



COATINGS AND ANTI CORROSION ENGINEERING REVIEW

December 2022 - January 2023 | Volume 13 Issue 5 | ₹ 100



Major construction, oil and gas pipeline projects driving demand for paints and coatings in the Middle East



Interview

Mr Rajesh Marwaha

*National Sales Manager,
Technical Drying Services (Asia) Pvt Ltd.*

Technical Feature

Sustainable antifouling by controlled release from polymer bound Selektope®

TINKER & RASOR

RELIABILITY, QUALITY PRODUCTS & UNMATCHED CUSTOMER SERVICE!



MODEL APS
High Voltage
Holiday Detector
800v - 35,000v
Stick -type unit with
safety switch, volume
control and side

handle for easy control on long pipe
projects.



**Reference
Electrodes**

- Copper/Sulfate
- Silver/Chloride
- Portable
- Direct Burial



MODEL DL-1
4 Channel Data
Logger
Record DC and AC,
with and without filters.
Easy to use software
included at no charge



**Cathodic Protection
Test Stations**
Tough plastic materials
with UV protection,
Rapid Connect binding
posts. Test Stations with

removable covers, exposed terminals, At
Grade test stations and riser pipe are also
available.



**Accuracy
Verification**
Amp Clamp, Ammeter
and Voltmeter
verification instruments.
Includes calibration
documentation.



**MODEL M/2 Low Voltage
Holiday Detector**
The "wet sponge" type holiday
detector for thin film coatings meets
BS EN ISO 28765:2016.
9v, 67.5v and 90v outputs.
Very strong wand and extension
handles.
Ergonomic handle
Locking ground cable w/ clamp.
Large sponge and carryall included.
Other sponges available, including
for internal pipe coatings.
Operates from 9v battery



MODEL AP/W
High Voltage
Holiday Detector
800v - 35,000v
The best choice for all
coating inspection
applications, including

pipes, tanks, concrete and more!



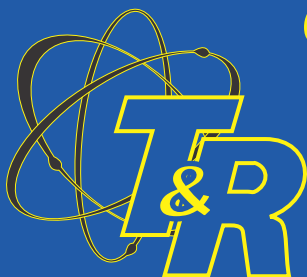
**MODEL TRiStar 50
Amp
Current Interrupter**
GPS Controlled, 50
Amp, 6000 Watt
current interrupter,
0.005s - 99.99m
Powered by 120v/240v
AC.



MODEL SR-2
Soil Resistivity
Measurement
• 0.1 ohm to 3 MOhm
• 4 Pin Wenner
• 3 Pin Fall of
Potential
• 2 Pin
• Soilbox available



MODEL CS-10
10 Amp Portable
Current Supply
1A and 10A range
Current adjust
LCD display
Internal battery,
external 12v source.
Interrupt features



www.tinker-rasor.com
Info@tinker-rasor.com

Contact our Exclusive Distributor in India:



ICS Technologies
<http://www.icstechnologies.org/>
info@icstechnologies.org
Corporate Office: Mumbai
Tel : +91 22 26507000 / 01

ICS TECHNOLOGIES

A COAT OF PROTECTION FOR EVERY APPLICATION



HIGH PERFORMANCE INDUSTRIAL COATINGS

- Zinc silicate primers • Epoxy primers & finishes • Vinyl ester coatings
- Heat resistant coatings • Bituminous coatings • Polysiloxane coatings
- Hi-gloss polyurethane finishes • Chlorinated rubber

PIPELINE COATINGS

- Heavy duty coatings for chemicals & petroleum industry
- Coating systems for thermal power, wind & nuclear power plants
- Food grade epoxy linings
- Gas flow epoxy coatings
- Jet Fuel coatings

MARINE COATINGS

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

AEROSPACE & DEFENCE

- GOST spec products
- BS spec products
- MIL spec products
- Coatings for missiles & aircraft
- AS 9100 certified

OEM COATINGS

- Quick drying primer & top coats, low bake & stoving systems
- Thermosetting acrylics
- Hi gloss polyester top coats
- Low bake polyurethane
- Casting sealers & unicoat epoxy chassis black



Grauer & Weil (India) Limited

Regd. Office: Growel Corporate, Akurli Road, Kandivli (E), Mumbai 400 101, India
T 91 22 66993000 F +91 22 66993010 E info.paints@growel.com

Chemicals | Engineering | Paints | Lubricants | Real Estate

EXCLUSIVE DISTRIBUTORS FOR INDIA

DeFelsko USA
Inspection Instruments

Use The Unique Interchangeability Feature To Prepare Your Customised Kit



Free App.

STD/ADV BODY

COATING THICKNESS ON NON-METALS

SURFACE PROFILE

SHORE HARDNESS

ULTRASONIC THICKNESS

DEW POINT (Td, RH, T)

SOLUBLE SALT TESTER (BRESLE PATCH)

COATING THICKNESS ON METALS (F & FN)

INFRARED THERMOMETER

BARCOL HARDNESS TESTER

TESTEX TAPE READER

200B POLYMER COATING ON WOOD, PLASTIC, 200C COATINGS ON CONCRETE, FIBERGLASS, 200D VERY THICK POLYMERS.

SPG - Integral Probe
S - Cabled Probe
OS - Cabled Probe for Convex Surfaces
CS - Cabled Probe for Textured Coatings
TS - Cabled Probe for Concrete Profile

SPG OS SPG CS/TS/TS

PRBSHD A PRBSHD D

A - HARDNESS OF RUBBER
D - HARDNESS OF PLASTIC

UTG C UTG M UTG P

C - Corrosion Probe
M - Multiple Echo Probe Thru Coat
P - Precision Probe

S - Integral probe with cabled Surface Temperature Sensor
A - Integral Probe with Wind Speed Sensor
D - Cabled Probe with 1/2" NPT Threads

DPM S DPM A DPM D

ADHESIVE PATCH LATEX ADHESIVE PATCH POSIPATCH

Cabled Regular Micro 0° Probe Micro 45° Probe 90° Telescopic Probe

RTRH1 - Measures peak height (HL)
RTR 3D - measuring common 2D/3D profile

PRBRTRH PRBRTR3D

AUTO. PULL OFF DOLLY ADHESION TESTER AT-A / AT-M

HOLIDAY DETECTOR HHD (STICK TYPE)

PINHOLE DETECTOR LPD

DFT GAUGE POSITEST COMBO(FN) & F

PC POWDER CHECKER (FOR UNCURED COATING THICKNESS)

Concrete Moisture Meter (CMM)

NEW

ALSO AUTHORISED DISTRIBUTORS & INDENTING AGENTS FOR INDIA

QLAB
USA
Weathrometers & Corrosion Chambers.

COESFELD
MATERIAL TEST
GERMANY
Pipeline Coating Test Insts.

RHOPOINT
INSTRUMENTS
U.K.
Gloss & DOI Meters

CI-ME
HONGKONG
Spectro / Colorimeter

DELMHORST
USA
Moisture Meters

Cole-Parmer
scientific experts
USA
Testing Equipments

METTLER TOLEDO
Switzerland
Weighing Balances Titrators

BROOKFIELD
USA
Viscometer

Chemstrumms
USA
Adhesive Test Insts.

Nabertherm
GERMANY
Furnaces

Leibniz
GERMANY
Tintometer

BINDER
Best conditions for your success
GERMANY
Oven, Furnace

Thwing-Albert
Incorporated Company
USA
Packaging Test Insts.

TABER
INDUSTRIES
USA
Abrasion Testing

COATINGS AND ANTI CORROSION ENGINEERING REVIEW

Cover Feature	26	Editorial	4
	Major construction, oil and gas pipeline projects driving demand for paints and coatings in the Middle East	New Products & Processes	6
Interview	14	Technology	36
	Mr Rajesh Marwaha National Sales Manager Technical Drying Services (Asia) Pvt Ltd.	Training Programs	38
Case Study	20	Industry News	40
	Passion for paint and commitment to carbon reduction	Research	43
Company Profile	30	Events & Exhibitions	46
	Surface Corrosion Consultants Ltd	Calender of Events	48
Technical Feature	32	Classifieds	50
	Sustainable antifouling by controlled release from polymer bound Selektope®		

COVER PHOTO: 123RF

COATINGS AND ANTI CORROSION ENGINEERING REVIEW

Volume 13; Issue 5
December 2022 - January 2023

Editor-in-Chief

Jolly Lonappan
editor-in-chief@coatingsjournal.com

Publisher

Franco Lonappan
publisher@coatingsjournal.com

Editor

Abraham Mathai
editor@coatingsjournal.com

Subscriptions

Vitthal Talekar
M: 8879050769
marketing@coatingsjournal.com

Design

Narendra Tipnis

Administration

Chhaya Kapadia

Accounts

Aatish Shedje

Office

Akash Mane

Editorial, Advertising and

Circulation Office:

102, Dattar Mansion, C. S. Marg, Vakola
Bridge, Santacruz (East), Mumbai 400055
Tel: (022) 26680477, Tel/Fax: 26684376
E-mail: info@coatingsjournal.com
URL: www.coatingsjournal.com

© 2022 Coatings And Anti Corrosion Engineering

Review. Views and opinions expressed in this magazine are not necessarily those of Coatings And Anti Corrosion Engineering Review, its publisher and/or editor. We at Coatings And Anti Corrosion Engineering Review do our best to verify the information published, but do not take responsibility for the absolute accuracy of the information. Coatings And Anti Corrosion Engineering Review does not accept the responsibility for any investment or other decisions taken on the basis of information provided herein. Coatings And Anti Corrosion Engineering Review does not take responsibility for returning unsolicited material or for material lost or damaged in transit. No part of this magazine may be reproduced without the prior written permission of the publisher. All disputes are subject to exclusive jurisdiction of competent courts and forums in Mumbai.



From the Editor-in-Chief...

The Middle Eastern countries are one of the fastest growing markets for the construction industry due to the presence of fast-growing economies which are witnessing increasing spending on residential, commercial as well as institutional construction markets. Consistently growing demand from end-use industries, particularly construction, oil and gas pipelines, and automotive is fuelling the demand for paints and coatings in the Middle East. The three T's: Tourism, Technology and Transportation are the driving forces going 'Together Towards Tomorrow!'

The bold decisions of conducting the Expo 2020 and the World Cup 2022 and the massive preparations in spite of the prevalent conditions set the ball rolling. For example, following the launch of Saudi Arabia's Vision 2030 in 2016, the Kingdom is on its way to becoming the world's biggest construction site with a total investment of \$1.1 trillion in infrastructure and real estate projects. Oman Vision 2040 is the Sultanate's gateway to overcome challenges, keep pace with regional and global changes, generate and seize opportunities to foster economic competitiveness and social well-being, stimulate growth, and build confidence in all economic, social and developmental relations nationwide. Kuwait's 2035 vision aims on transforming Kuwait into a financial and trade hub regionally and internationally, and becoming more attractive to investors.

In October 2020, the Dubai Tourism Strategy was launched by the Dubai Department of Tourism and Commerce Marketing (DTCM) Operation 300bn, the UAE's industrial strategy. This is likely to stimulate construction activity, particularly in the commercial segment. This presents opportunities for the construction of new hotels, bars, restaurants, and shopping centers to support an influx of tourists. In addition, Abu Dhabi's Department of Culture and Tourism plans to invest \$6bn in strengthening cultural and creative industries in the UAE's capital over the next five years, presenting further construction opportunities.

All this is bound to strengthen the demand for the coatings, paints and corrosion mitigation sectors. In this issue, we talk about some of the major projects and how it hopes to boost demand. All this and much more including all our regular columns and features in this issue.

As the year grows to a close let me take this opportunity to wish you all, our readers, advertisers and well-wishers a great New Year ahead!!!

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



ABRASION AND CORROSION RESISTANT CERAMIC COATINGS

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.

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.



Aluma Coat® - TW



Mineral Crusher Coated with Aluma Coat - TW



Inner Base of Dust Collector Coated with Aluma Coat - TW

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® - BR



Motor Shaft Coated with Aluma Coat - BR



Butterfly Valve Coated with Aluma Coat - BR

Contact us :

JYOTI CERAMIC INDUSTRIES PVT. LTD.



India (Head Office)

C-21, N.I.C.E, Satpur, Nashik - 422 007, Maharashtra, India.
Tel.: +91 (0) 253 2350120 / 338 / 729, 2351251
Fax: +91 (0) 253 2350023
E-mail: info@jyoticeramic.com

Europe

Jyoti Ceramic GmbH
Frankenstr. 12, 90762 Fürth, Germany.
Tel.: +49 (0) 911 78 71 20 83 / 84 / 85
Fax: +49 (0) 911 78 71 20 82
E-mail : sales@jyoticeramic.com

U.S.A.

Techno Ceramic Inc.,
P.O. Box 333, New Hampton, NY 10958, USA.
Tel.: +1 (0) 845 547 2219 / 845 547 2220
Fax: +1 (0) 845 547 2221
Email : jcw@tci-jyoti.com

Proudly made in INDIA for the WORLD



52 years service to the nation

Inviting state wise proposals for dealership / distributorship.

www.jyoticeramic.com

AkzoNobel sets leisure boating on new course with more sustainable B-Free range

Recreational boaters now have more ways to be kinder to the environment following the introduction of a new biocide-free (B-Free) fouling control range from AkzoNobel's Yacht Coatings business. The first product to be launched from the new B-Free range is B-Free Explore. It features a specially-developed, unique silicone polymer technology which produces an exceptionally smooth and slick hull – helping to reduce drag.

Fouling is controlled by preventing microorganisms such as barnacles, slime and algae from forming strong bonds with the hull of the boat. Any that do adhere can be simply wiped away by hand or water jet.



B-Free Explore features a specially-developed, unique silicone polymer technology which produces an exceptionally smooth and slick hull – helping to reduce drag.

“We've developed high-performance technology which allows boaters to maintain a clean, smooth hull,” explains Simon Parker, Director of AkzoNobel's Marine and Protective Coatings business. “It's based on proven technology and exemplifies the restless spirit of innovation which has been the cornerstone of our International brand for more than 140 years.”

Adds Jemma Lampkin, Global Commercial Director for

AkzoNobel's Yacht Coatings business: “Boaters are becoming more aware of the impact they can have on the environment, but they still require technologies that deliver high-performance fouling control. B-Free Explore provides a stand-out solution for both of these challenges.”

Specially crafted for the leisure boat market, B-Free Explore is the culmination of a five-year development program. It can be applied to new hulls or directly to existing antifouling, without the need for the removal of the previous antifouling coating. This makes it simple for boaters to upgrade from

their traditional coatings to the new technology.

The new product is also better for the marine ecosystem. Being biocide-free, it provides a smooth surface for improved hull efficiencies, which can lead to a reduced carbon footprint.

Continues Lampkin: “Ultimately, the innovations at the heart of B-Free Explore allow boaters to focus more on what truly matters to them – being out on the water.”

Nippon Paint Marine introduces new PSPC-compliant universal primer for newbuilds

Global coatings pioneer Nippon Paint Marine (nipponpaint-marine.com) has added a new anti-corrosive universal primer to its E-Marine range of paints.

E-Marine 2000 is the Japan-headquartered company's first general-purpose epoxy primer manufactured in China for the Chinese newbuilding market, notes a press release from the company.

achieved in two coats but for other parts of ships a range of film thicknesses can be applied in one coat. E-Marine 2000 has a minimum and maximum dry film thickness of 80µm and 1800µm respectively.

Gerald Mao, Senior Director, Nippon Paint Marine (Shanghai), said: “A general purpose, universal primer is a key priority for shipyards as a primer that can be



A ballast tank's first full coat of E-Marine 2000 universal primer (left) and the completed tank coating (right).

While the universal primer is suitable for application to all areas of a newbuild ship, such as the underwater hull, boot tops, topsides, decks and cargo holds, it has been specially formulated to meet market demand for a MSC.215(82)-compliant preparatory primer. The IMO resolution, adopted in 2006, governs the performance standards for protective coatings (PSPC) for ships' ballast tanks.

Taking two years to develop the formulation, E-Marine 2000, available in grey, red or cream, is an abrasion-resistant, high-volume, epoxy coating with an 80% solid content and capable of providing long-term corrosion protection.

For ballast water tanks, the required nominal dry film thickness of 320µm can be

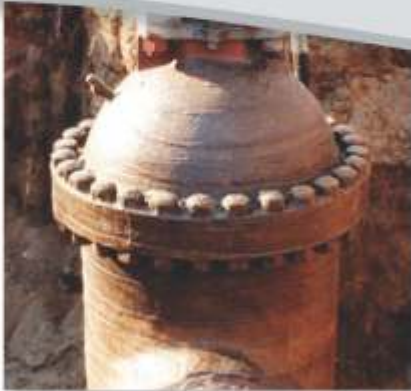
applied to all parts of ship – including ballast water tanks – offers significant commercial technical advantages. As this anti-corrosion paint has been certified for use as a ballast tank coating, more than 70% of a newbuild's undercoat requirement can be met with just one system.”

Another key benefit, compared to other primers in the marine marketplace, is its curing and short coating interval time. Depending on the temperature, a full cure can be achieved in seven days.

A low temperature version of the primer, E-Marine 2000 LT, is also available for application in ambient temperatures between -5°C and 10°C. At 0°C a full cure can be achieved within 18 days.

