioning time.



being installed. With inadequate protection, the component may be rusty and unsafe by commissioning time. Replacement could not only cost tens of thousands of dollars, but the time and distance required to make and deliver a new part could significantly delay the opening of the project. In contrast, internal protection with CorroLogic® VpCI®-339 Fogging Fluid and external protection with MilCorr® VpCI® Shrink Film could easily save not only the cost of the equipment but also the cost of the production otherwise lost by a delayed startup.

### Identifying corrosion costs on spares

The energy industry and other industrial plants also need critical and operational spares that can be installed quickly and efficiently if a main component fails or needs repair. Unfortunately, it is not uncommon for large warehouses to be full of rusty spares that are in no condition to use at a moment's notice. Even though some of these individual pieces may not cost much, the total cost of corrosion from lacking a clean spare can quickly add up to millions of dollars of lost production value from downtime, along with the cost of restoration and the intangible cost of safety issues that could arise from installing a faulty component. In contrast, a Cortec® restoration and preservation plan eliminates most of these costs and headaches with solutions that are easy to apply and remove.

### It's time to calculate your ROI!

Whether the calculation is done on paper or estimated mentally, counting the cost of corrosion gives a better picture of the importance of corrosion protection, allowing decision-makers to see the value of making a small relative investment in rust prevention to protect their bottom line.

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Feature courtesy:  
CORTEC CORPORATION  
(cortecvci.com)



# Noise and vibration coatings market size worth US\$ 3.1 billion in 2030 | CAGR:3.25%

*According to the Adroit Market Research, the global noise and vibration coatings market is valued at US\$ 2.5 billion and is expected to reach US\$ 3.1 billion at a CAGR of 3.25% in the year 2030*

Solutions for noise and vibration coatings saw an increase in demand in the industrial and commercial sectors by the middle of the 20<sup>th</sup> century. The options for noise and vibration coatings have been broadened by the introduction of novel materials such as viscoelastic polymers. Manufacturers of coatings started developing specialized coatings with improved damping and surface adherence. With the development of technology, scientists and engineers started employing sophisticated simulation and testing methods to improve noise and vibration coatings. The behavior of coatings under various situations was better understood and their efficacy increased with the use of

computer modelling and simulation techniques.

Acoustic coatings and soundproof coatings are specialized materials that are used to lessen noise and vibration in a variety of applications. These coatings are intended to reduce vibrations and reduce sound waves, which enhances the acoustic performance of buildings or machinery. Viscoelastic polymers and fillers are often used to create noise and vibration coatings. While the fillers improve the coating's mechanical strength and other performance attributes, the viscoelastic polymers offer dampening qualities. The primary purpose of noise and vibration coatings is to



PHOTOS 123RF

*The market for noise and vibration coatings is rising as people become more aware of the harmful consequences of excessive noise and vibrations on human health, comfort, and productivity.*

generate thermal energy from the kinetic energy of sound or vibration. The viscoelastic characteristics of the covering material, which disperse the energy as internal friction, enable this conversion.

Depending on the particular application and needs, the

thickness of noise and vibration coatings might change. In general, thicker layers provide superior vibration-dampening and noise-reduction capabilities. Based on elements like frequency range, anticipated noise levels, and material properties, the right thickness



*The construction sector will provide significant prospects for coatings to improve overall acoustic performance, minimize noise transmission in buildings, and other structures.*

is chosen. Different techniques, such as spray coating, brush or roller application, or the use of pre-formed sheets, can be used to apply noise and vibration coatings. The size, shape, accessibility, and coating substance are only a few examples of the variables that affect the choice of application technique.

The market for noise and vibration coatings is rising as people become more aware of the harmful consequences of excessive noise and vibrations on human health, comfort, and productivity. As more businesses and people realize how important it is to put in place efficient noise reduction measures, the use of these coatings is growing. Governments and regulatory agencies are enforcing stronger laws governing workplace safety and noise pollution. Noise and vibration coatings are in demand because companies must invest in noise and vibration-



*Demand for efficient noise and vibration coating solutions is growing as customer expectations for comfort and silence in transportation rise.*

dampening technologies to comply with these regulations.

In order to provide patients with a calm and therapeutic atmosphere, the healthcare industry needs noise control technologies. In order to reduce noise disturbances and improve patient comfort and well-being, noise and vibration coatings are utilized in healthcare facilities such as hospitals and clinics. The noise and vibration coatings market are expanding as a result of ongoing research and development to enhance

performance, adaptability, and application techniques. The creation of more efficient and customized solutions is made possible by advancements in coating formulas, testing procedures, and material integration.

