Case Study: ClearSignal® Biofouling Protection

Poole Harbour, UK

9th July - 23rd September, 2021

Biofouling control is a key consideration for the deployment of ocean instruments and platforms used in scientific research, defence applications and commercial oceanography. The accumulation of biofouling decreases data quality, increases maintenance cost, and limits the use of some sensor types and platforms for long term deployments.

To combat the build-up of fouling on ocean science instruments, RS Aqua offer permanent protection in the form of ClearSignal coating. ClearSignal requires the professional application of multiple base layers (the number depends on the material type) to provide a non-stick coat which with care will last for the lifetime of the instrument. It is non-toxic, safe for all environments, and significantly reduces service times due to reduced biofouling adhesion and improved ease of cleaning. It is also acoustically inert, and can be used on hydrophones and acoustic transducers without affecting their performance.

To test ClearSignal's protective properties, the Game and Wildlife Conservation Trust (GWCT) recently deployed two acoustic tracking receivers side by side. One was partially coated in ClearSignal, the other not at all. Upon recovery the adhesion of fouling was examined and the difference in cleaning time measured.

Figure 1. The two receivers after being deployed for 78 days. The left was uncoated and the right coated in ClearSignal (excluding the receiver head).

The receivers were deployed for a total of 78 days during July to September in Poole Harbour, a location known for its productive waters during the late summer months. GWCT equipment used in this location at this time of year has historically suffered major fouling.

Upon recovery, the receivers were inspected and differences were immediately obvious in terms of the growth on each unit (see Figure 1 above). Multiple marine organisms had colonised the receivers e.g. copepods, benthic worms, bryozoans and golden star tunicate, with these being much more well established on the uncoated sections of the receivers (see Figure 2 below).

Figure 2. Coated (left) versus uncoated (right) receivers prior to cleaning.

When it came to cleaning the receivers, the uncoated receiver took 45 minutes and required heavy duty scrapers to remove the barnacles. In contrast, the ClearSignal coated receiver took only 12 minutes without any heavy duty cleaning. Most of the 12 minutes were spent cleaning the section of the receiver that wasn't coated with ClearSignal.

GWCT said that there were "huge differences between the uncoated and coated receivers. The protected receiver has only biofouling on the attachment rings and the head (that was without the product)."

Time lapsed videos of the cleaning of both receivers are available on request.

The test clearly demonstrates how succesfully the ClearSignal coating reduces the build-up of biofouling on Innovasea fish tracking receivers and reduces post-recovery maintenance time.