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

Meenakshi Sharma
Trenton Advisor

msharma@trentoncorp.com
+91-8588025184

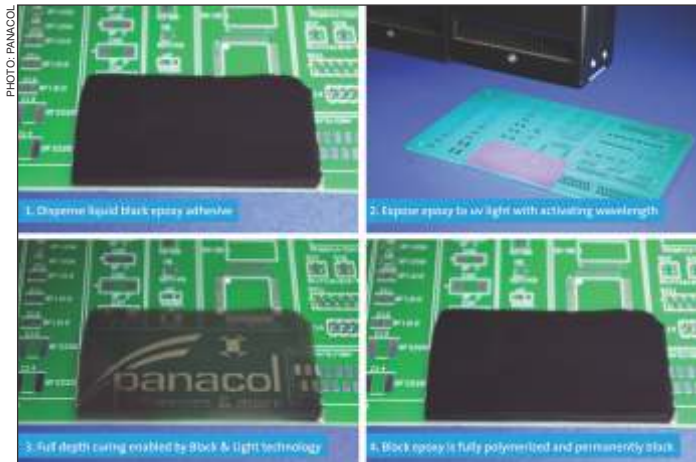
www.trentoncorp.com

Black&Light: Black epoxies cure under UV irradiation

With the new 'Black&Light' adhesives, Panacol has developed a new adhesive technology: deep curing black epoxies. Black epoxy adhesives from Panacol's Vitralit® product range can now be cured with UV light sources in thicker layers, without resorting to secondary curing mechanisms, notes a press release from the German-based company.

micrometers to several millimeters. The adhesives are suitable for encapsulation, glob top, or edge bonding in electronics manufacturing, as well as for optical adhesive systems where high OD values (optical density) are required. They are suitable for optoelectronic applications to help minimize reflections and enhance sensor transmission values.

A typical manufacturing



Black "Black&Light" adhesive is cured on a printed circuit board with UV irradiation.

Conventional black UV adhesives have a major disadvantage: the black color absorbs a high proportion of the UV intensity, which means that the energy needed to fully polymerize an adhesive can only penetrate a few micrometers. This results in surface "skin" formation on black adhesives, but not a complete cure. They must then be cured in a secondary thermal curing process at temperatures above 100°C.

Panacol's new 'Black&Light' technology enables the complete curing of black epoxy adhesives with LED UV energy. Depth of cure can range from a few hundred

process using 'Black&Light' technology can be as follows: The black adhesive is dispensed and cured with the appropriate wavelength and intensity. During the curing process, the 'Black&Light' technology within the adhesive enables the UV rays to penetrate and complete a full cure. Once the adhesive polymerization is complete, the structure of the 'Black&Light' technology prohibits light transmission, resulting in a fully cured adhesive system that remains irreversibly black.

The 'Black&Light' technology is compatible with many Vitralit® epoxy adhesives from

JSW Paints launches innovative product that focuses on consumers' health and well-being at home

PHOTO: JSW PAINTS



Aquaglo is 100% water-based, has low odor, dries quickly and is completely family-friendly.

JSW Paints has launched Aquaglo as India's first water-based paints for wood and metal surfaces with Germ Block Zn²⁺ ion technology, notes a press release from the company. Previously, consumers were using solvent based enamels, popularly known as 'oil paint,' for painting wood and metal surfaces. These contain chemicals and solvents that have a strong odor and have a high VOC (Volatile Organic Content). These paints are not recommended for kids and people with health conditions as the solvents pollute the home with their unhealthy fumes post-application.

Aquaglo is 100% water-based, has low odor, dries quickly and is completely family-friendly. Due to its quick-drying benefit, it enables the painting to be finished in a very short time as well. Aquaglo also retains its shine for a longer period.

According to Ms Anuradha Bose, Chief Marketing Officer of JSW Paints, "Aquaglo aims to change yet another convention in paints of using only 'oil paint' for wood and metal. Our new campaign draws consumers' attention to the clear benefit of adopting a water-based Aquaglo range of paints for painting wooden doors, metal grills and other such surfaces in their homes."

Panacol. Custom adhesive solutions can be created to accommodate unique requirements for amount of light blocking and depth of cure. The 'Black&Light' adhesive systems can be very specifically adapted to specifications of the respective application.

Another major advantage of the 'Black&Light' adhesives is storage. Many single-component, black epoxies require deep frozen transportation and storage. The 'Black&Light' epoxy adhesives can be stored and shipped at room temperature or under normal refrigeration.



PROTECT YOUR BUSINESS - GRACO HAS YOU COVERED



Whether it's a large coating project like a bridge, ship or internal/external pipe coating, or a simple touch-up project that only takes a few hours, you depend on your spray equipment to deliver a flawless performance every time. Graco offers a complete lineup of the industry's most dependable single/plural-component sprayers-in the exact size you need to accomplish any airless spray project.

THE POWER OF KING IS ELECTRIFYING

NO MATTER WHAT THE JOB IS, GRACO HAS A KING FOR YOU



KING E-SERIES



CONTRACTOR KING



KING

XP and XM Plural Component Sprayers Plural Component Sprayers for Industrial Coating Applications



XP



XP-hf



XPs-hf



XM50



Reduces waste and material cost



On-ratio Accuracy



Small foot print



Reduces clean-up time



Provides consistent material quality for fast curing materials

Graco India Pvt. Ltd.

295, Udyog Vihar, Phase 4, Gurgaon - 122015, Haryana, India.
Tel: +91-124-6610200 | Mob. : +91 70422 91666
Email : Denzil_D'costa@graco.com | Website : www.graco.com

Scan for more information

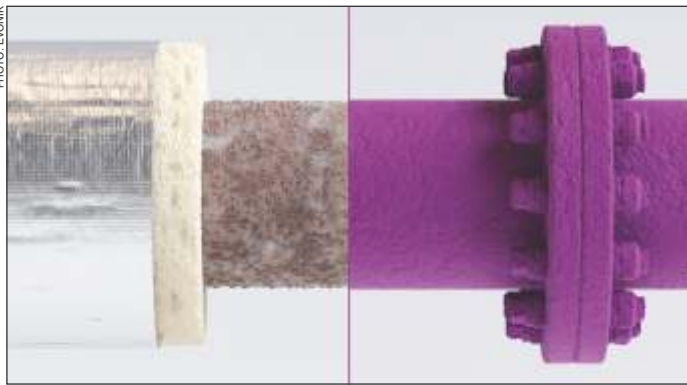


Evonik's TEGO® Therm makes insulation coatings more efficient

Evonik (evonik.com) has developed a new line of tailor-made feedstocks, TEGO® Therm, that substantially improve the performance of thermal insulation coatings (TICs). The new product range includes two microporous silica-based granules, TEGO® Therm HPG 4000 and TEGO® Therm HPG 6806, as well as a heat-resistant, silicone-based binder, TEGO® Therm L 300, notes a press release from the German company.

penetration and therefore corrosion under insulation (CUI). This significantly increases the service lives of coated items.

One target application for this new generation of feedstocks is the technical insulation of pipelines, tanks or various other components in industrial plants. A first product based on TEGO® Therm granules is already commercially available and can be applied for safe touch



Evonik has developed a new line of tailor-made feedstocks, TEGO® Therm, that substantially improve the performance of thermal insulation coatings (TICs).

The three new products from Evonik's Business Line Coating Additives are characterized by excellent insulation properties and heat resistance, even at temperatures of up to 250°C. This provides the following performance and sustainability benefits: insulation coatings based on TEGO® Therm products substantially reduce energy loss, and they also aid occupational health and safety, because they can significantly reduce the temperature of hot surfaces (safe touch). Insulation coatings also provide protection against moisture

and corrosion prevention purposes. Another benefit of TEGO® Therm-based insulation coatings is that they are easy to apply. "Conventional insulation systems, such as mineral wool, are often difficult and time-consuming to apply – appliances and components with complex geometries in particular are often inadequately insulated," says Dr Niko Haberkorn, Head of Thermal Managing Coatings at Evonik Coating Additives. As a result, non-insulated, hot surfaces increase energy loss and they also need to be protected against accidental

BYK innovation makes applications lightweight, more stable and safer

BYK Additives (byk.com) has launched the BYK-MAX CT 4275, a novel, specially developed additive that can be used in a wide variety of polyamides – for example in the automotive industry. The optimized surface treatment and the unique morphology of the silicate provide improved dispersion and incorporation into the thermoplastic matrix while ensuring near-perfect exfoliation in polar systems.

composites, the additive enables a lower total content of mineral and glass fibers without comprising the mechanical properties; it is therefore the ideal solution for lightweight construction applications, for example in the automotive sector. In addition, BYK-MAX CT 4275 will also have a positive effect on surface properties, scratch resistance and flow behavior.

The highly reinforcing mechanism of BYK-MAX CT 4275 improves, among other things, flexural modulus, yield strength, tensile strength and heat deflection temperature, while ensuring excellent flow behavior of the composite.

This makes it possible to form thinner components and thereby reduce weight.

In mineral and glass fiber-filled thermoplastic



BYK-MAX CT 4275 also have a positive effect on surface properties, scratch resistance and flow behavior.

The new additive does affect the density of the compound, thus offering weight reduction. It is highly miscible and requires no special processing steps.

contact. In contrast, coatings incorporating products from the TEGO® Therm line can be easily applied just by spraying. "That is even feasible to some extent during ongoing operations. This avoids equipment downtimes and saves time and money," says Haberkorn.

The water-based binder TEGO® Therm L 300 can withstand temperatures of up to 250°C, while standard binders for TICs can only withstand temperatures no higher than 160°C. Given its excellent adhesion to various substrates, TEGO® Therm L 300 ensures particularly resilient coatings.



KOMAL Scientific International Pvt. Ltd. KOMAL Scientific Co.

AN ISO 9001-14001-45001 CERTIFIED COMPANY

- ☞ THE ONE STOP SOURCE FOR YOUR TESTING REQUIREMENTS.
- ☞ A COMPANY WHERE QUALITY AND CUSTOMER SERVICE ARE AT PAR.

- IMPORTERS & EXPORTERS OF SCIENTIFIC LABORATORY TESTING INSTRUMENTS.
- PIONEER IN PAINT, INK, POWDER COATING, SURFACE COATING, PACKAGING, ADHESION, CORROSION, COATINGS, CONCRETE & METAL TESTING INSTRUMENTS.
- SPECIALIST IN VISCOSITY, RHEOLOGY, TEXTURE ANALYSIS & POWDER FLOW INSTRUMENTATION IN A WIDE RANGE OF INDUSTRIES SUCH AS PHARMACEUTICALS, FOOD & BEVERAGES, LUBRICANTS, CHEMICALS, MEDICAL DEVICES, COSMETICS AND PERSONAL CARE PRODUCTS.



SHOWROOM : 633, LAXMI PLAZA, LAXMI INDUSTRIAL ESTATE, NEW LINK ROAD, ANDHERI (W), MUMBAI - 400 053. (INDIA)

☎ (+91-22) 2633 5560 - 61 - 62

✉ prasan@komalscientific.com

🌐 komalscientific.com

✉ info@komalscientific.com

✉ mayank@komalscientific.com

CRISIL Rating : SME 1 'Highest'

New high-speed rotation atomizers from Wagner

From metal workpieces to automotive components and wood: Wagner's (wagner-group.com) high-speed rotary atomizers can be used in numerous industrial sectors

PHOTO: WAGNER



Wagner's high-speed rotary atomizers can be used in numerous industrial sectors and achieve extremely efficient coating results on both small and large workpieces,

and achieve extremely efficient coating results on both small and large workpieces, notes a press release from the company.

The Topfinish Bell 1S and Topfinish RobotBell 1 products available to date are equally well suited as all-round units for water-based and solvent-based coatings. Both models are now available as variants with external charge with the suffix "ECH" ("external charge"). They have been specially developed for demanding applications with water-based paints, where a particularly high coating quality is required.

The external charge of the coating material is decisive here: The high voltage emitted via the electrode ring ionizes the ambient air in such a way that the sprayed material is charged. The grounded workpiece is electrostatically coated. Compared to internal charging, external charging has the considerable advantage that the overall system does not have to be

specially insulated for use with water-based coatings, ultimately to ensure a safe coating process. The equipment costs for water-based coating applications are therefore significantly reduced.

These models can process even higher-viscosity materials too. Thanks to the modular concept, they can

also be converted in just a few minutes to a version with internal charging for use with solvent-based coatings, without having to modify the complete structure of the overall system.

The Topfinish RobotBell 1 ECH is mounted on a robot arm, while the Topfinish Bell 1S ECH is specially designed for use with reciprocators and linear axes systems. The proven RBC 1E control system is available for both versions.

Just like the already proven versions with internal charging, the new versions also enable large spray pattern variations (70 - 800 mm). Alternative disk sizes and adjustable steering airs are available, which can be adapted to suit the respective workpiece geometry and also the material used. An internal and external flushing device of the bell disk, as well as the direct disposal of excess material via a drain valve, ensure short color change times - for fast cycle times in highly automated coating.

Solvay launches new emulsifier to boost coatings and adhesives performance

Solvay (solvay.com) has launched Reactsurf® 2490, a new APE-free¹ polymerizable surfactant designed as a primary emulsifier for acrylic, vinyl-acrylic and styrene-acrylic latex systems. Reactsurf® 2490 improves emulsion performance to deliver superior functional and aesthetic benefits in exterior coatings and pressure sensitive adhesives (PSAs), compared to conventional surfactants, even at high temperatures, notes a press release from the company.

In addition to exterior coatings and pressure sensitive adhesives, other common uses of Reactsurf® 2490



PHOTO: SOLVAY

Common uses of Reactsurf® 2490 include paint binders, adhesives and sealants, textile and nonwoven binders, paper coatings, and building and construction applications.

include paint binders, adhesives and sealants, textile and nonwoven binders, paper coatings, and building and construction applications.

"Exterior coatings and pressure sensitive adhesives are both prone to surfactant leaching," explains Sel Avci, Coatings Global Marketing & New Business Development Director. "In exterior coatings exposed to harsh environmental conditions, leaching leads to dirt pick-up and water marks, while it leads to water whitening in PSAs. Reactsurf® 2490 prevents surfactant migration, which improves water-whitening resistance for PSAs and dirt pick-up resistance for exterior coatings. This means clear

label products retain their original appearance, and exterior surfaces remain clean and dirt free."

Reactsurf® 2490 is highly reactive and easily incorporated during the emulsion polymerization reaction. It eliminates the need for secondary emulsifiers, thereby facilitating fast and simple design of new latexes. REACH-certified and water-soluble, Reactsurf® 2490 also ensures compliance

with increasingly stringent regulatory requirements for APE-free solutions. Its optimal combination of properties includes low dynamic surface tension and critical micelle concentration, good particle size control, low grit and low foaming, in turn enabling better film hardness and antiblocking.

In tests of elastomeric coating binders, Reactsurf® 2490 delivered improved blocking resistance and superior dirt pick-up resistance after three months of outdoor exposure. Initial tests also demonstrated improved water-whitening resistance in PSA applications.



The ECKART effect – makes strong stronger.

Lamellar zinc pigments for superior protection and sustainable benefits: Our zinc flakes combine the corrosion-protective properties of zinc with the barrier effect of flake-shaped pigments. These characteristics are fully effective even in low film thicknesses.

ECKART is one of the world's leading manufacturers of effect pigments for the paints and coatings industry. **ECKART – take the brilliant way.** www.eckart.net

For further information please contact:

ECKART Asia Ltd. · Room 701-3, 7th floor C C Wu Building · 302-308 Hennessy Road · Wan Chai, Hong Kong
Tel +852 3102 7200 · Fax +852 2882 5366 · info.eckart.asia@altana.com

CJS Specialty Chemicals Pvt Ltd. · 105, Bajaj Bhawan · Nariman Point · Mumbai - 400 021 · India
Tel +91 22 6782 6969 · Fax +91 22 6782 6999 · ashish@cjshahgroup.com

Technical Drying Services (Asia) Pvt Ltd: Climate control on rent

Dehumidification systems play a crucial role in the surface area preparation for blasting, painting, and coating jobs and ensures anti-corrosive painting by maintaining temperature, relative humidity, and dew points as per technical specifications

Established in the year 1988, Technical Drying Services (Asia) Pvt Ltd, (TDS) a Pahwa Group company, is a leader in providing air solutions on rent for short-term moisture removal, humidity control, drying and temperature control services.

Headquartered at Gurgaon with branch offices in Mumbai, Vadodara, Kolkata, Chennai, Hyderabad and Cochin, the company's overseas activity is marked by their presence in Malaysia, China, Switzerland, Brazil, Philippines, Korea, Bangladesh, UAE, Nigeria, and USA.

Mr Rajesh Marwaha, National

Sales Manager, Technical Drying Services (Asia) Pvt Ltd., in a chat with C&ACER about the company and their activities.

What is product drying?

Product drying is the process where desiccant dehumidification technology is employed for the removal of excess moisture from the air. It is required across diversified industries for controlling humidity and temperature. Dehumidification systems play a crucial role in the surface area preparation for blasting, painting, and coating jobs in tanks, bullets, columns, reactors, coke

drums, vessels, pipelines, etc. It ensures anti-corrosive painting by maintaining temperature, relative humidity, and dew points as per technical specifications. Along with this, it is required for safe access to confined areas. By dehumidifying the space, it provides comfortable working conditions for the employees. Coming with the ability to eliminate moisture, dehumidification systems are also required for POP drying and preservation of equipment against corrosion due to moisture.



Mr Rajesh Marwaha, National Sales Manager, Technical Drying Services (Asia) Pvt Ltd.

PHOTOS: TDS

The application of dehumidification systems extends to a wide range of industries from pharmaceutical, food, defense, power, chemicals, electronics, leather, oil and gas, steel, cement, and many more. Hence, our TDS vertical provides desiccant-based dehumidifiers on rent to achieve the ideal drying conditions for smooth working across the industries.

How does humidity affect POP drying and what are the solutions available in the market to deal with the situation?