Demand for efficient noise and vibration coating solutions is growing as customer expectations for comfort and silence in automobiles rise. This market has enormous potential for coatings that may reduce engine noise, reduce road vibrations, and enhance interior acoustics. The construction sector is in greater demand for noise control and vibration-dampening solutions due to the rise in infrastructure development projects throughout the world. This industry will provide significant prospects for coatings to improve overall acoustic performance, minimize noise transmission in buildings, and dampen vibrations in bridges and other structures.

Noise and vibration coatings might be advantageous for industrial machinery and equipment such as compressors, pumps, and manufacturing machines. Industrial

situations need coatings that may lower noise levels, absorb vibrations, and extend the life of equipment as well as maintain regulatory compliance. Noise and vibration coatings will have a competitive advantage if they provide energy-saving qualities and eco-friendly compositions in addition to good noise control and vibration dampening. Opportunities will be favorable for coatings that improve energy efficiency ratings and adhere to environmental standards.

The noise and vibration coatings industry is significantly dominated by North America. The regional market received significant contributions from the United States and Canada. The existence of crucial industries including automotive, aerospace, and construction, which needed efficient noise control and vibration-dampening solutions, fuelled the market expansion. Increased emphasis on energy efficiency and stricter noise pollution rules were two other elements influencing the industry in this area.

To find out more, visit [www.adroitmarketresearch.com](http://www.adroitmarketresearch.com)



*In order to provide patients with a calm and therapeutic atmosphere, the healthcare industry needs noise control technologies.*



# ON VOLUDE – the theme of BASF's 2023-2024 Automotive Color Trends collection

Each year, designers for BASF's Coatings (basf.com) division create a new collection of colors to inspire automotive designers around the globe. This year, non-human intelligence was a strong driver for the creation of the ON VOLUDE collection from Automotive Color Trends by BASF for 2023-2024.

When BASF's designers looked at what their trend signals were telling them, they realized it's time for a color update, as the classic automobile color wheel has had its day. Non-classic automotive hues emerged, propelling colors through a series of shifts reflecting a positive mood, with a focus on lighter shades and the exploration of new, expressive color spaces.

ON VOLUDE provides exciting colors that also adopt an increasing focus on sustainability and functionality. As customers rely on the BASF collection to design automotive colors for their future models, one will see the new direction on the road or in the driveway in the next three to five model years.

## EMEA – Exploring features beyond color position

The palette for Europe, the Middle East and Africa (EMEA) puts a highlight on bright beige colors. Pastels also play an important role, introducing interesting non-automotive color positions into automotive design.

As seen throughout the ON VOLUDE collection, colors in EMEA explore features far

beyond color position. They add sustainable, recycled raw materials, LiDAR and RADAR compatible concepts, and haptic surfaces.

“Expressive colors reflect our will to communicate and speak up,” said Mark Gutjahr, head of Automotive Color Design for EMEA. “When we bring non-automotive colors into the mix, we broaden that conversation even further into new and exciting color spaces.”

## Asia Pacific – Realistic approaches to sustainable concepts

For ON VOLUDE, designers in Asia Pacific (APAC) explored and enriched the important color spaces for whites and grays, while adventurous new color spaces like shimmering green pastel and fluorescent red offer new expressions to meet the growing individuality of car buyers in APAC.

The collection shows realistic approaches to sustainable materials, sustainable processes, and a diversity of sustainable concepts and effects.

“This palette can create amazing color harmonies that are futuristic, modern and playful interactions between color and effect combinations,” said Chiharu Matsuhara, head of Automotive Color Design for APAC. “These sustainable concepts are reimagined in a more realistic way, boosting BASF's leadership in sustainability.”

## Americas – colors evolving in their functionality

The Americas palette seeks



PHOTO: BASF COATINGS

The ON VOLUDE collection from Automotive Color Trends by BASF for 2023-2024.

optimism and divergence that celebrates possibilities in all modes of art and design. The color spaces are evolving in their functionality while building in excitement.

The collection features softer hues, minimized textures and subtle moves that aspire toward future goals near and far. Colors in the Americas contribute to cooling effects in the vehicle with solar reflectance, work with sensor-based mobility concepts, and explore more approaches with responsible raw material sourcing.

