

# Final rusting place

Tackling the costly issue of corrosion is an ongoing headache for plant managers in many industries. Louise Davis meets the specialists at a coatings expert whose aim is to empower the industry in its efforts to conquer corrosion

"The global cost of corrosion, both in terms of money and the effect it has on the environment, is not talked about enough," believes Ekaterina Mezhentseva, global solutions manager, Jotun Performance Coatings. Determining accurate statistics is difficult for something whose cause, effect and mitigation tends to be a gradual process spanning multiple years. However, Mezhentseva has done the maths: "The annual cost of corrosion is estimated at around US\$2.5 trillion, which is equivalent to 3.4% of the global GDP, as per data published by NACE in 2013," she explains. "This does not include the indirect cost related to corrosion, such as downtime and other effects for the society – so the total cost is far greater."

As well as the shocking financial costs, Mezhentseva also highlights a worrying knock-on effect, which is that corrosion is a big source of CO<sub>2</sub> emissions globally. "According to the World Steel Association data, steel production represents around 10.5% of total global CO<sub>2</sub> emissions. Between

20% and 40% of steel produced today is intended to replace corroded steel. And if we continue the same approach to tackling corrosion, by 2030, as much as 9.1% of the total CO<sub>2</sub> emissions will be associated with steel produced to replace corroded steel," she details.

## CRUSHING CORROSION

Although there is still a long way to go in terms of getting the industry to limit corrosion, engineering operators have got considerably better at dealing with it over the years. As in many other facets of the engineering sector, Mezhentseva has noticed the rise of a more proactive approach here. "Preventative maintenance is a known approach in corrosion management," she states. "Understanding operational and environmental factors affecting steel and causing corrosion and taking actions early enough is a key. The awareness of corrosion and consequences related to corrosion has been increasing significantly in the industry, and we can see this confirmed in the large-scale study related to maintenance in the oil and gas industry that we recently launched."







*An example of Corrosion Under Insulation (CUI), a common and extremely complex type of corrosion situation that occurs on steel that has been insulated – which makes it difficult to notice and manage*





Above: **Ekaterina Mezhentseva**, global solutions manager, Jotun Performance Coatings

matter entirely. When it comes to corrosion, there is certainly no 'one size fits all' solution. Mezhentseva observes that every project is different. "It starts from understanding the key challenges that both the industry as a whole and a specific plant are facing," she reasons. "Corrosion is a complex issue that requires a certain level of expertise and experience to manage it efficiently and prevent it from causing damage and downtime. Jotun delivers corrosion expertise and support to the maintenance planning and provides a range of certified and proven technologies in corrosion protection, passive fire protection, and heat- and chemical-resistant coatings."

**PREVENTION IS BETTER THAN CURE**  
In engineering production environments there's often a great deal of pressure

Jotun's survey, which was published in August 2024, collected the views of 1,017 senior professionals in the onshore and offshore oil and gas sectors across 10 countries, exploring the industry's attitudes to maintenance management and the near-term outlook for the sector. "Some 88% confirmed that they are expecting their businesses to increase maintenance budgets in the next five years. In addition, we see that maintenance including corrosion management is gaining a strategic focus in the industry, particularly driven by sustainability and decarbonisation targets," notes Mezhentseva.

Putting money aside is one thing; actually tackling the problem is another

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## THE POWER OF POWDER

Recently, Jotun announced the launch of its Primax Coatings Solutions range, which the firm describes as "advanced anticorrosive powder coatings solutions specifically engineered to protect steel used in the most extreme environments." Commenting on this innovation, Harshad Gawande, global category manager, Jotun Powder Coatings, says: "There are many coating manufacturers that claim to have corrosion protection systems that can meet global standards such as ISO-12944/Qualisteel. Jotun has gone one step further, offering up to 10 years of performance guarantees for our coatings systems that are tested at third-party laboratories. Our combined coating system of Primax primers and Super Durable topcoat is proven to meet the most extreme corrosion protection requirements of ISO 12944 – CX corrosivity category, with a guarantee programme to offer peace of mind."

Gawande explains that the Primax Coating Solutions family was engineered to protect steel used in critical machinery, such as generators, transformers, electrical cabinets, cranes and other equipment operating in aggressive environments. "The solution is a two-layer, anticorrosive steel protection system, involving primers and a premium topcoat, Jotun Super Durable," he details. "This top coat has a proven track record of resisting extreme temperature fluctuations and high humidity, as well as boasting acid rain UV protection to retain colour and gloss in the building construction industry. Our assortment of primers, such as Primax Xtend and Primax Protect, have also been proven effective in other industries, but achieving a CX rating required a lot of work."

Left: Storage tanks in the oil and gas sector are particularly vulnerable to corrosion due to the extreme environments they are located in

## REVEALING RUST RESEARCH

Jotun's recent report emphasises the growing strategic significance of maintenance within the oil and gas sector. The report's findings underline the crucial role that maintenance, especially corrosion management, plays in ensuring the safety, profitability and environmental sustainability of oil and gas operations. The positive news was that respondents confirmed that maintenance budgets are increasing. However, three quarters of the senior decision-makers in the oil and gas industry (74%) said these maintenance budgets are the first to be cut when cost savings must be made. This paradox demonstrates how difficult it is for those in charge of

maintenance strategies to plan.

"Effective maintenance is no longer just a technical issue; it's a strategic imperative that impacts every facet of the industry's operations, from safety to environmental sustainability," says Ekaterina Mezhentseva. "Our report clearly shows that the industry is moving towards greater investment in maintenance, driven by the need to meet ESG criteria and ensure long-term operational success, but budgets need to be future proofed to allow for effective long-term maintenance planning."



to keep operations flowing at all costs. Naturally, this means Jotun always emphasises the need for preventative measures. "Operational downtime represents a large cost and safety issue. To maximise operational uptime and avoid unexpected downtime, our main recommendation is always to secure long-lasting or even extended protection that will prevent corrosion even in the most challenging conditions," advises Mezhentseva. But there will always be some scenarios where treatment or repair work is necessary. "In cases where a shutdown is required and the priority is to bring the plant back to operations as efficiently as possible, we support this by providing fast return to service products and solutions. Additionally, solutions such as AssetKeeper – our expertise and proactive service programme – is one example of how we support maintenance

*Above: Application Proactive service plans can ensure the application of coatings is swift, planned and causes minimal downtime*

planning so that downtime will be limited," she explains.

A recent success story saw the AssetKeeper solution deployed in an oil and gas sector project, as Mezhentseva explains: "Showcasing how we work with coating and corrosion assessment, when PPC (Petroleum Pipelines Company) in Egypt wanted us to deliver an assessment on noticeable coatings failures on some of their tanks, we utilised the AssetKeeper tool. Our technical team discovered that the paint

specification used was not suitable for the climate and conditions that the tanks were operating in – with the condition of the coatings being poor after only two years despite being designed to last for five." Mezhentseva says that following Jotun's reporting and guidance on how to proceed with repairing, the technical team created a new paint specification that considered the requirements PPC had (as well as the extreme conditions) to ensure durability and performance.

The coatings specialist is not content to sit back and revel in such accomplishments, though. Mezhentseva reports that across the entire company there remains a drive to deliver even greater progress in its mission to banish corrosion. "More than 400 scientists in Jotun are working closely with the rest of the organization to ensure we stay on top of product and technology innovations," she reveals. "This has been at the core of the company since its inception almost 100 years ago, and the teams in our seven R&D centres are excited to showcase new innovations in the coming months." 