POP drying is delayed immensely in the presence of high humidity. It deteriorates the quality and life of the coating. In case crude method is employed for POP drying under uncontrolled temperature, it can cause



The dehumidification systems play a crucial role in the surface area preparation for blasting, painting, and coating jobs in tanks, bullets, columns, reactors, coke drums, vessels, pipelines, etc.



DELIVERING WORLD CLASS SOLUTIONS IN ENGINEERING INSTRUMENTATION



For further details contact us at:

CALTECH ENGINEERING SERVICES

D-104, Twin Arcade, Military Road, Marol, Andheri East, Mumbai-59

Tel.: 29201454/29204050 Fax : 29250932

E-mail : info@caltechindia.com | Web : www.caltechindia.com





With the help of desiccant dehumidifiers, the coating can be done any time of the year without the fear of coating failure and improper adherence.

crack in the POP, destroying the aesthetics of the wall and at the same time reducing the POP life. Environment conditions with high humidity delay the process of drying and painting done on wet POP results in the paint peeling off due to the formation of bubbles or fish-eye.

To deal with the humidity problem in POP drying, the dehumidification system must be employed to speed up the drying process. It very effectively lowers the dew point of the surrounding air

which encourages the release of water from POP to surrounding dry air. It is the most effective and quickest method to maintain the required level of moisture and prevents coating failure while POP coating. With the help of desiccant dehumidifiers, the coating can be done any time of the year without the fear of coating failure and improper adherence.

What are all the segments TDS caters to for dealing with short term humidity related problems?

TDS is a leader in providing air solutions on rent for short-term moisture removal, humidity control, drying, and temperature control services. It comes with the best-in-class dehumidification system along with highly skilled NACE-trained 'Airengineers' to provide their services across Industrial project solution entailing – food industry, pharmaceutical industry, and defense sector; safe confined area access; surface preparation and coating; and water damage restoration.

How does TDS protect from the inherent dangers of working in confined areas?

Confined spaces are fully or partially enclosed areas like tanks, columns, spheres, boilers, drums, chimneys, pipelines, cyclones, dust catchers, scrubbers, sulphur pits, ESP areas, kiln and other similar spaces. The environment within these spaces is very unhealthy and hazardous given to the critical activities being carried out, responsible for the rise in temperature to as high as 48°C - 50°C coupled with high relative humidity. There is also a high probability of oxygen depletion and the atmosphere is very toxic, flammable, and explosive.

TDS provides customized dehumidification and temperature control systems that adsorb the excess moisture from the air and maintain RH below 60% while maintaining the temperature within the comfortable range of 25°C - 26°C. This provides perfect working conditions within the confined areas and prevents any risk of accidents, harm, and injury arising due to extreme environmental conditions in the confined space.

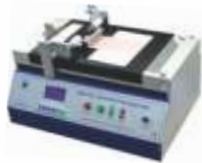


Dehumidification ensures anti-corrosion painting by maintaining temperature, relative humidity, and dew points as per technical specifications.

World class testing instruments for Paint, Coating & Corrosion testing



Touch Screen
Rotary Viscometer



Automatic Film
Applicator



Mfft Tester



Line Drying
Time Recorder



Pfund Cryptometer



Coating Thickness
Gauge



Cross Hatch
Adhesion Tester



Automatic Scratch
Hardness Tester



Digital Cupping
Tester



Digital Pull Off
Adhesion Tester



Intelligent
Glossmeter



Spectrophotometer



Wet Abrasion
Scrub Tester



Table Water-curtain
Spray Cabinet



Automatic Pendulum
Hardness Tester



Versatile Sand-milling
Dispersing-agitator



Lab Basket Mill



Uv Weathering
Tester



Salt Spray
Test Apparatus



Cyclic Corrosion
Test Cabinets



Water damage restoration is an emergency service provided by TDS to dry and restore water-damaged assets.

What is the role of TDS in emergency water damage restoration?

Water damage restoration is an emergency service provided by TDS to dry and restore water-damaged assets. In large commercial and industrial setups, it becomes crucial to restore water-damaged assets as it can incur huge replacement and reconstruction costs on the business. Failure in taking timely restoration steps can lead to tremendous infrastructure and assets loss. TDS comes with expertise in water

damage restoration services that makes use of desiccant-based dehumidifiers to remove moisture from water-damaged equipment. The high-velocity air blowers speed up the evaporation process to enable quick drying and reduce the chances of secondary and tertiary damaging effects caused by standing water and also prevent the corrosion of the assets. In the process, it also intervenes the growth of fungus, mildew, mold, etc.

What is the importance of controlling climate during

the blasting, painting and coating of tanks? How can recommended humidity levels be achieved for optimum performance?

Controlling climate during blasting, painting, and coating jobs in tanks is very critical. Uncontrolled environmental

conditions lead to poor surface preparation responsible for blistering, cracking, peeling, and cratering on the surface. High relative humidity causes condensation on metal surfaces accounting for coating-related problems like blooming or flash rust and corrosion. Therefore, it is crucial to maintain the temperature, relative humidity, and dew points as per technical specifications. For which TDS provides dehumidification system for maintaining relative

humidity inside the tank at <55% and temperature between 30°C - 35°C for optimum performance of the coating/painting to enable timely completion of the project. It increases the coating and paint life 1.5 – 2 times by inhibiting rust bloom, blistering, and curing failures.



Controlling climate during blasting, painting, and coating jobs in tanks is very critical.

Opportunity beckons!

Our readers are from diverse verticals like Shipping & Ports, Oil & Gas, Heavy Industry, Infrastructure, Automotive... and others

Engage with them...

COATINGS AND ANTI CORROSION ENGINEERING REVIEW

Find out how. Drop us an e-mail: marketing@coatingsjournal.com



Superior Quality Through Every Step of the Process For You to Build Great Surfaces



ABRASIVE

- Aluminium Oxide
- Coal Slag
- Garnet
- Steel Shot
- Steel Grit
- Glass Bead
- Copper Slag



PAINTING

- Spray Painting Machines
- IPC Equipments
- Airless Paint Hoses
- Airless Spray Guns
- Paint Accessories
- Paint Mixers



SAFETY

- Blasting Helmets
- Painting Hoods
- Airline Filters
- Blast Suits
- Whip Checks
- CO Monitor
- Dead Man Handle



INSPECTION

- Defelsko Instruments
- Thermometer & Gauges
- Pocket Weather Meters



BLASTING

- Blasting Machine
- Blast System Package
- Air Cooled After Cooler
- Air Receiver Tanks
- Blast Nozzles
- Bristle Blaster
- Hoses
- Graco EcoQuip



www.blastech.co.in

Passion for paint and commitment to carbon reduction

The carbon footprint reduction commitment AkzoNobel has made covers the full value chain and is aligned with the Paris agreement – which aims to limit global warming and ensure that global temperature rise doesn't exceed 1.5 °C above pre-industrial levels

At AkzoNobel, we've made it our business to deliver the sustainable and innovative solutions that our customers, communities – and the planet – are increasingly relying on. We're fully focused on ensuring that the pioneering paints and coatings we supply today can help safeguard our world far beyond tomorrow.

Guided by our People. Planet. Paint. purpose, which lies at the heart of everything we do, we've identified three key global topics – climate change, circularity, health and well-being – and made a commitment to future generations that we'll do everything we can to address them.

This determination to remain a necessary business for a sustainable future is driven by four key 2030 ambitions: 50% less carbon emissions in our own operations and across the value chain; 50% of

revenue from sustainable solutions; moving towards zero waste; and providing skills training to more than 100,000 people in local communities. Beyond 2030, we aim to be carbon neutral by 2050.

Our commitment to science-based sustainability targets

Our sustainability targets are aligned with the Paris Agreement and were validated by the Science Based Targets initiative (SBTi). We are the first paint and coatings company with validated science based targets. The commitment we have made also applies to the full value chain. This includes our own operations (Scope 1 and 2), as well as Scope 3 upstream and downstream.



PHOTOS: AKZONOBEL

AkzoNobel is always looking for new ways to drive sustainable innovation that brings tangible benefits, delivers a positive social and environmental impact, and enables customers to reach their own sustainability goals.

Scope 3 covers purchased goods and services, application, use of our products and end-of-life. Together, this covers around ~96% of our total emissions. We set the carbon reduction target for our own operations in early 2020 – we have targeted a 50% reduction by 2030 – and remain well on track, having reduced our footprint by 21% in 2021 (baseline 2018).

Sustainable solutions – how we are helping our customers

We're always looking for new ways to drive sustainable innovation that brings tangible benefits, delivers a positive social and environmental impact, and enables our customers to reach their own sustainability goals. That is

why we focus on developing our portfolio of paints and coatings with sustainability benefits in our value chain and offering our customers one of the largest portfolios of sustainable solutions.

We're well on track to deliver our 2030 target of more than 50% revenue coming from sustainable solutions, having achieved 39% by 2021. We identify the sustainability value we bring to our customers by using our externally verified Sustainable Product Portfolio Assessment (SPPA). We co-developed the SPPA with other chemical companies and the World Business Council for Sustainable Development (WBCSD). A sustainable solution is a product or service that meets



JAGUAR SURFACE COATING EQUIPMENTS

Manufacturer Equipments & Systems with high end technology & expertise to handle various fluids and coating materials in industrial as well as commercial applications. Our equipments are used globally to Spray, Transfer, Meter, Dispense & Control liquids and semisolids.

C-781 | Pneumatically Operated Airless Paint Sprayer

Specifications and Features :

- ▶ Model : C-781
- ▶ Ratio : 78:1
- ▶ Power Source : Air
- ▶ Rust Proof Stainless Steel Hydraulic Circuit
- ▶ Easily Detachable Suction Port Reduces Cleaning & Maintenance Time
- ▶ Cartridge type throat Seal Housing



GLOBALLY TESTED & PROVEN BRAND
FOR
CORROSION PREVENTIIVE COATING APPLICATIONS

JAGUAR
SURFACE COATING EQUIPMENTS

SURYA-10 | Electrically Operated Airless Paint Sprayer

Specifications and Features :

- ▶ Model : Surya-10
- ▶ Max Power : 4 HP (BLDC)
- ▶ Controller : Excellent Control
- ▶ Portable & Easy to Carry
- ▶ Suitable for High viscous coating material & texture
- ▶ Long length hydraulic Part to handle variety of coatings
- ▶ Direct Detachable Suction Port



VAJRA-10 | Petrol Operated Airless Sprayer

Specifications and Features :

- ▶ Model : Vajra-10
- ▶ Max Power : 5.5 HP
- ▶ Power Source : Petrol
- ▶ Rust Proof Stainless Steel Hydraulic Circuits With High Flow Rate
- ▶ Superior pump & Packing life
- ▶ Easy Out Pump Filter for durable filtration & Hassle free performance.
- ▶ Rugged, Durable Cart Design



ACCESSORIES

DELIVERING ENGINEERING EXCELLENCE

at least one of the following criteria:

Reduced carbon and energy

How we're tackling climate change and help our customers to do the same. We have developed low embodied carbon products, solutions that require less energy in their application and solutions that help the user of the coated object use less energy. Our Cool Chemistry coatings technology helps building owners use less energy for air conditioning in heat intensive regions and our reflective coating for light fixtures can help give up to 30% more output. We have developed innovative coatings allowing for reduced energy usage in the application and curing of coatings including our Low-E powder coatings.

Coatings that can dry at ambient temperatures or using UV curing technology allow for reduced energy or faster production thus bringing also economical savings.

Reduced, reused and renewed material use

How we're combating



resource scarcity such as using less materials. As part of our ongoing efforts to deal with resource scarcity, we are using less materials and finding various ways to reuse and recycle our waste. These are reflected in certain Dulux and Sikkens products that contain renewable raw materials.

We have rolled out our Dulux Evolve product platform containing 35% of recycled post-consumer paint waste in multiple countries. We are able to help our customers to reduce material use for instance with our Interpon XTR platform allowing for reduced film thickness.

Less waste

How we are striving to reduce waste in our value chain. We are aiming to achieve 100% reusable waste by 2030. We are developing solutions to help our customers reduce waste in their own processes. We set new standards in sustainability through leveraging technology for automated spraying to reduce overspray and for powder coatings application processes to produce virtually no waste at all. Our high solid products allow us to use less packaging and thus reduce the packaging waste of our customers.

Longer lasting performance

How our durable products help customers protect surfaces for longer and thus lower costs and save resources. We develop innovative and durable products that protect surfaces for

longer, prolonging maintenance cycles, and keeping things more colorful. In the built environment and transportation sectors coated substrates need to resist to weather impacts and our longer lasting solutions help our customers reduce their scope 3 carbon footprint.

Health and well-being

How we aim to reduce the use of harmful substances and to reduce health risks for users and end-users of our products. A great example is our chrome free primer Aerodur HS 2121 we developed for our aerospace customers providing numerous performance, appearance and application benefits. Secondly, we develop solutions that bring particular health and well-being advantages to our customers. As a member of the World Green Building Council we are driving the development of more healthy buildings where people live and work. We have solutions for healthy buildings that significantly improve indoor air quality, help keep surfaces hygienically clean and help



Air Cooled Aftercooler



80%
Moisture removal from compressed air

Compressed air is cooled to approx. 9°C above ambient temperature

Customizable with double outlets & inlets

Blastline Air Cooled Aftercoolers are designed to work on most models of air compressors. To select the appropriate model, simply determine compressor horse power and select model from the chart.

Ratings:

Maximum working pressure: 250psi
Maximum working temperature: 121°C

Air Compressor Horsepower	Internal Airflow Maximum CFM	Model Number
50-75 HP	539	BL-450
100-125 HP	785	BL-600
150-200 HP	1569	BL-1000
225-350 HP	2300	BL-1600



**THE IDEAL
BLAST
SYSTEM
SETUP**





contribute through the use of color to more comfort. Examples include our new DuluxAirsure 99,9% VOC free wall emulsion paints and our Dulux Better Living Air Clean is capable of cleaning indoor air from certain harmful substances.

The SPQA gives a holistic view of the sustainability characteristics of our product portfolio and services.

Together with our customer-focused product stewardship process, it enables value-selling strategies tailored to specific customer needs. So, we can take a harmonized approach in our portfolio management, creating a unique baseline for future portfolio ambitions.

Product stewardship

Product stewardship is our approach to ensuring product safety and its sustainability aspects are considered throughout the value chain – from raw material extraction, R&D, manufacturing, transport, marketing and application, through to end-of-life. Our Product Stewardship Continuous Improvement Tool

(PSCIT) helps monitor and drive continuous improvement. And our Priority Substance Program continues to help us identify and control the use of hazardous substances. It's embedded in our processes and ensures we're ahead of any changes to regulations. The governance of the program is assured by the Raw Material Sustainability Group (RMSG).

Making buildings greener

Buildings are responsible for 38% of global carbon emissions, which makes construction one of the largest contributing sectors to climate change. Most of us also spend a large part of our daily lives inside buildings, so they have an impact on our health and well-being as well. We supply a wide range of sustainable solutions that can help to reduce the environmental footprint – and bring health and well-being benefits to the users – of the built environment. As an industry leader committed to creating more green buildings, our product innovations can play a vital role in making cities and communities more

sustainable. Whether it's in their design, construction or operation, “green” buildings reduce or eliminate negative impacts and can have a positive impact on our climate and natural environment. Green buildings have both commercial and sustainability

benefits. They aim to reduce carbon emissions from the built environment, preserve precious natural resources and improve the quality of life for people who live and work in them. Our solutions for green buildings include

solutions that are low emitting products improving indoor air quality; heat reflective paints and coatings helping to reduce the heat island effect in urban areas and environmental product declarations (EPDs) creating material transparency of our sustainable solutions.



The author **Ms Pamela Phua** is Product Management Director, Decorative Paints, South East South Asia. With a

special passion for sustainable development, Pamela is actively involved in projects to create inspiring living spaces for local communities and to promote green architecture trends. She is an author for the G7 & G20 summit publication advocating green developments. She is also a keynote speaker in United Nation Climate Change Conferences.

Opportunity beckons!

Our readers are from diverse verticals like Shipping & Ports, Oil & Gas, Heavy Industry, Infrastructure, Automotive... and others

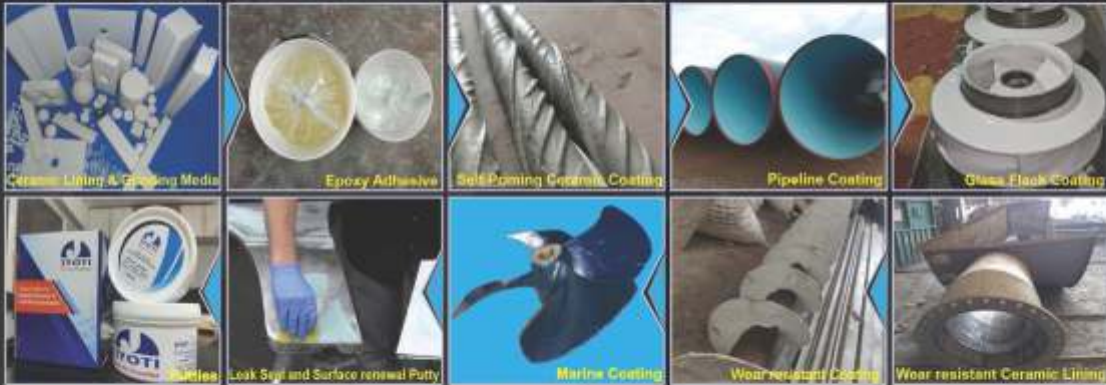
Engage with them...