“In this year's collection, red leaning pastels and mid-tones are replaced by restorative yellow and green effects suggesting renewal,” said Liz Hoffman, head of Automotive Color Design for the Americas. “The connection complements both grounded color spaces and otherworldly escapes. It shows evolving mindsets in automotive design.”

## Color expertise of BASF Coatings

Every year, the designers of

BASF's Coatings division study future trends which they use as foundation for the development of surface, texture and color positions. They draw inspiration from industry, fashion, consumer products, nature, technology, and more. This research is shared with BASF's customers, the automotive designers, to drive future mass production plans.

ON VOLUDE contains functional concepts with realistic approaches. BASF's designers set a global benchmark in color by also focusing on technology and innovation, which are important drivers for the automotive industry. The target is to meet those functional requirements while still being visually and haptically exciting.

BASF also leads the world in the global tools it uses to create new designs and share them with automotive designers. By using BASF's AUROOM® – a digital platform providing digital color – the design process is faster and more efficient.

## New global patents for C5 corrosion protection

Hexigone Inhibitors – an innovative manufacturer of Intelli-ion anticorrosion technology – has recently been granted patents across several key regions, including Europe, the United States, China, and Indonesia. These patents validate the sustainable technology and emphasize Hexigone's commitment to revolutionizing corrosion protection in coatings, notes a press release from the company.

Intelli-ion ensures the highest corrosion resistance, meeting the demanding "C5" standard in both solventborne and waterborne formulations. It offers the market a sustainable alternative to traditional inhibitors through its 'smart' ion-exchange protection mechanism. The granted patents protect the Intelli-ion

technology as well as the synergistic use alongside phosphate-based inhibitors.

Dr Patrick Dodds, CEO at Hexigone, highlighted the strategic significance of the patent grants, stating: "The patent strategy strongly aligns with our growth plans on a global scale – and adds to our existing patents in the UK and Japan. It not only validates the science behind our anti-corrosives but also bolsters our commitment to offering a new standard in coatings protection across key industries. By working with competitor products, we can also offer decreased raw material costs as well as performance enhancement."

Hexigone partners with Azelis as its specialty chemical distributor in the EU. Dan Mathias, Azelis' Marketing

Manager - CASE, further remarked: "Sustainability is one of the three strategic pillars at Azelis, together with innovation and digitalization. Our customers are enthusiastic about Hexigone's anticorrosive technology. Its protection capabilities are impressive, and the added benefit of improved adhesion further enhances its appeal. Our promise is 'Innovation through formulation,' whereby we combine ingredients with technical expertise to create opportunities through innovation, so the novel Intelli-ion technology aligns well with our mission."



*New patents granted across several key regions validate the sustainable technology and emphasize Hexigone's commitment to revolutionizing corrosion protection in coatings.*

Intelli-ion has received global recognition, winning awards from the British Coatings Federation and EcoVadis (Gold). With 17 distributors, Hexigone is poised for significant market expansion in 2024 and invites coatings manufacturers to collaborate to create smart coatings, the press release concludes.

## Hempel launches leading intumescent coating estimation software

Hempel has announced the launch of HEET Dynamic, an innovative new coating software specially designed to make intumescent coating estimations on steel sections quicker, easier and accurate for structural engineers and estimators, notes a press release from the company.

Hempel Engineering and Estimation Technology 'HEET' Dynamic empowers users to make efficient and effective fire protection decisions quickly and easily, offering up to 10 times faster calculations, without consulting third party engineering services or PFP (passive fire protection) coating providers.

Built with the user in mind, Hempel's HEET Dynamic software automatically performs volume calculations with 100% estimation accuracy to detail the intumescent coating required for a project. In accordance with location and design codes, calculations are based on steel profiles, fire ratings and fire testing standards.

J&D Pierce (Contracts) Ltd, said: "It is a very good piece of software for our engineers and designers. It allows us a lot of flexibility when designing structures without the need to keep contacting Hempel.

Easy to download and simple to use, HEET Dynamic is up

to date with latest industry standards, providing an innovative software that makes light work of complex situations. Using in-built calculators for automated thickness and volume calculations, HEET Dynamic features a simple copy and paste functionality to give the user full control.

HEET Dynamic includes section factor calculations, default limiting temperatures,

cellular beam calculations, a customizable user interface and project dashboard with libraries feature. These combined features deliver efficient calculation accuracy, without the need for overly complex technologies.



