

CORROSION PROTECTION

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SPOTLIGHT

MARINEPROTECT®: EFFECTIVE CORROSION PROTECTION FOR OFFSHORE STRUCTURES

Interview with **Mark Kan**

Area Manager CEE, CIS, Turkey & South Korea from Denso GmbH - Leverkusen, Germany



FOR ALREADY MORE THAN 100 YEARS, THE DENSO GROUP GERMANY HAS BEEN A GLOBAL NAME FOR QUALITY AND RELIABILITY IN THE FIELD OF CORROSION PROTECTION OF METALLIC PIPELINES. IN RECENT YEARS, THE COMPANY HAS BEEN ACTIVELY SUPPLYING WORLD MARKETS WITH ITS MARINEPROTECT® CORROSION PROTECTION SYSTEMS FOR JETTY PILES OPERATED IN SEA WATER. MARINEPROTECT® SYSTEMS ARE PRIMARILY USED TO PROTECT SPLASH ZONES - THE MOST DIFFICULT AREAS IN TERMS OF PROTECTION OF STEEL STRUCTURES AGAINST AGGRESSIVE MARINE ENVIRONMENT. THIS TECHNOLOGY HAS BEEN USED IN MANY INTERNATIONAL PROJECTS. OUR MAGAZINE INTERVIEWED MARK KAN FROM DENSO GMBH ABOUT THIS INTERESTING TECHNOLOGY.



Mark Kan, Area Manager CEE, CIS, Turkey & South Korea from Denso GmbH.

Why has DENSO Group Germany, one of the world's leading manufacturers of corrosion protection systems for pipelines, turned its attention to corrosion problems in offshore structures?

MK: Last year our company celebrated its 100 years jubilee. For a century DENSO Group Germany has been successfully solving the problem of corrosion prevention of metallic pipelines. DENSO Group Germany is the recognized pioneer of passive corrosion protection. Various insulation technologies used worldwide, such as petrolatum tapes and mastics or real co-extruded 3-ply PE/butyl rubber tape coatings were invented by our company. Today, the company acts as a universal manufacturer of passive corrosion protection materials, offering the widest range of products: heat shrinkable sleeves, liquid coatings, and tape coatings of various types. Our products are used for insulating welded joints during new construction as well as for the rehabilitation of old pipelines, for underwater crossings and trenchless pipe laying, for the protection of fittings and valves or for air-to-ground transitions.

As corrosion protection specialists, we are particularly interested in operating steel structures in aggressive environments. Preservation of reliability and durability parameters of steel structures in sea water throughout their design life, especially in zones of alternating wetting and splashing is still one of the

challenges of modern hydraulic engineering. The lack of relatively inexpensive, yet highly effective and uncomplicated methods of restoring the protective coating of piles in operation, prompted us to develop MarineProtect® systems. Interestingly, the main components of the system are based on modified petrolatum products that we patented back in 1927! This proves their relevance even almost a century after they were developed!

Let's summarize the features of the MarineProtect® corrosion protection systems and the essence of their application technology.

MK: The MarineProtect® systems consist of three elements: first, corrosion protection primer, secondly, corrosion protection tape and thirdly, mechanical protection jacket. The three elements are applied in series and form together outstanding anti-corrosion and mechanical barriers. MarineProtect®-Primer is a natural wax-based primer paste which can be easily applied to the pile structure even under water. When the primer is applied, it displaces water from the surface of the pile due to its emulsifying ability, thus forming a waterproof layer while also smoothing out and filling irregularities and cavities on the surface of the jetty. MarineProtect®-Tape, the main corrosion protection layer of the system, consists of a durable polypropylene-based non-woven fabric impregnated with a polymer stabilized petrolatum



The application of MarineProtect®-2000 FD Jacket.



Workers are applying MarineProtect® in the harbor of Kiel, Germany.

compound. The tape is highly flexible and mouldable and can be easily applied to any shape of surface. When the tape is wrapped spirally with a 50% overlap over the primer-coated surface, the water is displaced and a chemically resistant against salt water casing is formed which is impermeable to corrosive media such as oxygen and water. The tape is also highly acid resistant to media with a pH value of 0 to 14. The MarineProtect®-Jacket is the top layer of the system and serves to protect against mechanical damages from waves, flotsams, ice loads and high winds. The jacket is made of highly durable, UV-resistant high-density polyethylene (HDPE). It is resistant to media with a pH level from 0 to 14, UV radiation, flexible, non-toxic, yet highly durable. The jacket of MarineProtect®-2000 FD is fixed with stainless steel bolts while for the fixation of MarineProtect®-100 Jacket special glass fibre reinforced polyamide tension SmartBand straps are used.

At first glance, it must be difficult and time-consuming to install such a three-component protection, especially if it is not a new construction but active submerged jetties. What conditions and equipment are required when working with this technology?

MK: In fact, the opposite is true - compared to many existing pile repair methods, MarineProtect® systems are extremely easy to

use, which is one of the main decision-making criteria for our clients. The indisputable advantage of MarineProtect® systems is that there is no need to install a caisson around the pile, i.e. a special watertight chamber, no need for pumping water out of

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the caisson and subsequent drying of the pile surface, no need for a high degree of surface cleaning when working in underwater conditions – all this and at least 5 days are necessary when repairing a pile with a 4-layer paint coating with a thickness of 560 micrometres.

On the other hand, just 4-6 hours and a team of 3 divers are needed to re-coat a 10-12 square meters big splash zone area of a pile using MarineProtect®. We are talking about just 4 simple steps: mechanical, abrasive or hydro-abrasive cleaning of the pile to at least St2 grade according to ISO 8501-1:2007, primer application, spiral wrapping of tape and finally installation of the protective jacket.


How cost competitive is your multi-component technology compared with painting?

MK: It should be noted that MarineProtect® systems are primarily aimed at repairing corrosion protection coating of already submerged jetties or submerged pipelines, not at new construction where jetties can be easily painted onshore.

Some of our clients have carried out a comparative analysis of the time and financial costs of using MarineProtect® systems and paints for repairing of already submerged piles. It showed the financial savings of our systems and time savings of up to 95 %. Judge yourself: while the painting of one submerged pile using the caisson equipment, as already mentioned, takes at least one working week, with our technology it takes no more than one working day. It is also important to emphasize that MarineProtect® systems are repairable. If necessary, it is possible to check the condition of the applied system, to partially dismantle and reassemble the system. Repairs can be carried out by divers without the use of special equipment.

Where are MarineProtect® systems currently installed in the world?

MK: MarineProtect® has been successfully deployed in the Caribbean and in the Atlantic, in the Caspian, the Black and the Baltic Seas for years.

Thank you for the interview! 

There are over 10,000 Level I, II and III inspectors in 74 countries worldwide, as large clients consider the qualification of Coating Inspector Frosio as a reference for monitoring the quality of the application of a painting cycle.

There are 367 active Certifications in Italy, of which 109 Level I (white card), 115 Level II (Green card) and 143 Level III (red card). The certification is in accordance with the Frosio Certification SCHEME, which follows the requirements of ISO 17024.

The University of Genova, accredited by FROSIO as a Training Body, is in charge of organising courses in the Italian language exclusively for the Italian territory. To date, 20 courses have been organised.

The Gruppo IspAC Associazione (GIA), accredited by FROSIO as Certifying Body, is in charge of organising the exams for the Qualification and Certification of Coating Inspectors Level I, II and III, renewal of certifications and level ups exclusively for the Italian territory.



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