COATINGS AND ANTI CORROSION ENGINEERING REVIEW

Find out how. Drop us an e-mail: marketing@coatingsjournal.com



Unique Solution Of Abrasion,
Corrosion & Cold Weld Technologies



CORROSION RESISTANT CERAMIC COATINGS • WEAR RESISTANT CERAMIC LINE PARTS • HIGH ALUMINA RUBBER EMBEDDED CERAMIC • METAL BONDING ADHESIVE
• METAL SURFACE RENEWAL & MACHINABLE PUTTY • EPOXY ADHESIVE & LEAK SEAL PUTTY • EPOXY COATINGS & EPOXY PRIMER

JYOTI INNOVISION PVT. LTD.

301, 3rd Floor, Milestone, Opp. Reliance Smart, Near Drive in Cinema, Thaltej, Ahmedabad-380054, Gujarat, India.
+91 79 4895 9666 +91 90999 09825/28 +91 83200 00497 sales@jyotiinnovation.com www.jyotiinnovation.com



KHUSHBOO
SCIENTIFIC

SINCE 1984...

QC, R&D LAB TESTING INSTRUMENTS

Authorized Distributors for INDIA



QUV WEATHERING TESTERS



**SALT SPRAY CORROSION TESTER & Q-PANEL
CORROSION COUPONS(SSP/CCT/CRH(600 or 1100 ltr)**



**QSUN XENON - Xe2
WEATHERING TESTER**



Rotating Rack



**QSUN XENON - Xe3
WEATHERING TESTER**



QCT CONDENSATION TESTER

Major construction, oil and gas pipeline projects driving demand for paints and coatings in the Middle East

Sales prospects in the paints and coating are expected to witness a steady growth outlook of magnitude of 4.7% and are expected to top a valuation of US\$ 7,447.9 mn by 2032

The Middle Eastern countries are one of the fastest growing markets for the construction industry due to the presence of fast-growing economies, which are witnessing increasing spending on residential, commercial as well as institutional construction markets. Consistently growing demand from end-use industries, particularly construction, oil and gas pipelines, and automotive is driving the demand for paints and coatings in the Middle East.

The Middle East paints and coating market is estimated to reach a valuation of US\$ 4,690.2 mn in 2022. Sales prospects in the paints and coating are expected to witness a steady growth outlook of magnitude of 4.7% and are expected to top a valuation of US\$ 7,447.9 mn by 2032, said Mr Nikhil Kaithwade, Principal Consultant, Future Market Insights (FMI), while speaking at the Gulf Coatings Show 2022 Conference in Sharjah, UAE, recently.

The novel Covid-19 affected this market as well. Due to Covid-19, many end-use industries were affected such as oil and gas, construction, and automotive which directly impacted the paints and coating market.

The large Industrial and protective coatings market being created by the Middle Eastern oil and gas industry is particularly attractive to European, as well as North American and Japanese, coatings manufacturers because it requires global technical standards. In fact, its needs are even tougher because of the region's climate which necessitates resistance against hot temperatures, UV rays, and potential abrasion from sand and dust, noted Mr Kaithwade. "An increase in the demand for paints and coating from the marine industry is also fuelling the market growth in the middle eastern region. Saudi Arabia remains a prominent country in the consumption and production volume of paints and coating."



With \$1.1tn investment, Saudi Arabia is set to become the world's biggest construction site

Following the launch of Saudi Arabia's Vision 2030 in 2016, the Kingdom is on its way to becoming the world's biggest construction site with a total investment of \$1.1 trillion in infrastructure and real estate projects. Riyadh's population is expected to reach 17 million by 2030, up from about 7.5 million today. The city has unveiled real estate projects worth \$104 billion since the Kingdom's National Transformation Plan launch in

2016. "Saudi Arabia will easily become the largest construction site in history, with planned construction projects in the Kingdom being over 555,000 residential units, over 275,000 hotel keys, over 4.3 million square meters of retail space, and over 6.1 million square meters of office space," said Mr Daniel S. Murad, CEO, The ChemQuest Group. "NEOM (city being built in Tabuk Province) is expected to house nine million residents across 300,000 new homes once complete, making it the largest giga-project

PHOTO: 123RF



announced to date. Another head-turning giga-project is the \$20 billion Diriyah Gate which will give Riyadh 20,000 homes when it is completed in 2027, creating a city-sized historic district.”

Growth outlook of the paints and coating market in Kuwait

The Paints and Coating market in Kuwait is expected to reach about US\$ 476.4 mn by end of the forecast period. Kuwait is home to some of the most exquisite buildings in the entire world, many of which feature classical façades.

With Kuwait Vision 2035 in mind, it is more important than ever to create environmentally friendly, sustainable structures with high-performing, energy-efficient façades. Modern façades that are secure, long-lasting, and cutting-edge in terms of appearance, technology, thermal efficiency, and acoustics are highly valued. The growing mega projects and increasing construction sector is expected to benefit the consumption of paints and coatings in the country.

Automotive cluster & vision

The Gulf Cooperation Council (GCC) is one of the fastest growing tire markets at approximately ~ 6% CAGR reaching 41m tires in 2021. Saudi Arabia is the largest

market in GCC, at 62% of sales by units. A world-scale tire manufacturing plant in Saudi Arabia would be the first in the region and will gain competitive access in the GCC market, Greater Arab Free Trade Area (GAFTA) markets and Near East and African markets.

“The Middle East region is one huge market for vehicles, be it cars, light trucks, or heavy trucks. But, hardly any vehicles are produced in the region. But, when that changes, and there are plans in the offing, there will be a huge flourishing in this segment,” said Mr Murad.

For example, the Automotive Cluster's mandate is to develop the local automotive industry in Saudi Arabia. Auto industry is very critical for any country's economy. It creates downstream industries while growing in automotive areas. The vision is to bring OEMs to produce ~300K+ vehicles in Saudi Arabia between 2020 and 2030. Also, vision is to have at least 40% Local Gross Value Add (LGVA) to develop automotive eco-system in the kingdom.

At the heart of this drive, the automotive cluster is aiming to: Encourage and support

further Saudi Arabian and foreign investment in the sector; Make KSA a major player in vehicle development and production; Reduce imports and increase exports; Create and sustain employment; and assist with national economic diversification.

Saudi Arabia is also a major consumer of cars and trucks, all currently imported. Sales in 2015 for Light Vehicle reached 844,000 units. Market slowed down since 2015 but in 2019 market grew 29% compared to 2018 volume. Volume in 2019 came out strong ~533,000 units.

The best categories to be sold in Saudi Arabia are C and D for both Sedan and SUV styles. The GCC has annual light vehicle sales of over 1.0 million, highlighting the potential of KSA as being the regional hub of car production. There is strong

demand for commercial vehicle market also, supported in part by the country's booming construction sector.

The Middle East is making sustainable mobility a cornerstone of its urban development

According to figures that came out in 2018, urban transport projects underway in the Gulf countries had a combined value of \$175 billion. Additional projects worth \$393 billion are also now in progress, and still others worth \$322 billion are currently in the launch phase. Projects involving roads, bridges, and tunnels alone are currently valued at \$140 billion. For a total of \$890 billion, one of the highest investment in the sector in the world, some projects have a particularly futuristic slant, like the one in Dubai, where



automation is expected to affect 25% of public transport by 2030. Dubai's new "Green Line" alone is expected to transport 125,000 passengers a day by the end of this year, and that number is expected to climb to 275,000 by 2030. Additionally, the Etihad Rail, a project creating a 746-mile rail link between the Emirates and Saudi Arabia to Oman, will be

able to transport 16 million passengers annually once completed. The Webuild Group is at work on Line 3 of the Riyadh metro, the largest city metro project under construction in the world to date. Its 84 stations with more than 108 miles of track will allow millions of people to travel around Saudi Arabia's capital.

Middle East construction market has historically been focused on supporting the oil sector...

"As the world moves increasingly away from fossil-based energy, the investment into new oil sector infrastructure has become far less important. Saudi Arabia's Vision 2030 is a leading example of Middle Eastern countries,

response to this global shift," emphasized Mr Murad.

Operating as a bridge fuel between oil and coal power and renewable-based power, natural gas infrastructure investment will remain an important fixture in Gulf construction for some years to come. As part of the diversification away from oil, there will be a transitory role

Gulf Coatings Show in United Arab Emirates celebrates successful premiere

The Gulf Coatings Show and Conference premiered at the Expo Centre Sharjah, United Arab Emirates, from October 17 to 19, 2022. The event attracted a total of 1,254 participants, who had the opportunity to learn about innovations in paint, coating, adhesive and sealant manufacture from 27 exhibitors representing nine countries. In addition to the show itself, the content-rich event proved a winner, with lectures, keynotes and an extensive business programme offering a targeted match-making function.

Vincentz Network and NürnbergMesse, the organizers of the European Coatings Show, which is held in Nuremberg every second year, have created a new go-to event for the

paints and coatings industry in the Middle East. The premiere of the Gulf Coatings Show and Conference marked the launch of a content-rich, three-day event held in Hall 2 of the Expo Centre Sharjah in the United Arab Emirates. The event drew 1,254 trade visitors and conference participants (about 70% being direct decision-makers) to Sharjah to learn about international trends and innovations in the coatings industry from 27 exhibitors representing nine countries, and to establish new business contacts.

"The concept was a 100-percent success, and we are very pleased the first event in this new series went so well," comments Thimo Holst, Director Gulf Coatings Show, NürnbergMesse GmbH. "The content of the Gulf Coatings



Show is highly relevant to the coatings industry in the Middle East. We have built up a lot of momentum for the next event, and hope to see strong growth in 2023."

On October 17 and 18, 2022, 14 prominent international speakers at the Conference Forum gave presentations on the challenging themes affecting the sector: In addition to innovations in coating technologies, the programme included other topics such as digitalization, sustainability and reducing carbon emissions. This top-quality, informative event was well received by the 177 participants from 19 countries. The programme also included four short courses on coating technology, which were tailored to the needs of

the coatings industry in the Middle East, and offered certification for the 62 participants.

Another high point was the Business Matching Hosted Buyers Programme, which gave exhibitors and visitors at the Gulf Coatings Show specific opportunities to meet. On the first day of the show, exhibitors were given an individual schedule of conversations arranged with ideal candidates. The level of satisfaction was very high – almost all the exhibitors were able to generate new business based on the 214 meetings that were held.

The next Gulf Coatings Show will be held in Hall 2 of the Expo Centre Sharjah, United Arab Emirates, October 9 – 11, 2023.



for natural gas in supporting global energy needs until the renewable sector is able to fully meet the planet's energy needs.

The plan creates new economic opportunities that allow diversification away from fossil-based economics. Building this new economy will require huge construction investment. The UAE already has achieved significant diversification away from oil dependence, with a vibrant economy centered around commercial, business services, and entertainment sectors, primarily located in Dubai.

In October 2020, the Dubai Tourism Strategy was launched by the Dubai Department of Tourism and Commerce Marketing (DTCM) Operation 300bn, the UAE's industrial strategy. Under the plan, the government plans to boost growth in the tourism sector and support wider economic recovery by attracting visitors and encouraging spending. The strategy aims to attract between 21 and 23 million visitors by 2022, increasing by an additional 2-3 million visitors by 2025.

This is likely to stimulate construction activity, particularly in the commercial

segment. This presents opportunities for the construction of new hotels, bars, restaurants, and shopping centers to support an influx of tourists.

In addition, Abu Dhabi's Department of Culture and Tourism plans to invest \$6bn in strengthening cultural and creative industries in the UAE's capital over the next five years from June 2021, presenting further construction opportunities and heating up competition in the commercial segment overall.

The strategy is built on the following six objectives: to create a relevant and attractive business environment for local and international investors in the industrial sector; to support the growth of national industries and enhance their global competitiveness; to stimulate innovation by accelerating advanced technology adoption across the industrial value chain to upgrade systems and solutions, boost productivity and forge competitive advantages in new areas; to build on the solid industrial foundations that have helped fortify the UAE's position as a global leader in industries of the future; to cultivate a culture of innovation in the ministry; to provide a



comprehensive array of administrative services in accordance with the highest standards of quality, efficiency and transparency.

MEA housing overview

The number of existing dwellings in the Africa/Mideast region totalled 410 million units at the beginning of 2020, accounting for 18% of the global housing stock. The following trends are common among national housing sectors throughout the region: Over 72% of the regional housing stock consists of single-family dwellings, reflecting the large rural population, especially in sub-Saharan Africa; Despite the high percentage of single-family dwellings, the average unit size was only 69 square meters in 2020 – among the lowest in the world – due to low average incomes in many of the region's populous countries; The share of multifamily housing has continued to increase due to ongoing rural-to-urban migration throughout the region; Much of the population lives in poor quality, informal housing lacking basic amenities, and there is a significant housing deficit in the region; While most countries are economically developing, standards of living – and quality of housing – are relatively high in a few of

the region's more prosperous countries, such as Botswana, Israel, South Africa, Turkey, and the Middle Eastern oil-producing nations that export petroleum.

New housing construction activity in the Africa/Mideast region is forecast to increase an average 4.6% per year to 14.6 million units in 2025, the fastest pace of any world region and representing a return to growth following the stagnancy of the 2015-2020 period, as several key markets rebound from the effects of the COVID-19 pandemic.

MEA bright economic outlook

Growth in the region is expected to firm to 5.3% in 2022, assisted by rising oil revenues, and a general waning of the pandemic's - adverse impacts.

These growth projections represent an upward revision of 0.9% point from the IMF's January forecast, mainly accounted for by improved prospects among the GCC economies.

Regional growth is expected to reach its fastest rate in a decade in 2022, but the rebound could have been even stronger had it not been for the detrimental impact of Russia's invasion of Ukraine on oil importers.



New innovative corrosion software assists in digital transformation of coatings and insulation inspection

Surface Corrosion Consultants Ltd, continually innovate to discover new and improved ways to prevent corrosion

Surface Corrosion Consultants Ltd (consultsurface.com), a leading corrosion software and inspection specialist company is celebrating securing the largest ever contract for its cutting-edge digital solution.

Surface Corrosion Consultants Ltd (Surface) have been engaged by gas and oil exploration and production company Shell NAM to provide a ten-year package through its innovative Surface Asset Management™ (SAM™) software.

The technology will be deployed in the client's onshore and offshore gas production facilities in the UK and Dutch sectors of the Southern North Sea and represents an important step forward in underlining the

scalability of SAM™.

Established in 2010, Surface Corrosion Consultants Ltd, specialise in a comprehensive range of paint inspection, NDT and coating inspection and corrosion prevention services for several industries including nuclear, energy, marine, oil and gas, subsea, renewables, transport and infrastructure and the industrial sector. Surface Corrosion Consultants Ltd, continually innovate to discover new and improved ways to prevent corrosion.

Headquartered in Belfast, the in-house team of experts support clients to extend the life of assets. With a deep understanding and knowledge of corrosion management the company developed an innovative, tablet-based application, Surface Asset



PHOTOS: SURFACE CORROSION CONSULTANTS LTD

SAM™ software is an easy to use, digital inspection application that can also manage new build projects providing full cradle to grave traceability.

Management (SAM™), to transform how coating condition surveys and painting campaigns are recorded and managed. The ground-breaking SAM™ software is an easy to use, digital inspection application that streamlines all aspects of NDT management and coating inspection.

The company's newly launched web and tablet-based application, Surface Asset Management™ (SAM™) has been created for the complete management of assets from conditional surveying and specification to scope of works and inspection reporting.

SAM™ is a fresh and unique approach to corrosion prevention and has been developed with simplicity and efficiency at the forefront of its design. The software removes duplication of tasks and creates a single point of access to monitor corrosion and manage the execution of coating systems, passive fire protection and insulation instalment.

SAM™ software is an easy to use, digital inspection application that can also manage new build projects



Surface Corrosion Consultants Ltd, specialise in a comprehensive range of paint inspection, NDT and coating inspection and corrosion prevention services.

providing full cradle to grave traceability.

Using a tablet and Bluetooth technology, coating inspectors record inspection data in real time, including MPI, UT and visual readings as well as images. Every piece of inspection data collected is instantly saved to secure servers. SAM™ creates skilfully formatted and concise documentation that is available anytime to download or send direct from the desktop or tablet.

Following initial penetration testing to identify and address issues and a data cleaning process, training sessions will be conducted for users. The further addition of a Cyber Essentials' Plus accreditation gives client assurance and peace of mind that Surface's IT own infrastructure meets all the latest regulations and is ISO27001 compliant.

The scope of work will also include the integration of data into the SAM™ application to maximise asset management efficiency through seamless and streamlined transition. It

will allow field inspectors performing quality checks using SAM™ to input and generate reports based on their findings. This is then transferred to the cloud to allow real-time reporting of activities in the field, to ensure up-to-the-minute information. The project also involves the exciting development of a bespoke Degradation Forecasting Module (DFM) which enables better planning and cost efficiencies by forecasting when asset upgrading is required.

Commenting on the contract award, Surface Corrosion Consultants' Managing Director Sean Truesdale said: "This is the most significant contact to date for SAM™ in terms of scope and length of time, we are delighted to be working with the Shell NAM to develop the application in step with their needs. I am excited to see SAM™ being used globally and look forward to what this relationship has to offer for the future.

"It is crucial that our technology's evolution mirrors the real needs of the sectors we



Surface Corrosion Consultants', Senior Coatings Inspector taking pictorial evidence during a conditional survey.

operate within and this is only achievable thanks to a combination of nurturing

close working relationships and having the best expertise in the industry on our team to develop innovative, practical solutions which are scalable and allow us to engage with significant clients such as Shell NAM."

Joost Brilleman Civil Engineering Lead (TA-2) at NAM added: "This new version of SAM™ is assisting us in our digital transformation of coatings and insulation inspection along with monitoring the progress and productivity of our contractors. We have plans for additional functionality and investment with the SAM™ development team meaning we will be able to accurately predict the condition of assets years into the future. Digitizing the whole process makes sense on so many levels."