*Easy to download and simple to use, HEET Dynamic is up to date with latest industry standards, providing an innovative software that makes light work of complex situations.*



# Technical Drying Services, from the house of Pahwa Group, celebrates 25 years of empowering industries

Pahwa Group's leading brand, Technical Drying Services (TDS) celebrated the completion of 25 years in the industry. On the occasion of the silver jubilee, the company pledged to boost its innovative endeavors to amplify its leadership position in providing quality air solutions.

The brand came into existence in the year 1998 with the vision to enable temporary desiccant dehumidification and deploy air solutions to inhibit the moisture threats impacting a wide range of industries. Under the leadership of Deepak Pahwa, the company has achieved significant milestones by registering growth from a handful of clients in the beginning to expanding to 400+ clientele at present.

Over the span of 25 years, the brand has successfully provided its services to some of the leading companies across the industries, namely Reliance Industries, ONGC, Tata Steel, Sun Pharma, JK Cement, etc, to list a few. In addition to this, during the

rainy season, when various parts of the country suffer from flooding situations, the rental services of TDS play a crucial role in mitigating the national loss with the help of advanced dehumidification solutions. In a recent flood in Chennai, the Water Damage Restoration solution from the house of TDS immensely contributed to safeguarding and restoring the assets damaged in the deluge situation.

Driven by its unwavering dedication to ensuring customer satisfaction, TDS has been continuously upgrading and tailoring its services to meet the perennially changing demands of the industry. Given to its persistence, the company has been establishing a strong foothold in the country, with a presence in Haryana, West Bengal, Maharashtra, Gujarat, Tamil Nadu, and Telangana, along with an international office in Malaysia.

Speaking on the occasion, Deepak Pahwa, Director, Technical Drying Services, said, "The team at TDS



*The team at TDS diligently works towards innovating continuously to provide breakthrough, cutting-edge solutions for guaranteeing customer satisfaction.*

diligently works towards innovating continuously to provide breakthrough, cutting-edge solutions for guaranteeing customer satisfaction. Discerning that TDS finds application in an inherently vulnerable industrial setup, there is a need to provide immaculate systems devoid of any scope of error to protect the integrity of the company as well as the lives of on-ground employees working there. In this pursuit, we invariably strive to provide best-in-class dehumidification solutions coupled with highly skilled, NACE trained Airingers to deliver the quality of work necessary for the industries."

Since its inception, TDS services have been giving the desired fillip to various companies. The brand comes with the expertise to provide industrial project solutions and quality air solutions for ensuring access to safe confined areas. At the same time, the safe preparation and coating application empower the power plants by minimizing loss incurred due to corrosion and premature coating failure. Likewise, the Water Damage Restoration service contributes to reducing the loss of property and life with the restoration of water-damaged assets.

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# Researchers develop drones-sprayable coatings to protect wind turbines from ice

Damp, cold conditions are the enemy of wind power. If a layer of ice forms on the rotor blades, this can result in rotational imbalance and, hence, increased wear. In such cases, the turbines often have to be shut down for several days, leading to massive losses for the operators due to the pause in electricity production. Now, for the first time, a Fraunhofer team has succeeded in using drones to protect rotor blades against ice. The new technique has been developed jointly by experts from the Fraunhofer Institute for Manufacturing Technology and Advanced Materials IFAM and the Fraunhofer Institute for Manufacturing Engineering and Automation IPA in the project “TURBO — Temporary coating by means of drones.”

Up to now, operators who wanted to protect their wind turbines against ice had to dig deep into their pockets: Heating mats that can be integrated in the blades or systems to pump warm air into the rotors are extremely expensive — as is the use of

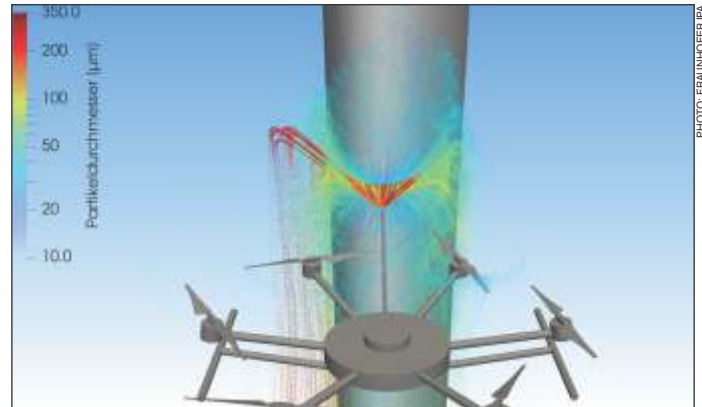
helicopters to spray de-icing agent onto the turbines.

