BEYOND CORROSION

Dinko Cudic explains why energy operators should be changing the way they regard corrosion protection

While we continue to fight corrosion and extend the life of assets, coatings have developed from simply stopping corrosion to preventing it from happening in the first place. The challenge is whether these coatings are used at the outset and whether they will actually stand the test of time. Add to that the time to apply and you have a new challenge of satisfying both contractors and end users at the same time. We could then add in stringent standards and approvals and the checklist keeps on growing.

It's easy to stop corrosion or decay of the material, eliminate the oxygen and water electrolyte and we break the corrosion cell that leads to electrochemical corrosion. How is it done? By placing a barrier over the surface to be protected and block it from the environment. Think encapsulation.

In the food processing industry this is like vacuum-packing your groceries to keep them fresh, in the water industry it is known as polyethylene encasement for ductile iron or simply as sleeving. Going back in time, conservation was conducted by keeping moisture away from meat and vegetables to wood and steel using fat, wax, tree sap or honey. So whether using advanced impermeable barriers such as PE or PP or more rustic ones such as honey, they all lead to encapsulation of the material and therefore prevention of decay.

Take the analogy of honey and add in a ISO 21809-3 standardised term – non-curing, non-crystalline and fully amorphous low viscosity polyolefin coating and you have Easy-Qote.

A coting that offers immediate protection of the surface giving a barrier that blocks oxygen and water, therefore avoiding corrosion.

This kind of approach opens new possibilities in protecting not only "new build" but also easy ways of applying this barrier or coating over existing and aged assets across the globe. Specifically, assets found in remote areas and distant locations where accessibility is a challenge – consider onshore and offshore wind farms. Accessibility to these structures requires planning, equipment and manpower. Their locations also bring the challenge of changing environmental conditions whether high winds, torrential rain, extreme heat or extreme cold.

In the power sector there is also the consideration for keeping energy flowing wherever possible. Many options for corrosion prevention may require a shutdown whilst surface preparation can take place or even for the application itself. These shutdowns cost time and money and can often include timely asset replacement if prevention was not factored at the outset.

Coatings are moving beyond mitigating the effects of corrosion to actually stopping it from occuring

CASE IN POINT

In Europe a new LNG terminal was commissioned to support the supply issues brought about by the Russian war. In the interest of time the pipes for installing the system were acquired uncoated and since time was limited the decision was taken to coat the pipes on site.

Standard coating systems made the situation very vulnerable for application, and time consuming, so the operator decided to look for other options.

Having a successful track record with Stopaq products (the original PIB coating launched in 1997), the operator was familiar with the technology and minimum surface preparation requirements. Through their experience they had learnt more about the Easy-Qote range (the latest technology to come from Stopaq) and it was this they turned to during the LNG terminal installation phase.

The decision was made to use EasyQote VE Basecoat + WB Topcoat on the pipework (gas pipes and water pipes).

Since there were many contractors working on site, the Easy-Qote system was very useful because of the minimum surface preparation requirements. They prepared the surface St3 with a wire brush and did not have to blast the surface which would have caused local environment contamination, increased the preparation time considerably and resulted in additional tools and manpower.

In addition, once the pipes were welded, the supply of gas started. At this time, the pipe coating was not completed. On 'live' gas pipes, blasting is prohibited which would make the surface preparation for a standard system impossible. Easy-Qote application was able to continue safely, meaning no delay in operations.

Criteria	Blast & Paint	Easy-Qote	Performance
Waste	• 300 kg other waste • 2.000 kg General Waste • Total 2.300 kg Waste	• 11 kg General Waste	**>99%** Waste reduction
Safety	• Hazard labelled • Flammable • Allergic reaction to skin due to chemical exposure • Respirator mask required due to dust content and exposure	• VOC . CMR free • Non-flammable • No chemical exposure • No dust content nor exposure	Non-hazardous material and exposure
Performance	• 10+ years maintenance interval • 24 months shelf life • 24-36 hours intervals between layers – system several days	• 30+ years maintenance interval • Unlimited shelf life • Hot or cold applied • Complete system installation in same day	3x Extended maintenance interval

Easy-Qote versus traditional coatings

BUT WHAT ABOUT THE LONG TERM?

We can discuss how coatings have and are evolving, how they will extend the asset life but what does it mean for the long term?

Where we want to get to is looking beyond corrosion – application for asset lifetime extension has taken place, but what else does it mean if the right coating is selected? How can we quantify it in environmental and HSE terms. Table 1 considers the role of Easy-Qote when compared with traditional coatings.

Through testing, Seal for Life can confirm that Easy-Qote products result in 11x less carbon emissions/91% CO_2 emission reduction, than traditional systems when considering materials, logistics and service life as well as a 99% waste reduction.

The company's goal is to change the way corrosion protection is viewed, by combining high coating performance and safety benefits with minimal waste and improved environmental impact. Assets are protected from ageing and degradation, making them last longer and being safe from an HSE aspect as well.

No rehabilitation, minimal CO_2 emissions, no further investment in protection required, maintenance free, environmentally friendly and no waste. This combination moves us beyond a simple short-term fix to a long term, beyond corrosion solution. ●

Coating pipes on site can avoid expensive, lengthy shutdowns

Dinko Cudic is with Seal for Life.
www.sealforlife.com