SAM™ is a fresh and unique approach to corrosion prevention and has been developed with simplicity and efficiency at the forefront of its design.

Sustainable antifouling by controlled release from polymer bound Selektope®

Creating new ways to introduce polymer-bound active substances into marine antifouling coatings

Abstract

Biocide-containing antifouling coatings are widely used to prevent the accumulation of marine biofouling on vessel underwater surfaces. The adhesion of microbial slimes, macro algae and hard-shelled organisms such as barnacles on vessels create increased friction as the hull glides through the water. This can lead to reductions in vessel manoeuvrability, increased weight and reduced speed, all of which can result in increased fuel consumption and maintenance costs.

A study conducted by I-Tech and Safinah Group found that of 44% of the 249 large, ocean-going vessels inspected in dry dock had over 10% of their underwater hull surface covered with hard fouling. If you extrapolate that to global fleet scale, we estimate that (based on added resistance due to hard fouling data published in

study by Michael P. Schultz in 2011) just 10% hard fouling coverage could be responsible for at least 110 million tonnes of excess carbon emissions per year, and an additional US \$6 billion spent annually on fuel from the international shipping industry.

As the first line of defence against biofouling, antifouling coatings must ensure continued protection, as biofouling conditions change and intensify in warming waters due to climate change.

Today, there are a limited number of biocides available for use in marine antifouling coatings. For these biocides, a sustainable release rate of across the entire intended lifespan of a coating product is essential for effective biofouling prevention. For example, antifouling coatings for large, merchant vessels need to deliver adequate antifouling protection for up to

five years vessel operational time between dry docking, as dictated by safety obligations at an international level.

If we look to the past for inspiration on how to create better antifouling coatings for the future, unrivalled biocide release rate control was achieved when a biocide is covalently attached to a polymer chain, with the biocide release only occurring when the covalent bond between the biocide and the polymer is hydrolysed when in contact with water at the coating surface. This was the highly effective controlled release rate method used for the high-performance tributyltin (TBT)-based coatings of the past.

In recent years, I-Tech AB and RISE Research Institutes of Sweden have collaborated to prove the concept that the barnacle-repelling biocide, Selektope® can be attached to a polymer chain as an

alternative method for its introduction into antifouling coatings and to improve the controlled release rate of the biocide.

Introduction

For over forty years Tributyltin (TBT), an organotin biocide, was used in antifouling paints, mostly commonly as a booster biocide alongside cuprous oxide. Due to its strong ecotoxicity and its negative ecological effects observed worldwide, TBT was phased out of use from Jan 1, 2008 by the International Maritime Organization (IMO).

Unfortunately, coatings that made use of if TBT in the past delivered superior antifouling performance that can, in part be attributed to its mode of controlled release facilitated by being covalently attached to a polymer chain.

Since the TBT ban, the number of other biocides available for use has

decreased and R&D efforts to develop new antifouling technologies has intensified in a quest to ensure continuously high antifouling performance.

Today, the three most common types of marine antifouling coatings are: self-polishing copolymer (SPC), controlled deple-

PHOTOS: I-TECH



I-Tech AB and RISE Research Institutes of Sweden have collaborated to prove the concept that the barnacle-repelling biocide, Selektope® can be attached to a polymer chain as an alternative method for its introduction into antifouling coatings and to improve the controlled release rate of the biocide.

tion polymer (CDP) coatings and, foul release (FR).

In self polishing copolymer (SPC) and controlled depletion polymer (CDP) coating types, the biocide is not chemically bound to anything, it is evenly dispersed in the matrix and is released as the matrix erodes/polishes. Alternatively, the biocide could be dissolved as water penetrates the paint film and the biocide would diffuse out to the coating surface. However, there is a risk that biocide molecules could diffuse out too early.

One way to stop biocidal molecules from diffusing out of the coating film prematurely is to attach them to a large carrier, such as a polymer. In this set up, the biocide is covalently bound to the polymer chain. The bond must be hydrolysable so that it breaks upon contact with water and the biocide gets released as the coating film erodes/polishes. You can control the release rate of the biocide based on the chemistry of the covalent attachment and the composition of the co-polymer and so, ultimately control the polishing rate of those coating systems. This is what made TBT so successful as a biocide in antifouling coatings with a long lifespan for commercial, ocean-going ships.

What is Selektope®?

Selektope® (common name: medetomidine) is an active agent developed, patented and registered by I-Tech AB for use in antifouling coatings. It can be used to reduce hard fouling (primarily barnacle growth) on vessels and other underwater structures.

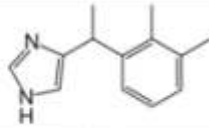
CAS-No.	86347-14-0
EINECS-no	Not listed
IUPAC Name	4-[1-(2,3-dimethylphenyl)ethyl]-1H-imidazole
Other common name	Medetomidine
Molecular formula	C ₁₃ H ₁₆ N ₂
Structural formula	
Molecular weight (g/mol)	200,28 g/mol

Figure 1. Selektope: molecular and structural formula

Currently, the most common way to introduce Selektope® into a coating matrix and to prevent its premature depletion is via the Selektope® interacting with a carrier (pigment particle) in the paint mixture. The Selektope® remains in the matrix through electrostatic interactions with the metal pigment where it “interacts” with the inorganic particles. It does not form a new molecule.

Cuprous oxide, zinc oxide and iron oxide are commonly used. ZnO is advised as the best pigment particle for maximum Selektope® adsorption.

For this method of introduction, the strength of electrostatic interactions is controlled both by pH and ionic strength of the surrounding medium, which might vary the release in different waters, although most marine waters are similar.

Concept and strategy

I-Tech AB and RISE Research Institutes of Sweden (RISE) created a synthesis method for a Selektope-containing monomer and the polymerisation of that monomer was developed as a means to improve/control the release rate of the biocide in marine antifouling coatings.

The theory behind polymerising a Selektope-containing monomer was that if Selektope was covalently

attached to the backbone of a polymer it would hydrolyse and release and its rate release would be significantly improved.

(A monomer is a small molecule that can be reacted with itself or with other monomers to make a polymer, each monomer is like a link in the polymer chain. A homopolymer is a polymer made up of the same type of monomer. A co-polymer is built up of two or more different monomers.)

A secondary objective was to ascertain whether the polymerising the Selektope-containing monomer solved any previously encountered gelation issues in paint products during storage. For example, silyl acrylate coatings are sensitive and also usually do not have a shelf life of more than six months when stored. For the coating of larger vessel hulls this is not an issue since the paint is produced and supplied “on demand” at the shipyard. However, for leisure boats using SPC coatings as opposed to CDP paints, gelation and shelf life of paint products are an issue.

Therefore, the intended outcomes of the projects were:

To prove the concept of using polymer-bound Selektope® to achieve the same control of release rate achieved by TBT-

coating systems of the past.

To solve any issues with gelation in stored paint products.

The approach

Initially, work was conducted by I-Tech and RISE to screen various monomers and synthesis routes as well as attempting the polymerisation of them. Finding ways to create hydrolysable covalent bonds to Selektope® is not only of interest to create monomers but can potentially be used in other carrier structures.

Better equipped with better understanding of what monomers might be feasible, during the second phase I-Tech and RISE commenced work to refine the method and to synthesise some polymers. After this, I-Tech and RISE had some success creating the monomer and the chemistry used to attach the Selektope® molecule to the monomer was patented.

I-Tech and RISE then proceeded to scale-up and develop synthesis methods. In the end, four different monomers were used to make a co-polymer. Since the collaborative R&D teams were equipped with much more knowledge and experience from the initial phases, they knew which combinations worked best. Therefore, the aim of the final phase was to

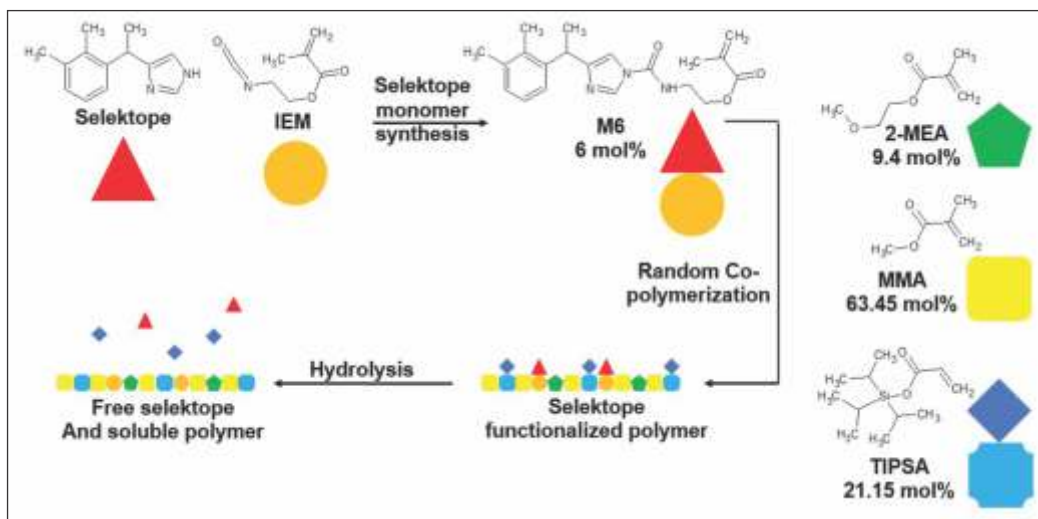


Figure 2: The concept of attaching an active agent (Selektepe) to a monomer, polymerising it to a copolymer with other monomers and the hydrolysis of the polymer when in contact with water to release the biocide and form a water soluble polymer.

refine the polymerisation and to create a polymer that can be used as a binder system in paint.

Today, zinc acrylate and silyl acrylate are common binders used in SPC coatings. Therefore, I-Tech and RISE tried to make a monomer that could be added in the polymerisation of silyl acrylate to make them even better. During the final phase, it was found that keeping the monomer mixture close to what is commercially available with the silyl acrylates today yielded the best results.

Results

The incorporation of the Selektepe® functionalised monomer in the polymer backbone was verified by diffusion NMR. The release of Selektepe® due to hydrolysis

was verified in artificial seawater by laboratory studies followed by HPLC-measurement.

Formulations were prepared in which the total concentration of Selektepe® was similar, both when added bound to pigment as well as when added covalently bound to polymer. The first test panels with coating formulations making use of a Selektepe-containing polymer were put into the water in early June 2021 in waters off the west coast of Sweden at the Kristineberg Marine Research Center.

The test panels were coated with SPC copper-free coating formulations comprising:

- Panel 1: SPC control coating with no Selektepe®.
- Panel 2: SPC with "free"

Selektepe® adhered to pigment particles (the currently used formulation technic) and 1% zinc pyrithione as a co-biocide.

Panel 3: SPC with polymer bound Selektepe® and 1% zinc pyrithione.

Panel 4: SPC with polymer bound Selektepe®, no co-biocide.

Panel 1 (SPC control coating with no Selektepe®) was covered with all kinds of organisms. Panel 2 (with "free" Selektepe® with zinc pyrethione co-biocide) had no hard fouling, but some soft fouling. Panel 3 (SPC with polymer bound Selektepe® with zinc pyrethione co-biocide) had no hard fouling, but some soft fouling. Panel 4 (polymer bound Selektepe® without a co-biocide) had a

few organisms attached – this confirms why a co-biocide is required.

These test results confirm the successful release of Selektepe® from the polymer chain during the ten month period since its performance is equal to that of test sample containing pigment bound "free Selektepe®".

Conclusions

There are no polymers on the market with Selektepe®. I-Tech and RISE have proven the concept and how it works.

Self-polishing co-polymers containing Selektepe® that covalently attached along the polymer backbone can be synthesised.

RAFT polymerisation to control kinetics and molecular mass are needed for polymer stability.

Selektepe® was released upon hydrolysis in artificial seawater.

Linear release from polymer during months 1-4.

Release from formulation with polymer bound Selektepe® was below limit of detection.

The Selektepe® functionalised acrylic/methacrylic monomer for incorporation in polymers could be synthesised with good yield. Acrylic monomers are very unstable and regularly gelled before homo/co-polymerization.

Good antifouling efficacy of the formulation containing polymer bound Selektepe® in static field test was achieved over a ten month period. Tests are ongoing.

Proving this concept in silicone-based, foul release coatings will be a future focus for I-Tech.

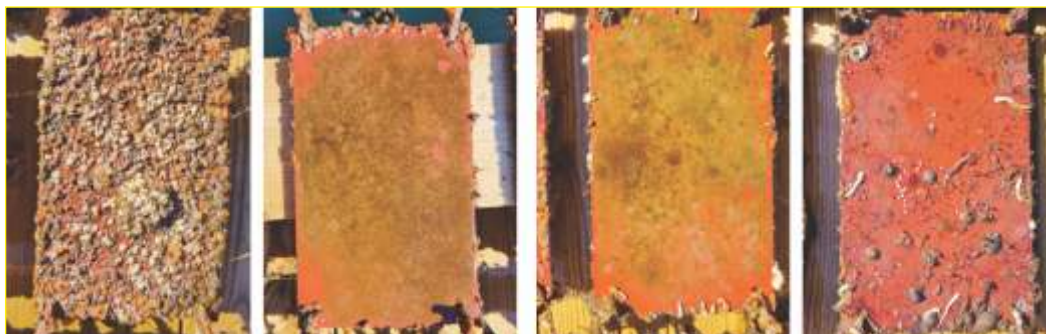


Image 1: Test panels after 10 months submerged off the west coast of Sweden.



Author:
Dr Dan Isaksson,
Research & Application
Development Manager
at I-Tech.

AMPP Certification Courses in India.

Fundamentals of Protective Coatings (C1)

NACE: Protective Coatings Specialist (PCS-1 Basic)
14 Feb – 18 Feb 2023, Mumbai

Planning and Specifying Industrial Coatings Projects (C2)

NACE: Protective Coatings Specialist (PCS-2 Advanced)
20 Feb – 24 Feb 2023, Mumbai

Correspondence Address

NACE International India Section
305-A, Galleria, Hiranandani Gardens, Powai, Mumbai-400076, India
Tel: +91-22-25797354, Email: info@naceindia.org
Website: www.amppindia.org / Conference : www.corcon.org
Mr. Denzil D'Costa – Program Coordinator

Registration Contact

Mr. Manoj Mishra, Manager Administration
Cell +91 9820631320,
E-mail: manoj@naceindia.org

Hosted By

Henkel creating added value for its customers with digital LOCTITE® Pulse solutions

Expansion of maintenance, repair and overhaul portfolio to include data-enabled solutions

In October 2021, Henkel Adhesive Technologies (henkel-adhesives.com), a global leader in adhesives, sealants and functional coatings, introduced LOCTITE Pulse, an Industrial Internet-of-Things (IoT) solution that contributes to the reliability of critical assets. Once installed in your critical assets, LOCTITE Pulse sensors continuously collect data and provide valuable insights into asset health, notes a press communique from the company.

The first solution, LOCTITE Pulse Smart Flange Leak Detection, can detect early leakages and may be able to predict serious incidents. Critical assets can be monitored with a smart app and notifications are sent when irregularities are



PHOTOS: HENKEL/PA

LOCTITE Pulse Smart Flange Leak Detection, can detect early leakages and may be able to predict serious incidents.

detected. This enables operators to act in a timely manner, significantly decreasing the risks of growing leaks to both operations and the environment and contributing to sustainability.

Major customers in the oil and

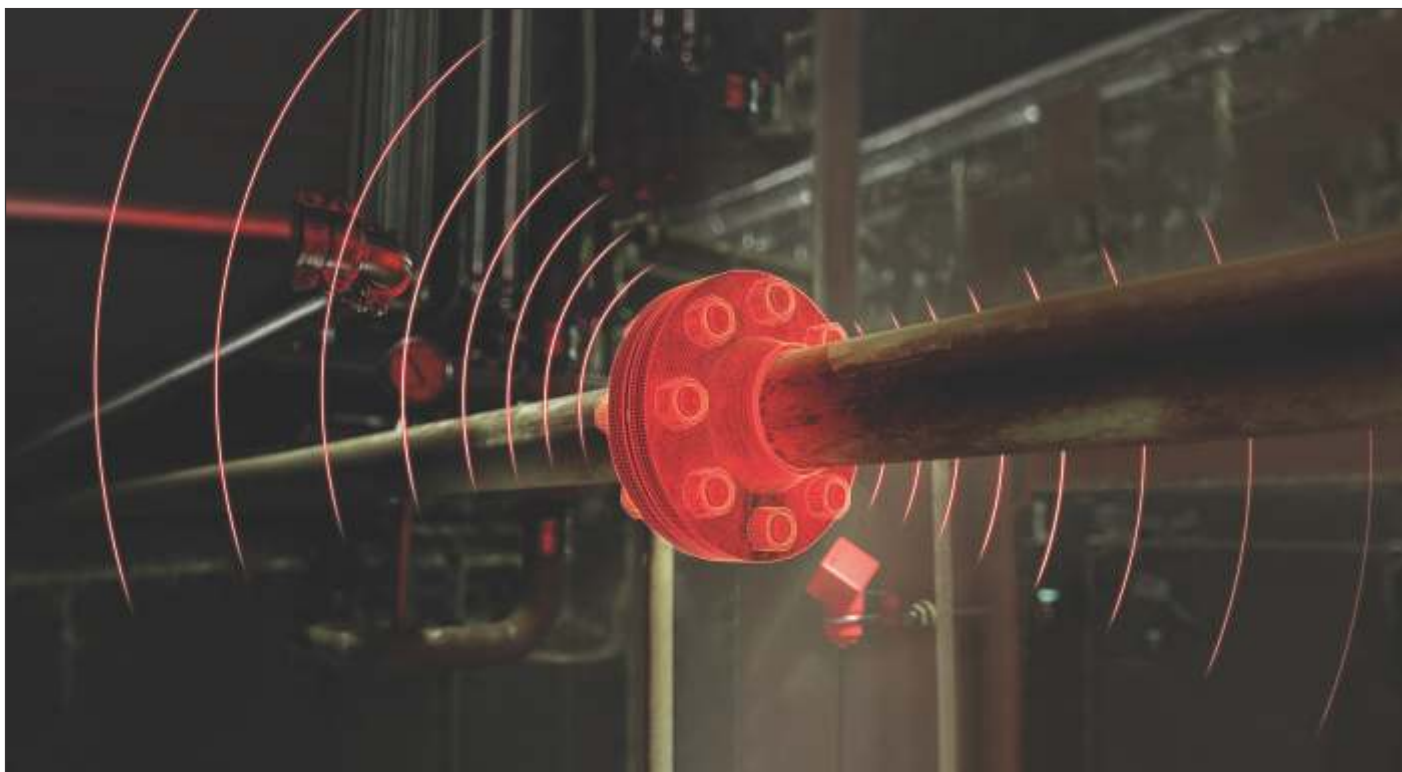
gas and chemical industries, such as Shell or H&R Group, have already installed the solution in their plants and are benefiting from intelligent monitoring.