“Drones that are only used when needed offer a cost-effective alternative,” says Andreas Stake, project manager at Fraunhofer IFAM. However, in order to use drones to prevent ice, a number of conditions have to be met: As well as being environmentally friendly, the coating materials need to demonstrate good adhesion and sufficient durability so they remain on the rotors for weeks and protect them from ice. The spraying system used needs to be highly accurate but lightweight at the same time. And finally, the drones need to have a high payload and allow for very precise control.

## Important for wind turbines: environmentally friendly materials and precise application equipment

The Fraunhofer researchers working on the TURBO project succeeded in developing a prototype which fulfills all of these requirements: The coating material designed by the scientists at Fraunhofer IFAM in Bremen is made from urea and wax, is environmentally friendly and demonstrates good adhesion. This material can be applied quickly and easily using a spray technique and also dries quickly. The coating underwent testing in an ice chamber at the institute to confirm that it reliably protects against the formation of frost.

The team at Fraunhofer IPA built the equipment used to apply the coating. It consists of a small pump which presses the fluid urea/wax mixture at high pressure into



Simulation of coating by means of drone under the influence of wind.

a long, thin lance, at the tip of which is a nozzle with a diameter of just 0.3 millimeters. This airless pump system is able to produce droplets with a diameter of 100 micrometers. Even at wind speeds of 35 kilometers per hour, these droplets can still be sprayed precisely onto the edges of the rotor blades where they then solidify. The edges are particularly important as this is where the icing process starts when wet, cold air hits the turbine.

## Ensuring success with simulations

Dr Oliver Tiedje, project manager at Fraunhofer IPA, and his team determined the technical parameters — for example, the required pressure, an efficient atomization method and the optimum droplet size — using fluid dynamic simulations. “Our decades of experience in modeling coating processes really helped us out. We were able to draw on this expertise,” says the physicist. “However, we did have to adapt the process parameters to the complex geometry of the wind turbines.”

The researchers now intend

to work with industry partners to develop the technique further and get it ready for series production. There are numerous applications in which drones can be used to apply coatings, ranging from ice protection for wind turbines and overhead lines in rail transport to building refurbishment — for example, repairing defects in render on parts of buildings that are difficult to reach.

The “TURBO: Temporary coating by means of drones — Icing protection of wind turbines as a case study” project was supported by 19 companies including coating and raw material manufacturers, manufacturers of coating equipment and drones, and operators of wind turbines. The project was submitted to the German Federation of Industrial Research Associations (AiF) via the Research Society for Pigments and Paints (FPL) as an Industrial Collective Research project (IGF) and is funded by the Federal Ministry for Economic Affairs and Climate Action (BMWK), Germany.



Coating drone during a spray test: The coating material is applied by the drone via a lance.

Date	Course	Place	Organizer	Contact Details
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APR 08 – 12, 2024	CSWIP 3.1 Senior Welding Inspector Level II	Kochi	Blastline Institute	T: (484) 2408477 E: info@blastlineinstitute.com W: blastlineinstitute.com
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APR 22 – 26, 2024	CSWIP 3.1 Senior Welding Inspector Level II	Kochi	Blastline Institute	T: (484) 2408477 E: info@blastlineinstitute.com W: blastlineinstitute.com
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MAY 13 – 17, 2023	CSWIP 3.2 Senior Welding Inspector Level III	Kochi	Blastline Institute	T: (484) 2408477 E: info@blastlineinstitute.com W: blastlineinstitute.com
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MAY 20 – 25, 2024	Basic Coatings Inspector – CIP Level I Course	Kochi	Corcon Institute of Corrosion	T: (022) 24106494 E: info@corrosionindia.org W: corrosionindia.org
MAY 27 – 31, 2024	CSWIP 3.1 Senior Welding Inspector Level II	Kochi	Blastline Institute	T: (484) 2408477 E: info@blastlineinstitute.com W: blastlineinstitute.com
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# AMPP Annual Conference + Expo sets the agenda for the future of the industry

Artificial intelligence (AI) will lead to a promising future and is not to be feared, renowned physicist Michio Kaku told a packed house as the keynote speaker for the 2024 AMPP Annual Conference + Expo held at Ernest N. Moria Convention Center, New Orleans, USA, March 3 through 7, 2024.

