Measuring anti-fouling coatings on marine structures

The related costs of biofouling are so high that even expensive prevention technologies quickly pay for themselves: some sources put the savings in fuel consumption alone at 40%. Properly applied anti-fouling systems can significantly reduce a variety of operating costs, including downtime at dry dock. High-tech inspection instruments equipped to handle the wide variety of materials and thickness ranges typical of anti-fouling paints help ensure that the finished coatings can indeed fulfil their expected service lifetimes.

Any part of a marine structure – whether ships or offshore rigs or piers – that is permanently submerged under water will fall victim to biofouling, or marine organisms attaching to its surface. This affects performance by adding to overall weight, increasing drag in the water, and contributing to corrosive processes.

The solution used to be an easy decision: the marine bottom paint of choice contained highly effective tributyltin (TBT) which prevented the growth of a variety of biofouling agents. But due to toxic effects on marine life, the International Maritime Organization (IMO) banned it as of 2003. In response, a variety of alternatives has come on the market, each employing very different approaches to the problem.

The principle behind some anti-fouling paints is ablation or sloughing, meaning the controlled and sustained loss of material over time: coatings of this sort cannot start out thin! Others are partially soluble, still others self-polishing.

Since there is no “silver bullet” anymore that addresses all potential biofouling scenarios, marine service providers and dry docks need to be able to monitor a wide range of coating types, on both magnetic and non-magnetic substrates – without having to change instruments all the time.

For just such measurement tasks, FISCHER developed the FD13H probe with an especially robust hard-metal probe tip for longer life. When used with the mobile DUALSCOPE® FMP handhelds, the underlying substrate material is automatically detected and the correct measurement principle applied; this greatly simplifies the task of inspecting anti-fouling coatings because the probe and gauge are suited for measuring such a wide variety of coating materials on exactly the kinds of substrates typically found in marine installations.

One feature that the new multi-layer anti-fouling coating systems all have in common is that they tend to be rather thick, sometimes even more than 1 mm. Indeed,