H&R Group is a leading German manufacturer of

mineral oil specialties. One of the challenges it faced was the numerous critical flanges to be monitored during production. Since the majority of these critical flanges are located under insulation or in difficult-to-access areas, visual inspection required significant effort and was often carried out at insufficient intervals and in inadequate quality. With the help of LOCTITE Pulse Smart Flange, critical flanges are now continuously monitored, enabling the detection of possible leaks at an early stage. This avoids costly repairs and unplanned downtime, while also providing an additional level of safety. For Jan Hendrik Graef, Head of Operations at H&R, one fact is crucial: "I now have an overview of the plant at all times and all locations."



Critical assets can be monitored with a smart app and notifications are sent when irregularities are detected.



Once installed, LOCTITE Pulse sensors continuously collect data and provide valuable insights into asset health.

The use case at Shell is similar. The Shell Energy and Chemicals Park Rheinl is one of the largest chemical and energy sites in Germany. Dr Michael Hansen, Engineering Manager at Shell, states: "In the past, the monitoring of our pipes and flanges was very complex and costly." Fabian van Straelen, Senior Asset Inspector at Shell, adds: "In particular around road junctions, we have a large number of assets which require an efficient and reliable monitoring solution." With the help of LOCTITE Pulse, these critical assets can now be continuously monitored, and potential leaks can be detected at an early stage. Dr Michael Hansen highlights: "We are particularly impressed by three advantages of the Henkel solution: the simple and fast installation, the fact that leaks

can be precisely localized and the possibility of rapid scaling."

"With LOCTITE Pulse Smart Flange, we have brought a solution to market that helps our customers address a problem for which they previously had no suitable solution. We help them to create an additional level of safety and at the same time support them in reducing expenses and increasing uptime," explains Dr Michael Honné, Head of MRO 4.0/Industry 4.0 at Henkel Adhesive Technologies. He adds, "IoT, especially smart maintenance, is an important future growth area in which Henkel is consciously investing. Smart Flange represents just the first of many solutions that will soon follow. Our goal is to offer our customers a broad portfolio of data-driven solutions under

the LOCTITE Pulse brand."

Dr Kourosh Bahrami, Corporate Vice President, General Manufacturing and Maintenance, Henkel Adhesive Technologies concludes: "As a global leader in adhesives, sealants, and functional coating solutions, we already enable our customers to minimize downtime, increase efficiency and extend equipment lifetime. With LOCTITE Pulse, we are taking the next logical step by offering our customers this

digital and data-enabled portfolio of smart maintenance solutions that will elevate operational efficiency and sustainability to the next level. LOCTITE Pulse Smart Flange is the first piece of the great vision that we're all striving for. We see Loctite Pulse's digital solutions as an opportunity to simplify, improve and add real value to our customers' operations. As our successes at Shell and H&R have outlined, we are creating substantial value for our customers."

Expand your business foot-print

With each issue, your advertising message reaches a vast readership comprising senior decision-makers

**COATINGS AND
ANTI CORROSION**
ENGINEERING REVIEW

Find out more: marketing@coatingsjournal.com

Date	Course	Place	Organizer	Contact Details
JAN 16 – 20, 2023	CSWIP 3.1 Senior Welding Inspector Level II	Kochi	Blastline Institute	T: (484) 2408477 E: info@blastlineinstitute.com W: blastlineinstitute.com
JAN 16 – 20, 2023	BGAS Grade 2 Painting Inspector	Kochi	Blastline Institute	T: (484) 2408477 E: info@blastlineinstitute.com W: blastlineinstitute.com
JAN 23 – 28, 2023	CSWIP 3.2 Senior Welding Inspector Level III	Kochi	Blastline Institute	T: (484) 2408477 E: info@blastlineinstitute.com W: blastlineinstitute.com
JAN 23 – 28, 2023	Basic Coating Inspector / CIP Level 1 Course	Vadodara	Corcon Institute of Corrosion	T: (022) 24106494 E: info@corrosionindia.org W: corrosionindia.org
JAN 30 – FEB 03, 2023	CSWIP 3.1 Senior Welding Inspector Level II	Kochi	Blastline Institute	T: (484) 2408477 E: info@blastlineinstitute.com W: blastlineinstitute.com
JAN 30 – FEB 03, 2023	Certified Coating Inspector / CIP Level 2 Course	Vadodara	Corcon Institute of Corrosion	T: (022) 24106494 E: info@corrosionindia.org W: corrosionindia.org
FEB 06 – 10, 2023	CSWIP 3.1 Senior Welding Inspector Level II	Kochi	Blastline Institute	T: (484) 2408477 E: info@blastlineinstitute.com W: blastlineinstitute.com
FEB 13 – 17, 2023	BGAS Grade 2 Painting Inspector	Kochi	Blastline Institute	T: (484) 2408477 E: info@blastlineinstitute.com W: blastlineinstitute.com
FEB 14 – 18, 2023	Fundamentals of Protective Coatings (C1)	Mumbai	NACE International India Section	T: (022) 25797354 E: info@naceindia.org W: amppindia.org
FEB 20 – 24, 2023	Planning & Specifying Industrial Coatings Projects (C2)	Mumbai	NACE International India Section	T: (022) 25797354 E: info@naceindia.org W: amppindia.org
FEB 20 – 24, 2023	CSWIP 3.1 Senior Welding Inspector Level II	Kochi	Blastline Institute	T: (484) 2408477 E: info@blastlineinstitute.com W: blastlineinstitute.com
FEB 20 – 24, 2023	Cathodic Protection Program Level 1	Mumbai	Corcon Institute of Corrosion	T: (022) 24106494 E: info@corrosionindia.org W: corrosionindia.org
FEB 27 – MAR 03, 2023	CSWIP 3.1 Senior Welding Inspector Level II	Kochi	Blastline Institute	T: (484) 2408477 E: info@blastlineinstitute.com W: blastlineinstitute.com
FEB 27 – MAR 03, 2023	Cathodic Protection Program Level 2	Mumbai	Corcon Institute of Corrosion	T: (022) 24106494 E: info@corrosionindia.org W: corrosionindia.org
MAR 06 – 10, 2023	BGAS Grade 2 Painting Inspector	Kochi	Blastline Institute	T: (484) 2408477 E: info@blastlineinstitute.com W: blastlineinstitute.com
MAR 06 – 10, 2023	BGAS Grade 1 Painting Inspector - Offshore	Kochi	Blastline Institute	T: (484) 2408477 E: info@blastlineinstitute.com W: blastlineinstitute.com

COATINGS AND ANTI CORROSION

ENGINEERING REVIEW

India's premier B2B magazine on Corrosion Management



Special Offer!

Rs. 1,200 Only
for a 3-Year Subscription

Big Savings
& a Free Gift!



Wet Film Thickness Gauge

OR



11-in-1 Card Tool Kit

Please your preferred gift

Period	Issues	Rate (INR)
1 year	6	700
2 years	12	1,400
3 years	18	1,200*

* Big Savings & a Free Gift

SUBSCRIPTION FORM

Name: Mr / Ms / Dr / Prof. _____ Designation: _____

Company: _____

Address: _____

City: _____ Pin code: _____ State: _____ Country: _____

Tel: _____ Mobile: _____ E-mail ID: _____

Which of the following best describes your industry/business representation?

- Aerospace Automotive Construction Consultancy Chemicals Defence Steel Services
 Energy Engineering Equipment & Supplies Fire & Safety Oil & Gas Off-shore & On-shore
 Infrastructure Instrumentation & Testing Inspection & Quality Assurance Shipping & Ports Pipelines
 Ship Building & Repairs Mining Minerals & Metals Paints High Performance Coatings Maintenance
 Turnkey Project Implementation Fabrication Other _____ (please specify)

Payment options

For the Subscription: 1-year Rs. 700 2-years Rs. 1,400 3-years Rs.1,200

Cheque/DD No: _____ Dated: _____ Drawn on: _____

Bank transfer

A/C: Coatings & Anti Corrosion Engineering Review | A/C No. 13332320000191
RTGS/NEFT IFSC Code: HDFC0001333, MICR Code 400240103

After fund transfer, please scan and e-mail this completed form to marketing@coatingsjournal.com

Cheque/DD in favour of Coatings & Anti Corrosion Engineering Review to be sent to:

Coatings & Anti Corrosion Engineering Review
102 Dattar Mansion, C.S Marg, Vakola Bridge, Santacruz (E), Mumbai 400055
Email: info@coatingsjournal.com | www.coatingsjournal.com

Or simply scan this QR code
for UPI payments



BASF launches automotive coatings using renewable raw materials to fulfill customer requirements in China

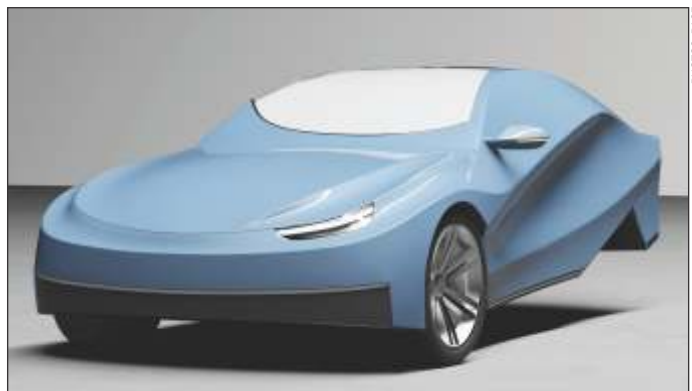
BASF's (basf.com) ColorBrite® Airspace Blue ReSource basecoat, certified by REDcert² according to a biomass balance approach, made its debut in China. This is the first time BASF's biomass balance automotive OEM coatings were introduced to Asia since the official launch in Europe in May of this year, notes a press release from the company.

The first batch of ColorBrite® Airspace Blue ReSource basecoat has been delivered to a customer in China. This basecoat product enables around 20% reduction in product carbon footprint. The saving number is reviewed by a third-party external sustainability consultant. Being part of the biomass balance version of BASF's ColorBrite waterborne basecoat portfolio, ColorBrite® ReSource adds a reduced carbon footprint without the need to alter the product's

formulation and performance.

BASF has also received the biomass certification for its resins plant in Caojing, as well as its paint manufacturing sites in Minhang and Caojing operated by BASF Shanghai Coatings Co, Ltd. With this certification, BASF has the capability to provide its customers in China a comprehensive range of biomass balance certified automotive coatings solutions using materials derived from renewable raw materials.

"Replacing fossil-based feedstock with renewable raw materials through BASF's biomass balance approach symbolizes our pledge to helping our customers achieve their carbon emission targets while retaining the same high quality and performance of the product. The biomass balance approach certification for our sites in China reinforces our



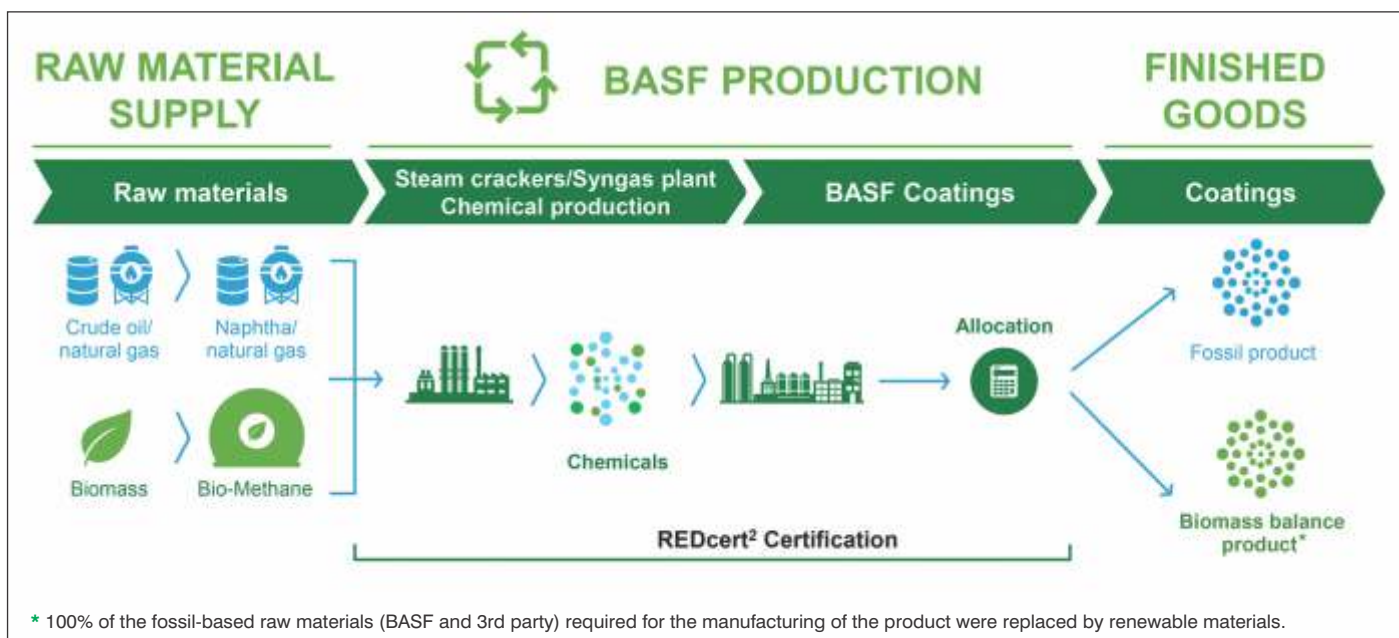
PHOTOS: BASF

BASF's ColorBrite® Airspace Blue ReSource basecoat, certified through a biomass balance approach.

commitment of being an industry leader in driving sustainability and innovation. We look forward to cooperating with more OEMs in China by contributing to a resource-efficient and carbon-neutral future together," said Jack Zou, Vice President, Automotive OEM Coatings Solutions Asia Pacific, BASF.

In BASF's biomass balance approach, renewable raw materials are used as raw materials when manufacturing

primary chemical products in the production site. The proportion of renewable raw materials is then attributed to certain sales products according to a certified mass balance method. REDcert² is a certification system for the sustainable use of biomass, which confirms that BASF has replaced the quantities of fossil resources required for the biomass balanced product sold with renewable raw materials.



Fossil-based feedstock is replaced with renewable feedstock using BASF's certified biomass balance approach in the early stage of the production process.

MC-Bauchemie opens new site in India

MC-Bauchemie India recently celebrated the inauguration of a new plant in Halol in Gujarat, India – with key customers, employees and partners in attendance. The complex includes a production facility where powder products, concrete admixtures, polymers and resins are manufactured, plus warehousing, logistics and office space, and a laboratory.

In forming MC-Bauchemie India as a joint venture back in 1985, MC-Bauchemie became one of the first Western construction chemicals companies to make the move to the Indian subcontinent. It has since established itself as a manufacturer of high-quality chemical products for the Indian construction sector, forging a strong reputation among architects, planning engineers, builders and applicators alike. The last four years in particular have been crowned with success in the wake of extensive restructuring. MC-Bauchemie India had invited its most important customers from all over India to mark the inauguration of the modern production site in Halol, and despite the enormous distances that some of them had to travel in this huge country, they kindly made the trip. With all employees of MC-Bauchemie India present, they graced the ceremonial opening of the new facility in Halol, a municipality located about 40 kilometres northeast of the major city of Vadodra in the state of Gujarat. Also present was MC-Bauchemie India's first-ever customer, Sanjay Kale of Buildpro Systems in



View of MC-Bauchemie India's new industrial facility in Halol.

Pune, now in his mid-70s and long retired.

The new MC site in Halol comprises more than 8,500 m² of land and around 3,300 m² of production, warehousing, logistics and laboratory floor space, together with 600 m² of office space and other built-up zones. The production plant has a capacity of around 8,300 t (metric) of powder products, over 5,500 t of concrete admixtures, 800 t of polymers and 600 t of resins.

Speaking at the event, Dr Ekkehardzur Mühlen, Managing Director of the MC-Bauchemie Group said, "We are investing in India in order to enhance our position and further expand our business in this major market."

Other MC product systems serving local needs will also be introduced into this market in due course, he explained, stating: "We are thus following a strategy aligned to consolidating our footprint in

India and Southeast Asia and further accelerating our pace of growth."