Targeting his message to his audience with references to corrosion and the future of construction, the professor of theoretical physics at the City University of New York presented his vision of a future paved by AI and nanotechnology.

He doused fears of a future led by out-of-control AI, saying a scientist views chatbots and other forms of AI as similar to a tape recorder.

“A tape recorder faithfully records the human voice, and then you can chop it up and reassemble it to create something new,” he said. “A chatbot goes into this gigantic structure called the Internet, isolates what you want, chops it up, splices it together, and puts it out for you. So chatbots are nothing to be afraid of. They are simply glorified tape recorders. They don't think. They're not original.”

The author, whom AMPP CEO Alan Thomas called “one of the world's leading scientific figures,” envisions a future where structures with embedded sensors will report

their own incidences of corrosion. Furthermore, cars will tell their owners when their engines begin to suffer from wear and tear.

“Now we have artificial intelligence, eyes and ears around the world that can spot the decay of our infrastructure without having to see bridges fall down,” Kaku said. “And this is not just bridges. It affects society in general.”

Leaving a valuable mark on the field of material protection and performance, the event brought together more than 6,000 attendees, 381 exhibitors and more than 400 papers presented, providing the backdrop for breakthroughs and enriching discussions aimed at shaping the future of the industry.

Here, attendees had the opportunity to immerse themselves in a packed agenda of technical sessions, hands on workshops and exhibits that highlighted the latest trends, technologies and strategies in the corrosion protection, surface coating and material integrity.

These presentations provided an array of opportunities to learn about and delve deeper into critical issues, explore new technologies and discover innovative practices that are shaping the future of the industry.

Awards programs at the March 2024 show included AMPP's Scholarship Awards



and EMERGING Leaders Bash (sponsored by BP and Sherwin-Williams), along with the association's Honoree Night — which celebrates the association's annual service, technical, and project award winners for that year.

Held by the Association for Materials Protection and Performance (AMPP), each year's show represents the industry's largest and most comprehensive event, all while offering an occasion to reconnect with friends and network with industry peers.

This year's conference was the third held by AMPP since the 2021 merger between legacy organizations NACE International and SSPC: The Society for Protective Coatings. With that storied history in mind, the show aims to provide everything attendees valued from the legacy CORROSION and Coatings+ events.

With its successful 2024 edition, the AMPP Conference has not only reaffirmed its

position as the premier event in the field of material protection and performance, but has also set the agenda for the future of the industry, promoting sustainability, innovation and technical excellence.

Looking to the future, the AMPP Conference continues its mission to foster professional development and technological innovation. The next edition, to be held in Nashville from April 6 to April 10, 2025 promises to bring even more opportunities for learning, knowledge sharing and collaboration, ensuring that the global materials protection and performance community remains at the forefront of science and technology.

Undoubtedly, this event is key for professionals, students and emerging leaders in the industry, offering cutting-edge technical content and enriching experiences that foster professional and personal growth.

# HANNOVER MESSE energizes a sustainable industry

*Exhibitors at HANNOVER MESSE demonstrate how companies can most efficiently use automation, artificial intelligence and renewable energies to achieve these goals.*

“Innovative technologies like those we see in April at HANNOVER MESSE are paving the way to a climate-neutral, high-performance industry,” said Arno Reich, Senior Vice President of Trade Fair and Product Management at Deutsche Messe AG. “However, companies need guidance on how to apply automation, artificial intelligence and energy management concepts. Furthermore, bureaucracy and a shortage of skilled workers are limiting growth potential.”

HANNOVER MESSE 2024 provides the answers to these challenges under the lead theme of “Energizing a Sustainable Industry.” According to Reich, “The solution is a mix of new technologies, cross-industry collaboration and a clear political framework.” At HANNOVER MESSE, companies from the mechanical engineering, electrical engineering and digital industries as well as the energy sector come together to present their solutions for a greener future. More than

4,000 companies represent a united industrial ecosystem and demonstrate how automation, digitalization and electrification can enable climate neutrality.

HANNOVER MESSE is the world's leading trade fair for industry. Its lead theme of “Industrial Transformation” brings together exhibiting companies from the mechanical engineering, electrical engineering and digital industries as well as the energy sector to present solutions for future production methods and the energy supply. Key topics include Industrie 4.0/Manufacturing-X, Energy for Industry, Digitization/Artificial Intelligence and Machine Learning, Carbon-neutral Production, and Hydrogen and Fuel Cells. The program is complemented by a series of conferences and forums. The next edition of the event runs in Hannover, Germany, April 22 – 24, 2024.

