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"It is vital to agree the timing of this review. Uncertainty around dates is likely to delay crucial investment decisions and industry needs a clear steer."
UK shipping minister Stephen Hammond

A change of model, a change of attitude

Biocidal coatings put toxic chemicals into the sea, says Hydrex, which promotes an alternative approach

"When you clean hulls that have a biocide element," said Hydrex's CEO Boud Van Rompay, "you dump large quantities of toxic chemicals into the port and harbour waters." On a conservative estimate, he believes that means that ships are releasing around 100,000 tonnes per year into the water. "This is very destructive and simply not sustainable."

It all comes down to the inefficiency of the antifouling he said. "It's not designed to be cleaned, so you have places such as Algeciras and Singapore – along with many others that also carry out this type of maintenance – being continually polluted. It's not just the water column pollution but the long-term sediment contamination that is so harmful. We should have learned our lesson with TBT," he said, and predicted that this concern will contribute to the end for copper-based paints.

He points out that each time an average ship of 50-100,000 dwt has a new antifouling coating applied, usually every two or three years, 15 tonnes of biocides are sprayed onto the hull. "Of those 15 tonnes the large, harmful volatile organic compound component is lost instantly into the air, which is itself undesirable. During the application, further toxic substances are pushed out into the environment in the form of overspray and waste."

Then when the ship is refloated, there is "an instant, large scale distribution of biocides into the water which pollutes the shipyard and surrounding water and contaminates the sediment locally," he said. As the ship sails for the next two or three years, it leaches biocides wherever it goes, he added, before it goes back to drydock. "It is often cleaned in the water, which creates a sudden pulse discharge of biocides into the water. This cleaning can take off 30-50 per cent of the remaining biocide coating which goes straight into the local marine environment."

The way forward, he believes, is obvious: "Stay away from the repeated recoating model and put on something inert and resilient that thoroughly protects the hull for the service life of the ship – around 25 years – with minimal repairs."

He explains that the most durable, underwater hull coatings are glassflake based surface treated composites (STCs) such as his company's Ecospeed product. These harder coatings also avoid the issues of abrasion resistance common to the softer copolymer varieties of fouling release. "The glass flake variety gains because it's both tough and flexible: it's not like ceramic. If you bend the steel it will stay in place, and there are many, many vessels that suffer from contact damage in harbour areas and others that have some part of their route through ice – which would rip off other coatings in a moment."

He explained that even in ice Ecospeed only loses a tiny amount, typically 0.5 or 1 per cent, leaving minimal touch-up areas, citing inspections on a variety of vessels with Hydrex's coating. These, he said, show a completely intact coating after a couple of years, despite icy and turbulent waters. One particular test, on the Swedish icebreaker *Oden* – which had to break thick ice using its engines at full load more than once on a winter crossing – maintained its original condition with virtually no loss of layer thickness or mechanical damage. "These coatings have been proven to stay on the hull in the harshest of conditions: two-and-a-half metre thick ice mixed with volcanic lava in Antarctica, for example," he said.

Boud Van Rompay, founder and CEO of Hydrex (photo: Hydrex)

Despite this, non-biocide products still have difficulty in keeping hulls clean at slow speeds in warm, aggressive waters or on ships with a stop-start operational profile. In answer to this challenge Mr Van Rompay suggested that routine in-water hull cleaning could be used to keep the hull free of macro-fouling and most microfouling. "This system works on the basis of replacing chemicals with good old-fashioned elbow grease and you could argue that the savings in fuel allow plenty of margin for the labour. The industry needs a change of attitude and to grow its in-water cleaning capability."

He argued that the cost of this system "is overshadowed by the savings resulting from a reduced fuel bill and from avoiding repeated applications. Even now this is an economically sound alternative, whether seen from the shipowner's or operator's perspective."

Although some might view the current trend towards slow steaming as a challenge for the coating, Mr Van Rompay is more confident. "It's difficult to predict ship speeds but I believe slow steaming is only a temporary measure that helps get rid of the extra cargo space and reduces the fuel bill. This state of affairs isn't a sustainable solution: slow steaming is simply not going to be here in two or three years' time." ***MP***

Cleaning an Ecospeed-coated hull after more than a year with routine cleaning (photo: Hydrex)