Mr Christoph Hemming, Regional Manager IMEA at MC-Bauchemie, noted that, "Since acquiring all the shares in our Indian MC company in 2018, we have reorganized and modernized its business structures. In the ensuing period, we have succeeded in taking our business in India to a much higher level and, above all, in driving substantive development with the new management in place," adding not without a little pride: "And we have continued to hit all our targets, even during the toughest periods of the coronavirus pandemic." Together with the expansion in production capacity at the Goa site, this opening of a modern manufacturing facility in Halol represented, he said, a major step in generating the further growth of the business – and one well worth celebrating.

Mr Pinaki Mukherjee, Managing Director of MC-Bauchemie India, noted: "With our modern manufacturing facility in Halol, we can produce MC-India's entire product range – from powder products and concrete admixtures to polymers and resins. And we also now have another air-conditioned warehouse for injection products here, in addition to that located at our site in Goa. We are very proud of this and need to thank all team members involved in this project for the dedication and commitment they showed in getting us to this point. With the opening of this new production facility, we currently have two sites in western India, one north of Mumbai in Halol and one south of Mumbai in Goa. With this and with the strength of our team, we are now in a position to extend our delivery reach to the west and northwest of the country."

Brighten your world with “ZEITGEIST”, Heubach's 2023 Decorative Color Trends

Zeitgeist invokes the mood of the age and perhaps no feeling more closely reflects this spirit of the time than that we must salvage our planet. With sustainability as a guiding principle, Heubach's 2023 Decorative Color Trends set a new direction in color and application techniques for decorative coatings.

The shades that feature in Zeitgeist 2023 Decorative Color Trends reach out to the future, diving into the unknown, exploring new galaxies and the depths of the seas. Based on the topics “Impetus”, “Free Rein”, “Y-Files” and “Deep Space” Heubach (heubachcolor.com) has developed four color palettes from traditional, natural driven soft tones to intense and bright shades.

The four color palettes consist of 21 color trends including The Color of the Year (COTY) 2023 – GOOD JINN, a dark and intense blue hue which is great for drawing the focus of a room to some special feature – a large window or a nice painting or piece of furniture.

“To each color trend we offer matching color tones and the basis for each is a guiding formulation available in our Formula Guide. This allows customers to match any color they aim for in modern architectural paints,” said Franziska Trapp, Segment Head Decorative and Wood Coatings, Global Technical Marketing Coatings at Heubach.

“At the same time, our digital

world offers another kind of creativity, one that lets us explore a whole metaverse of opportunities and colors in each of the palettes. Why not lead a second life in the Y-FILES, where “Y not” is the reigning motto? Especially now that the pandemic has turned us into blank slates and given us FREE REIN over how to continue. Who knows, we might even be inspired to become real-world explorers – fathoming the undiscovered depths of DEEPSPACE and bottomless oceans.”

All ZEITGEIST shades are formulated with Colanyl® 500 waterborne pigment preparations. The resin-free and low VOC range combines the advantages of broad compati-

bility in waterborne architectural coatings and suitability for Point-of-Sale and In-Plant tinting.

It also offers a well-balanced mixture of high and medium pigment content for economical coloring, optimized preservation and minimized

settling behavior for a long shelf life of up to two years, no impact on film hardness or abrasion resistance and has good hiding power even in light color areas. Colanyl 500 is low VOC and manufactured without using alkyl phenol ethoxylated additives (APEO).



“ZEITGEIST” Decorative Color Trends 2023+: full color palette from traditional, natural driven soft tones to intense and bright shades.

IMAGE: HEUBACH

If you have any...

**IndustryNews/NewProducts
Research/CaseStudies/Events
TechnicalFeatures/Reports**

that you would like to share with our readers, please contact: editor@coatingsjournal.com

**COATINGS AND
ANTI CORROSION**
ENGINEERING REVIEW

Scientists use modified silk proteins to create new nonstick surfaces

Researchers at Tufts University, Massachusetts, have developed a method to make silk-based materials that refuse to stick to water, or almost anything else containing water.

The modified silk, which can be molded into forms like plastic or coated onto surfaces as a film, has nonstick properties that surpass those of nonstick surfaces typically used on cookware, and it could see applications that extend into a wide range of consumer and medical products.

Silk is a natural fiber spun by moths and has been used for thousands of years to make durable and fine fabrics—and surgical sutures to close wounds.

More recently, scientists have learned to break down the fibers to their basic protein element—silk fibroin—and reconstitute it into gels, films, sponges, and other forms to create everything from implantable orthopedic screws to textile inks that change color in response to body chemistry.

“What makes silk such a unique material is that not only can it take on a wide range of forms and shapes, but one can easily change its properties by chemically modifying the silk fibroin,” said Krishna Kumar, Robinson Professor of Chemistry at Tufts.

“If we want to make orthopedic screws that are absorbed by the body at different rates using silk fibroin, we modify the chemistry,” he said. “If we want to create a blood sensor that detects oxygen, or glucose, or other blood

components, we modify the chemistry. In this study, we modified silk fibroin to repel water, and we can do it in a way that can ‘tune’ the material to be more or less water repellent.”

Turning silk into a water repellent material involved covering the surface of the silk fibroin with short chemical chains containing carbon and fluorine, called perfluorocarbons. These chains are very stable and do not react with other chemicals, nor do they interact with proteins and other biological chemicals in the body.

While the natural surface of the silk protein acts like a magnet to water, with negatively and positively charged branches on the silk attracting water, a silk protein covered with perfluorocarbons leaves little for the water to grab on to.

Perfluorocarbons even resist attraction caused by other forces that typically bring molecules together. Changing the number and length of perfluorocarbon chains on the silk protein can adjust how ‘unsticky’ it behaves. Luke Davis, an assistant professor of chemistry, established the level of fluorine required on the surface of silk to exhibit nonstick behavior.

The chemical synthesis is done under mild conditions, so unlike the production of other nonstick substances, the manufacturing process could be safer, both for workers and the environment. Safer manufacturing and a renewable biological source of material checks two boxes for sustainability.



Water beading on a nonstick surface.

The Tufts researchers measured the nonstick property by observing how water beads up on the surface of the material—like how water rolls off a waxed car. In fact, on nonstick silk molded into bars using the highest level of perfluorocarbons, the water rolled up into drops that are rounded even tighter than on Teflon.

It's not just water that rolls off the nonstick silk, but any substance that has water as a major component, which could include various foods, blood, cells, and tissues. Although not tested in this study, perfluorinated materials are known to repel oils as well.

“Modifying medical devices to prevent detrimental interactions with water and other biologics has the potential to preserve strength and integrity for as long as they are needed,” explained Julia Fountain, a graduate student in Kumar's lab and co-author of the paper. “Silk is already relatively inert to the immune system, so tuning its ability to repel cells or other substances could make it even

more useful.”

The advantages of highly nonstick surfaces go well beyond medical applications. While there is concern regarding chemicals absorbed in the body from commercially available nonstick coatings, silk-based nonstick surfaces may offer an alternative option, which can be explored for its relative safety.

One could also imagine automotive windshields where rainwater just rolls off without using wipers, coatings on metals that help prevent rust, or on fabrics to make them easier to clean.

“The success we had with modifying silk to repel water extends our successes with chemically modifying silk for other functionalities—such as the ability to change color, conduct electrical charge, or persist or degrade in a biological environment,” said David Kaplan, Stern Family Professor of Engineering at Tufts. “As a protein, silk lends itself well to modular chemistry—the ability to ‘plug in’ different functional components on a natural scaffold.”

ALD coatings for next-generation solar cells

Researchers at the University of Helsinki are developing thin films needed in new types of halide perovskite solar cells, and matching ALD processes, in order to provide increasingly affordable solar cells, enable their integration into objects and, consequently, promote the transition to renewable energy.

Most commercial solar cells are silicon-based, and apply PERC (Passivated Emitter and Rear Cell) technology originally launched in 1983 by Martin Green, a recently awarded Millennium Award. However, increasingly efficient, inexpensive and durable solar cells are being developed all over the world. Even in the case of silicon-based cells, a transition is underway to novel techniques, including the tunnel oxide passivated contacts (TOPCon) concept, where several layers of silicon and oxide are added to the cell.

In addition to silicon, other solar cell technologies are being investigated. The most promising new technique is based on the use of halide perovskites as a light-absorbing material. The general chemical formula of halide perovskites is ABX_3 , where A is an alkali metal or an amine, B is tin or lead, and X is a halide. The most commonly studied compound is methylammonium lead iodide $CH_3NH_3PbI_3$. Perovskite solar cells are on the verge of commercialization, and some manufacturers

believe they will be mainstream in a couple of decades.

“As these new types of solar cells can be transparent, they can be installed in, for example, windows. They are also flexible, which increases their uses,” says Senior University Lecturer Marianna Kemell, who heads the research project funded by the Academy of Finland.

Even though halide perovskite solar cells have achieved high efficiency levels, problems with cell stability and the lack of industrial-scale production techniques have constituted bottlenecks impeding their widespread adoption.

While pursuing a master's degree in chemistry, Doctoral Researcher Georgi Popov boldly chose halide perovskites and their atomic layer deposition (ALD) as the topic of his master's thesis. There were doubters, as prior research-based knowledge was scarce.

“We identified suitable chemicals and were able to design a reaction that enabled us to create a metal iodide coating through deposition for the first time. We were able to demonstrate that this can actually be done through atomic layer deposition. The first successful trial was carried out with lead iodide, which was then processed into $CCH_3NH_3PbI_3$ perovskite through a further reaction,” Popov says. “The research article was published in the refereed



Members of the research group next to the ALD reactor. Georgi Popov (left), Marianna Kemell, Alexander Weiss and Mariia Terletskaia.

Chemistry of Materials scholarly journal. Later on, we also developed ALD processes for caesium iodide and $CsPbI_3$ perovskite.”

Coatings produced through atomic layer deposition are used in roughly 30% of silicon-based solar panels. The ALD group headed by Professor Mikko Ritala at the University of Helsinki has achieved promising results in terms of the technique's adaptability to perovskite solar cells. The advantage of coatings produced by atomic layer deposition is that they form a uniform and comprehensive layer even on rough surfaces.

“If at some point we start making tandem solar cells, which combine a silicon cell and a perovskite cell, we know how to make that perovskite. We are developing the recipes and the chemistry used to grow perovskite,” Popov says.

While the work currently being carried out is basic research,

developing recipes and experimenting with small surface areas, the technique is applicable to large-scale production.

“The current plants manufacturing solar cells in China and elsewhere are able to adjust their equipment to produce ALD-coated solar cells,” says Popov.

More than 80% of solar cells are manufactured in China, where industrial-scale ALD devices are also produced. Wei-Min Li, PhD, an alum of the University of Helsinki's Department of Chemistry, works as the chief technology officer at Leadmicro, a leading Chinese manufacturer of ALD equipment. This connection gives the department a solid grasp on where the field is going. ALD equipment used to produce silicon-based solar panels can also be expanded to produce next-generation solar cell materials.

“We are developing the future technical solutions that will gradually replace and

supplement current production. In the future, fewer resources will be needed for production, and, thanks to increasingly effective cells, less surface area as well. When solar cells can be installed on uneven surfaces in addition to even ones, we no longer need to build solar parks in fields, as fields are needed for other purposes,” Popov notes.

However, Popov points out that we cannot afford to wait for new technical solutions, as the utilisation of renewable energy sources must be increased now. By replacing current sources of energy with solar or wind power as much as possible, pressure will increase and the entire field will advance.

“The best part of silicon-

based cells is that they last roughly 20 to 30 years and will continue to function even after that, albeit possibly less efficiently. Since solar cells produced with the PERC technique are the current state of the art, and they are available, it is advisable to acquire as many of them as possible. They will pay for themselves,” Senior University Lecturer Kemell says.

The project entitled 'Atomic Layer Deposition as key enabler of scalable and stable perovskite solar cells,' which is funded by the Academy of Finland, will continue until 2024. In addition to Marianna Kemell and Georgi Popov, contributing to the project are Doctoral Researcher Alexander Weiss and master's student Mariia Terletskaia.

Clear window coating could cool buildings without using energy

As climate change intensifies summer heat, demand is growing for technologies to cool buildings. Now, researchers report in ACS Energy Letters that they have used advanced computing technology and artificial intelligence to design a transparent window coating that could lower the temperature inside buildings, without expending a single watt of energy, notes a press release from the American Chemical Society (ACS).

Studies have estimated that cooling accounts for about 15% of global energy consumption. That demand could be lowered with a window coating that could block the sun's ultraviolet and near-infrared light — the parts of the solar spectrum that typically pass through glass to heat an enclosed room. Energy use could be reduced even further if the coating radiates heat from the window's surface at a wavelength that passes through the atmosphere into outer space. However, it's

difficult to design materials that can meet these criteria simultaneously and can also transmit visible light, meaning they don't interfere with the view. Eungkyu Lee, Tengfei Luo and colleagues set out to design a “transparent radiative cooler” (TRC) that could do just that.

The team constructed computer models of TRCs consisting of alternating thin layers of common materials like silicon dioxide, silicon nitride, aluminum oxide or titanium dioxide on a glass base, topped with a film of polydimethylsiloxane. They optimized the type, order and combination of layers using an iterative approach guided by machine learning and quantum computing, which stores data using subatomic particles. This computing method carries out optimization faster and better than conventional computers because it can efficiently test all possible combinations in a fraction of a second. This produced a coating design that, when fabricated, beat the



PHOTO: ACS ENERGY LETTERS

A hand holds a transparent film in front of a view of a building, demonstrating that the film doesn't block visible light. This window film (held in fingers at top left) keeps rooms bright and cool by allowing visible light to pass in while reflecting invisible infrared and ultraviolet sunlight and radiating heat into outer space.

performance of conventionally designed TRCs in addition to one of the best commercial heat-reduction glasses on the market.

In hot, dry cities, the researchers say, the optimized TRC could potentially reduce cooling energy consumption by 31% compared with conventional windows. They note their findings could be applied to other applications,

since TRCs could also be used on car and truck windows. In addition, the group's quantum computing-enabled optimization technique could be used to design other types of composite materials.

The authors acknowledge support from the National Research Foundation of Korea and the Notre Dame Center for Research Computing.

Successful EuroBLECH 2022: Industry gathered in Hanover to shape the future of sheet metal working

The 26th International Sheet Metal Working Technology Exhibition, EuroBLECH 2022, ended October 28, 2022 after four days of flourishing business. A total of 38,076 trade visitors (FKM audited) from around the world came to Hanover to shape the future of sheet metal working and defy current challenges. This year's show hosted 1,300 companies from 39 countries on a net exhibition space of 86,136 square metres. A euphoric atmosphere and full order books were the results of a successful comeback of the show.

A closer look at this year's visitor numbers reveals that a total of 35,944 unique visitors came to the exhibition grounds in Germany. Practically matching the previous edition's stats, this is an exceptional result, especially given the difficult general conditions. Industry experts from all parts of the world came to the show for shorter but therefore more productive visits.

"It is hard to describe how we're feeling after giving everything we had in the past four years to make this show possible. We are overwhelmed by the fantastic outcome and proud that EuroBLECH continues its critical role in bringing the global sheet metal working industry together," says Evelyn Warwick, Exhibition Director of EuroBLECH, on behalf of the organisers Mack-Brooks Exhibitions. "This year's edition was both special and hugely important for the whole sheet metal working industry. Judged by the exhibition space itself, you can tell as we came pretty close to the record numbers in 2018," continues Evelyn Warwick.

A total of 62% of exhibitors came from outside of Germany to this year's show. This represents a further increase in international attendance by 4%. According to the preliminary results of the exhibition survey, this trend continuous throughout the visitors: more than half of the trade visitors (56%) made their way to the event from outside of Germany, making EuroBLECH a truly international exhibition. Major visitor countries, next to Germany, included the Netherlands, Poland, Italy, Sweden, Turkey, Austria, Belgium, Denmark and France. Furthermore, 37% of all visitors do not attend any other trade show, which is an increase of 10% compared to the show in 2018 and underlines the importance of the event.

As the key marketplace for the industry, EuroBLECH 2022 offered its visitors the opportunity to find solutions for the current challenges in the industry and connects them with businesses from all over the world to help them integrate the latest machinery and software into their manufacturing process. The hot topics this year were digitalisation, sustainability and Industry 4.0. Many of the products and innovations shown at EuroBLECH 2022 have been developed with a focus on cost and resource efficiency.

"The visitors this year meant serious business. Almost every second person entering the gates to EuroBLECH 2022 came with the intention to invest. That's an increase of 4% compared to the previous edition," concludes Evelyn Warwick. Both exhibitors and visitors were highly satisfied



PHOTO: EUROBLECH

with the show and their newly established business relations. The visitors praised the comprehensiveness and international range of the products on display, as well as the quality of the exhibition stands and the many live demonstrations of digital processes. The exhibitors appreciated the highly qualified and international audience with its high percentage of decision-makers (80%).

"EuroBLECH is of great importance to us, as it is the leading international show for the sheet metal working industry. It is a truly global event, hence we were able to meet visitors from all over the world, for example Asia and Australia. Our result of the show is a success for Bystronic in these challenging market conditions," said Johan Elster, Chief Sales Officer, Bystronic Group.

"We've had a fantastic week at EuroBLECH recording a record number of leads. The atmosphere was electric and it was clear to see that customers were ready and excited to be back at EuroBLECH," noted Matthew Fowles, Group Marketing

Director, LVD Company NV.

A great majority of the visitors came from the industry (72%), followed by visitors from trade workshops and services. The most important sectors visitors belonged to included engineering, steel and aluminium construction, sheet metal and products, the automotive industry and its suppliers, iron and steel production and electrical engineering.