Exhibiting companies include global technology enterprises such as Amazon Web

Services, Bosch Rexroth, Google Cloud, Microsoft, Salzgitter AG, SAP, Schneider Electric, and Siemens as well as small and medium-sized enterprises such as Beckhoff Automation, EBM-Pabst, Festo, ifm electronic, igus, LAPP, Pepperl+Fuchs, Pilz, Q-CELLS, Rittal, Turck, and WAGO.

Leading research organizations such as Bavaria Innovative, various Fraunhofer institutes, the Karlsruhe Institute for Technology (KIT), and Germany's Ministry of Education and Research spotlight the current state of R&D and technology transfer. More than 300 industrial startups boost the focus on entrepreneurship and innovation.

Green hydrogen is gaining more and more traction as governments and companies invest in projects to decarbonize sectors such as manufacturing and transportation. HANNOVER MESSE features roughly 500 companies from the hydrogen and fuel cell industry, including more than 300 at the group exhibit Hydrogen + Fuel Cells Europe.

Norway is Partner Country at HANNOVER MESSE 2024. With the theme “Norway 2024: Pioneering the Green Industrial Transition,” the country highlights its plans for converting to a low-carbon society and its key role in developing solutions within sectors such as renewable energy, carbon-neutral

production, and application of green and digital solutions. The Norwegian-German Energy Conference on April 23 examines a hydrogen economy that creates investment security for infrastructure, production, transport, storage, and distribution.

Two months before elections in Europe, the European Union presents itself at HANNOVER MESSE as a strong economic alliance. Ursula von der Leyen, President of the European Commission, kicks off the program with a speech at the opening ceremony on April 21. The EU's program during the fair includes the conference “EU as Home of Decarbonized Industry” – where industry representatives can meet EU politicians to discuss topics such as the Green Deal – and the European Commission Pavilion.

A shortage of skilled workers remains a challenge in industry. YOUR FUTURE is HANNOVER MESSE's young talent initiative that encourages high school graduates, college students and young professionals to pursue careers in areas such as AI, engineering and robotics. The program consists of meetings with potential employers, guided tours to sponsoring exhibitors, information on apprenticeship and trainee programs, and networking with other participants.





# parts2clean 2023: First-rate contacts, new projects and concrete deals

Deep-going technical discussions, a strongly attended Expert Forum and a positive overall mood on all three days of the fair testified to the fact that the 20th parts2clean, ending on September 28, fulfilled all expectations. More than 3,000 trade visitors came to the event at the Stuttgart Exhibition Center, Germany, the majority of them armed with current tasks and projects as well as a thirst for new information. This resulted in numerous high-quality contacts, new projects and even direct business deals for the more than 150 exhibitors from 14 nations at the event. The highlight theme of "High Purity," which was added to the core areas of this, the leading international trade fair for industrial parts and surface cleaning, made a major contribution to the substantial increase of around 33 percent compared to the previous year.

"In this way, we have placed a stronger focus on the range of solutions offered at parts2clean for tasks where the highest cleanliness requirements need to be met," reports Christoph Nowak, Project Director at Deutsche Messe, "and we have thus succeeded in attracting more visitors from the affected industries to parts2clean."

This was confirmed by Dr.-Ing. Günther Schmauz, board member at acp systems AG: "With our high-purity snow blasting cleaning solutions, we were previously more of a niche supplier at parts2clean. At this year's event, however, we were able to welcome a large number of trade fair guests from the fields of EUV

lithography, including system partners and suppliers, as well as electromobility. The latter ranges from battery manufacturers and suppliers of components for power dissipation and energy management right through to electric motors. For us, parts2clean 2023 went very well."

Jan Gerbrands, CEO at Netherlands-based Brookhuis Applied Data Intelligence B. V., a manufacturer of products for optimizing cleanroom operations, expressed similar sentiments: "It was a fantastic show for us, as we were able to generate many new contacts." And, according to Rainer Straub, Board of Management and Vice President Sales & Customer Service at Ecoclean GmbH: "parts2clean was significantly more successful for us this year than in 2022, certainly due to the highlight theme of 'High Purity', which is a focal point in our program at Ecoclean. This helped us to attract new visitors."

The fact that most of them were able to hold highly detailed discussions about specific projects was due to the above-average percentage of trade visitors (99%). About 88% of them were involved in operational investment decisions, and about 78% visited the trade fair looking to make purchases.

And these were directly implemented at parts2clean, as Wolfgang Prem, Managing Director of Maschinenbau Silberhorn GmbH, reported: "This year we are taking away a whole lot of good leads with visitors from companies we did not know before. But the highlight of our participation



PHOTO: DEUTSCHE MESSE AG

in the tradeshow was that we were able to sell one of our new MWS cleaning systems to a company from Israel directly at our booth. It was a first contact that occurred right here at the show."

Manfred Holzleg, General Manager of Safechem Europe GmbH, also expressed his satisfaction: "At parts2clean, we always have the opportunity to meet a diverse audience. This year, we were able to hold numerous discussions, especially with visitors from industries that are new to us, and we can also open up new business fields as a result. However, parts2clean is also important for us from the point of view that the world market and technology leaders from the various areas of industrial cleaning technology come together here, and we can exchange information about developments and trends in an interdisciplinary manner."

Bahadır Kök, Sales Manager of the Turkish company Everest Elektro Mechanik Makina Sanayi Ve Tic. A.S. took a similar view: "parts2clean is one of the most important trade fairs for Everest. In order to become more independent from the automotive industry, we have

developed new systems in line with the current standards in medical technology, which we are presenting here.

"We also invited our dealers from various countries to attend the fair so that we can present these new developments to them." Maria Laure from the New Business Perfect Welding division at the Austria-based Fronius International company assesses her participation in the trade fair in the following light: "We participated in parts2clean for the third time and have noted a positive development, both in terms of visitor numbers as well as the international makeup. We conduct around 50% of our discussions in English. These are thorough-going discussions that deal with specific tasks, and in some cases the visitors even bring along the workpieces to be cleaned."

Strong demand for information drives record attendance at Expert Forum: "A magnet for visitors has always been the bilingual Expert Forum at parts2clean," remarks Nowak. "But this year it underpinned its status as one of the world's most sought-after sources of expertise on industrial parts and surface cleaning, drawing record attendance."

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APR 09 – 12, 2024	PAINTEXPO 2024	Karlsruhe, Germany	Leipziger Messe GmbH	T: +49 341 678 0 E: info@leipziger-messe.de W: leipziger-messe.de
APR 16 – 18, 2024	MIDDLE EAST COATINGS SHOW	Dubai World Trade Centre Dubai, UAE	dmg.events	T: +971 4 4453773 E: paddyoneill@dmgevents.com W: middleeastcoatingsshow.com
APR 22 – 26, 2024	HANNOVER MESSE	Hannover, Germany	Deutsche Messe AG	E: info@messe.de W: messe.de
APR 30 – MAY 02, 2024	AMERICAN COATINGS SHOW 2024	Indiana Convention Center Indianapolis, Indiana, USA	American Coatings Association	E: chames@paint.org W: american-coatings-show.com
MAY 15 – 17, 2024	INTERNATIONAL COATING INDUSTRY EXPO	Poly World Trade Centre Guangzhou, China	China Coating Alliance International	T: +80-20-29193563 E: sfexpo@hotmail.com W: coatexpo.cn
JUN 12 – 16, 2024	COATINGS EXPO VIETNAM 2024	SECC Ho Chi Minh City, Vietnam	VEAS	T: +84 28 38488561 E: info@veas.com.vn W: coatings-vietnam.com
JUN 19 – 22, 2024	SURFACE & COATING 2024	BITEC Bangkok, Thailand	RX Tradex	T: +66 2686 7222 E: surfaceandcoatings@rxtradex.com W: surfaceandcoatings.com
JUN 27 – 29, 2024	EXPO PAINT AND COATINGS 2024	Pragati Maidan New Delhi, India	Toredo Fairs India Pvt Ltd	T: (91) 98453 63225 E: info@expopaintcoating.in W: expopaintcoating.in
AUG 29 – 31, 2024	COAT INDIA 2024	Yashobhoomi, Dwarka New Delhi, India	ACEXM7 Events Pvt Ltd	E: support@acem7.com W: coatindia.in
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NOV 11 – 14, 2024	ADIPEC	Abu Dhabi, UAE	dmg events	E: enquiry@adipec.com W: adipec.com
FEB 17 – 19, 2025	SAUDI ARABIA COATINGS SHOW 2025	Dhahran Expo Damman, Saudi Arabia	dmg Events	W: saudiarabiacoatingsshow.com E: andrewgathercole@dmgevents.com

*Please note, schedules are subject to last minute changes.*

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