In addition to the innovations and numerous live demonstrations at the exhibition stands, attendees were able to appreciate the EuroBLECH 2022 Presentation Area. The new show feature delivered 27 sessions throughout the four exhibition days, offering exciting insight into innovative companies and projects, interesting discussions and valuable networking opportunities.

Date of the next show

Many exhibitors at this year's show have already announced that they will exhibit again at the next EuroBLECH in 2024, which will take place October 22 – 25, 2024 at the Hanover Exhibition Grounds in Germany.

ADIPEC 2022 generates US\$8.2 billion in business for global energy supply chain

ADIPEC 2022 has generated an estimated US\$8.2 billion in business for exhibiting companies, a survey conducted across the 2,200 exhibitors has revealed.

ADIPEC took place in Abu Dhabi from October 31 to November 3, 2022, gathering some of the best minds from energy markets around the world to address critical issues facing the energy sector, including the trilemma of security, affordability and sustainability of energy supply.

The future of energy was discussed across more than 350 sessions, where over 40 ministers and 38 global CEOs, policy makers, energy experts and innovators shared their views on achieving a progressive and pragmatic transition and the significant role of investment and collaboration in the path to Net Zero.

ADIPEC 2022 saw a record global attendance of more than 160,000 attendees from 164 countries, with 41 percent coming from abroad. The UAE saw an estimated value of US\$200 million brought in through sectors that supported the four-day event, including tourism and hospitality.

Tayba Al Hashemi, ADNOC Sour Gas CEO and Chair of ADIPEC 2022, said: "ADIPEC 2022 set out the need for a bold and realistic energy transition, an approach that is both pro-climate and pro-growth if we are to successfully chart a future of energy that is secure, sustainable, and affordable. The positive

impact of the event is not only felt here, in Abu Dhabi and the UAE, but by the global energy industry and governments, who continue to turn up in larger and larger numbers each year."

"The record-breaking numbers of attendees and deals speak for themselves, but I have also been listening to feedback from attendees. They value ADIPEC because it fuses together strategic thought leadership and industry insight, alongside commercial deal making, the largest technical innovation conference programme, and a huge exhibition showcasing the latest in climate and optimization technologies. ADIPEC continues to reinforce the role of the UAE and Abu Dhabi at the heart of the global dialogue on the future of energy."

Global progress on climate action, the energy transition and the energy trilemma will be in sharp focus next year, as the UAE welcomes global leaders to the country for COP28 – The Emirates Climate Conference with the UNFCCC. ADIPEC 2023, taking place in Abu Dhabi from October 2 - 5, about a month before COP28, will be particularly meaningful in framing industry discussions around some of these key challenges energy markets face today.

Christopher Hudson, President of dmg events, organisers of ADIPEC 2022 said: "ADIPEC 2022 has shown the world that it is so much more than a hydrocarbon show. It is a strategic



PHOTO: ADIPEC

platform for climate and technology, bringing together key stakeholders to engage with a broad range of voices from across the global value chain, collaborate and drive forward the energy transition dialogue.

"This has directly translated into commercial benefits for attendees and significant benefits to the economy, as well as helped shape important industry discussions, demonstrating the fundamental role of collaboration in the transition to Net Zero."

Decarbonisation was a key theme across the four days of the event, with a first-of-its-kind, dedicated Decarbonisation Zone and Conference at ADIPEC. Experts shared their views on the latest innovations that will enable stakeholders to address the growing demand for green solutions, attract strategic partnerships and cross-industry participation, generate funding mechanisms, and convert innovative ideas into a practical solution towards leading a cleaner energy future.

Industry efforts towards climate action were further reinforced by An Eye on Methane: International Methane Emissions Observatory 2022, a report launched by the UN Environment Programme (UNEP), which found that more than 80 oil and gas companies across the world have committed to measuring and reducing their methane emissions. UNEP advised that companies needed to do significantly more to cut methane emissions and tackle climate change.

Among the significant deals at ADIPEC 2022 was the signing of the historic agreement between the UAE and the US to catalyse US\$100 billion of investment in renewable energies and clean technologies in the UAE, USA and emerging economies around the world by 2035.

The ADIPEC survey also revealed that 97 percent of exhibitors met or exceeded their objectives through their participation, with 93 per cent rebooking for ADIPEC 2023. The next edition of ADIPEC will be held October 2 – 5, 2023.

Date	Event	Venue	Organizer	Contact Details
JAN 23 – 24, 2023	INTERNATIONAL CONFERENCE & EXHIBITION ON 'CORROSION MANAGEMENT'	Hotel Crowne Plaza New Delhi, India	The Association for Sustainable Engineers	M: (91) 9953333784 E: conference@icecm.in W: icecm.in
JAN 23 – 25, 2023	EXPO PAINT AND COATINGS 2023	International Convention City Bashundhara, Dhaka, Bangladesh	Toredo Fairs India Pvt Ltd	T: (080) 43023891 E: info@expopaintcoating.com W: expopaintcoating.com
FEB 13 – 15, 2023	SAUDI ARABIA COATING SHOW	Dhahran Expo, Dammam, Saudi Arabia	DMG Events	W: saudiarabiacoatingsshow.com
MAR 02 – 03, 2023	PAINTINDIA 2023	IEML, Greater Noida Delhi NCR, India	ExpoNova	W: paintindia.in
MAR 19 – 23, 2023	AMPP ANNUAL CONFERENCE & EXPO 2023	Colorado Convention Center Denver, USA	AMPP	E: Lesley.martinez@nace.org W: amp.org
MAR 28 – 30, 2023	EUROPEAN COATINGS SHOW	Exhibition Centre Nurnberg, Germany	Vincentz Network	W: european-coatings-show.com
MAR 28 – 31, 2023	EXPO SURFACE	Congress Center Kielce, Poland	Targi Kielce	T: +48 41 3651222 E: biuro@targikielce.pl W: targikielce.pl
APR 17 – 21, 2023	HANNOVER MESSE 2023	Hannover, Germany	Deutsche Messe	T: (91-22) 62672119 E: yash.panchal@hmf-india.com W: hannovermesse.de
APR 18 – 19, 2023	CHEMEXPO INDIA	Bombay Exhibition Centre Mumbai, India	ChemExpo India	T: (91-22) 24044477 E: vijay@chemexpoindia.com W: chemexpoindia.com
JUN 21 – 24, 2023	SURFACE & COATINGS 2023	BITEC Bangkok, Thailand	Reed Exhibitions	T: +66 2286 7222 E: surfaceandcoatings@reedtradex.co.th W: reedtradex.com
JUL 13 – 15, 2023	EXPO PAINT AND COATINGS 2023	Pragati Maidan New Delhi, India	Toredo Fairs India Pvt Ltd	T: (080) 43023891 E: info@expopaintcoating.com W: expopaintcoating.com
AUG 27 – 31, 2023	EUROCORR 2023	Square – Business Meeting Centre, Brussels, Belgium	DECHEMA	E: eurocorr@dechema.de W: eurocorr.org
OCT 04 – 06, 2023	PAINTEXPO EURASIA	Istanbul Expo Center Istanbul, Turkiye	Artkim	E: sales@artkim.com.tr W: artkim.com.tr
OCT 09 – 11, 2023	GULF COATINGS SHOW	Expo Centre Sharjah, UAE	NurnbergMesse GmbH	W: gulf-coatings-show.com
APR 09 – 12, 2024	PAINTEXPO 2024	Karlsruhe, Germany	FairFair GmbH	T: +49(0)70226025150 E: info@leipzig-messe.de W: leipzig-messe.de

Please note, schedules are subject to last minute changes.



International Conference & Exhibition on “Corrosion Management”

SECOND EDITION

23th - 24th JANUARY 2023 HOTEL CROWNE PLAZA, NEW DELHI, INDIA

Platinum Sponsor



Gold Sponsor



Exhibitors



Organized By



Event Partner



The International Conference & Exhibition on Corrosion Management is forum for policy makers, asset owners, licensors, contractors, technology majors, research organisations & equipment suppliers to explore next generation downstream opportunities whilst collaborating on emerging & future risks across industry markets.

KEY TOPICS

CORROSION

- Corrosion Control Strategies in offshore assets
- Emerging technologies in Asset Management
- Corrosion Management of non-piggable pipelines
- Digital solutions to Management of Plants
- Corrosion Control in process plant
- Corrosion failure studies of plant assets
- Corrosion Under Insulation (CUI)
- Microbiologically Influenced Corrosion and its impact on pipelines
- Role of AI in inspection/monitoring the health of assets.

CATHODIC PROTECTION AND EMERGING CHALLENGES

- AC corrosion and its remedy
- Case studies in AC corrosion of Pipelines
- Digital monitoring of cathodic protection in plants of pipelines
- Challenges in Cathodic protection of plant piping /buried structures

STORAGE & TRANSPORTATION OF HYDROGEN AND LINE PIPE METALLURGY

- Latest trends in line pipe metallurgy
- Development of Line Pipe Metallurgy for transportation of pure H₂
- Repurposing NG pipelines for transportation of Hydrogen - NG blend - Transmission and Distribution
- Storage of Hydrogen - present and future
- Safety in transportation of Hydrogen blends through existing gas Pipelines

OPERATION & MAINTENANCE OF CGD PIPELINES

- Integrity Management in CGD pipelines
- Cathodic Protection monitoring of CGD pipelines
- In line Inspection of CGD Pipelines
- Application of AI/ ML in corrosion monitoring of CGD network
- Creation of Digital twin of CGD network

PIPELINE INTEGRITY MANAGEMENT

- Frequency and selection of In line Inspection tools
- Analyzing ILI report and pipeline repair techniques
- Latest Trends in pipeline integrity monitoring in offshore and on shore pipelines
- Latest Trends in Internal Corrosion Management of Pipelines
- Residual life Assessment of Pipelines
- Challenges in Service conversion of pipelines
- Risk Based Inspection of Assets
- Emerging technologies in inspection of linear assets like pipelines
- Surveillance of pipelines through drones & satellites

COATINGS

- Emerging trends in Paint and coating for structural steel and concrete structure
- PU Coatings - Opportunities and Challenges
- Internal coating of pipelines and its impact on integrity

REGISTER NOW



+91-9953333784
+91-7703960294



conference@icecm.in
india.asen@gmail.com



www.icecm.in

HINFLON PRODUCTS

SPECIALISED IN
PTFE / FLUOROPOLYMER
COATING
APPLICATIONS

1. PTFE ►
TEXTILE CYLINDERS
2. Xylan1070® ►
FASTNERS, NUT/BOLT
3. ECTFE (HALAR®) ►
CHEMICAL
STORAGE
VESSELS
4. PE/PP ►
CORROSION
RESISTANT PLASTIC
COATINGS ON
HARDWARE

HINFLON PRODUCTS
Plot No D-16, MIDC Phase II
Dombivli (E), 421203, Maharashtra, India.
Tel: +91 (0261)2871673;
Mob: +91 9820081547
Email: hinflon@email.com



JAI GANESH
PAINTING CONTRACTORS

G. S. Kharatmol
Manoj G. Kharatmol

SPECIALIST IN
Sand, Shot & Copperslag
blasting, Epoxy Coating,
Guniting, Industrial, Painting
Spray Painting, Cement
Mortar Lining, Bitumen and
Coal tar Wrapping

OFFICE
601, 6th Floor, Pure Gold, N G Acharya Marg,
Opp. Saroj Sweets, Chembur,
Mumbai - 400 071.

WORKSHOP
Plot No. 1199, Sector-KWC, Road No.13,
Kalamboli, Navi Mumbai - 400 216.
Telefax: 25543355, Cell: 9819714390
email: mgkharatmol@gmail.com
website: www.jgpc.in



Industrial Rubber Hoses from
the Land of Natural Rubber



Heavy Duty Air Hose

**Strong and flexible
construction guarantees
easy handling and durability**

WWW.JOLLYFLEX.NET

Authorized Dealers

Blastline India Kochi, Kerala Ph: 9562011088 info@blastlineindia.com	Blastech Mumbai Ph: +91 22 26684375 blastechindia@vsnl.net
---	---

“SMALL”
Fetches you
BIG
RETURNS

Advertising in
our **Classified** Columns
ensures maximum **visibility**
of **product**
and **service** messaging.

Competitive pricing &
high **return**
on **investment**

Coatings & Anti Corrosion Engineering Review
102, Dattar Mansion, C. S. Marg, Vakola Bridge, Santacruz (East), Mumbai 400055
Ph.: 022 2668 0477, E-mail: marketing@coatingsjournal.com | www.coatingsjournal.com



- Offshore
- Oil & Gas
- Refineries

JSM

Hi-Performance Protective Coatings Specialist

- TSA/TSZ ■ EPOXY ■ PU
- Inspection Services
- Surface Preparation
- High Performance Coatings
- Glass-bead SS finishes
- Structures ■ Heat Exchangers
- Rly. Bridges ■ Specialist in TSA of Offshore Structures

JSM ENTERPRISES

66, Gami Industrial Park, 3rd Floor
TTC MIDC, Pawne, Navi Mumbai 400 705
M: +91 80808 66992, 93214 22666
E: jsmcoatings@gmail.com

WE
HOPE
THAT THIS
DECEMBER
WILL BE
FOR YOU
A CHEERFUL ENDING
TO THE YEAR
AND A GREAT
BEGINNING
TO A HAPPY NEW ONE
WISHING YOU A VERY
MERRY CHRISTMAS!
HAPPY NEW YEAR!
2023

**COATINGS AND
ANTI CORROSION**
ENGINEERING REVIEW

FEDCO
ISO-9001-2000
CERTIFIED COMPANY

FEDCO

PAINTS & CONTRACTS

*Specialist in
Abrasive Blasting
and Applicators
of High Performance
Coatings in
Petroleum and
Chemical Plants*

303, Gulab, 3rd Fl.,
237, P. D'Mello Road,
Fort, Mumbai 400001.
Tel.: 022 2261 7925,
022 2262 3060,
Fax: 022 2261 9050
email: fedco@rediffmail.com



ONWARD CHEMICALS

SINCE
1995

Premium Quality Ingredients for Anti-Corrosion & High Performance Coatings

PURETONE® TR TITANIUM DIOXIDE

Its a multipurpose & durable Rutile grade suitable for various paints & coatings applications.

IRONOR® MICACEOUS IRON OXIDE & MICRONIZED MICA | CMMF FRANCE

An anti-corrosion pigment with high barrier effect for heavy duty paints & anti-corrosion paints.

Onward Chemicals Pvt. Ltd. | Mumbai | Chennai

🌐 www.onwardchem.com | ✉ sales@onwardchem.com | ☎ : +91 22 4054 6474



Saudi Abrasives
Steel Shot & Grit

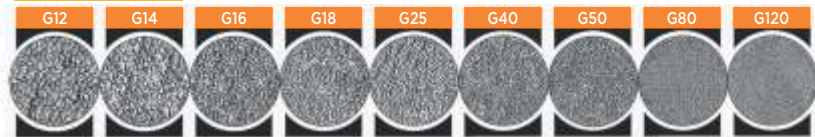


SA GRIT



Saudi Abrasives: Reducing Costs, Enhancing Efficiency

STEEL GRIT



STEEL SHOT



Steel Shot



Steel Grit



Garnet



Glass Bead



Copper Slag



Aluminium Oxide



Glass Grit

www.saudiabrasives.com

Manufactured by:
SAUDI ABRASIVES CO.
Street No.118, 2nd Industrial Area,
P.O. Box No.: 11982, Dammam - 31463
Kingdom of Saudi Arabia
Tel.:+966 13 8342998 | Fax:+966 13 8348617
E-mail: info@saudiabrasives.com

DEHUMIDIFICATION SYSTEMS ON RENT

for blasting, painting and coating anytime during the year
irrespective of weather conditions

BENEFITS :

- Hold the blast
- Prevent rust bloom
- Increase coating and paint life
- Prevent curing failures
- Strong adhesion of substrate with surface

Condensing
Unit

Dehumidifier



Dehumidification, Temperature Control and Ventilation Systems on Rent

TECHNICAL DRYING SERVICES (Asia) Pvt. Ltd.



Plot No. 2274/3, Rajiv Nagar, Gurugram – 122001, Haryana
tdsmarketing@pahwa.com



Contact

+91 9313481670

Social Connect



Perfection In Coating Thickness Measurement

Choose from an extensive array of products from portable MPOR series, FMP 10-40 series or FMP 100 which are best suited for your non-destructive, quick and exact thickness measurements of :

- Paint, powder coating, zinc, chromium, copper, lacquer, synthetic, etc. coatings on steel or iron using the magnetic induction method.
- Paint, powder coating, lacquer or anodized coatings on nonferrous metals using the eddy current method.
- Fast, non-destructive and precise multi layer measurements of paint/zinc or comparable coating system on steel or iron.
- Measurement of corrosion protective coatings in cavities with the all new FISCHER CAVITY PROBE.



Fischer Measurement Technologies (India) Pvt. Ltd.

City Centre, Office Nos. 3,4 & 5, Plot No. 138/1, Behind Persistent, Hinjewadi Phase 1, Pune - 411057

Tel. : +91 20 67909500 • Fax : +91 20 67909501

E-mail : india@helmutfischer.com • Website : <http://www.helmutfischer.com>

Branch Offices:

New Delhi : Tel: +91 9650917222 / 9871938867 / 9650040104 •

Bangalore : Tel: +91 9880598855 / 9880530494 •

Mumbai : Tel: +91 9860090882 • Ahmedabad Tel: +91 7600069280

 Coating Thickness

 Material Analysis

 Microhardness

 Material Testing