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The world's leading and only monthly magazine for the dry bulk industry

Fouling on Ecospeed can be removed fast and easy.

Barely scratching the surface on Marine Paints & Coatings

Jay Venter

Ecospeed stays intact for 20 years with underwater maintenance

Every hull coating fouls and, as a result, cleaning is an unavoidable reality for shipowners. For most coatings, this is a problem because they cannot be cleaned without damaging them, often very severely.

Ecospeed from Subsea Industries, however, was designed to be maintained regularly while keeping the coating intact for 20 years or longer.

The best and most viable approach is to clean the ship 100% and to do so regularly and always before sailing if the ship has been stationary and has fouled for a long period.

Ship hulls must be protected with a system that lends itself to fast, effective underwater cleaning without risk of damage to the coating and without posing any kind of hazard to the environment. Ecospeed is this system.

Fast and efficient fouling control

Underwater cleaning improves the hull surface.

With repeated underwater hull cleaning Ecospeed's surface further improves. This procedure is made easy by the coating's technical properties. Cleaning can be carried out whenever needed, at any point in its lifespan, without causing damage.

Long lay-up periods have no effect

Ecospeed is suited for ships which have a stationary period. An impermeable and impenetrable barrier is created during application. This gives the coating excellent and durable anti-corrosive properties. It also protects the underwater hull against mechanical damage. No rust or damage to the steel will be present on the underwater hull of the vessel after cleaning and this despite the aggressive nature of certain types of fouling. The hard fouling is unable to penetrate or damage the coating.

Toxic free

Independent tests have been carried out to authenticate Ecospeed's non-toxicity. This research proved that the coating is 100% non-toxic. There is no negative effect on the water quality or the marine environment at any point of its application or use.

The definite biofouling solution

The underwater cleaning of Ecospeed prevents the spread of biofouling entirely. The cleaning interval is optimized to minimize fouling. Regular cleaning prevents macrofouling from building up. At the same time it presents an opportunity to inspect so-called niche areas. Most of the fouling organisms will be destroyed during cleaning. When only microfouling or locally acquired macrofouling is cleaned off the hull and niche areas, the risk of translocation of NIS via hull fouling is minimal.

Underwater cleaning allowed

The results of above-mentioned tests were sent to port authorities and environmental agencies worldwide. As a result, several major ports have overturned the existing general ban on underwater hull cleaning. They specifically made an exception for vessels coated with Ecospeed.

Specially designed equipment

Underwater maintenance of Ecospeed is carried out with specially designed

Application of smaller vessels can be done in a single day.

underwater hull cleaning systems. These tools remove all fouling and at the same time optimize the smoothness of the paint surface. A complete line of equipment was designed in-house. They allow divers to clean the flat areas as well as the harder to reach parts of the hull without damaging the coating.

Fewer and shorter drydockings

There has been a trend of extending the maximum drydock interval if a stringent set of rules is followed. One of the requirements is the execution of a very strict underwater maintenance plan. The biggest barriers are dealing with biofouling and maintaining hull coating integrity. Ecospeed allows ship owners/operators to overcome both these barriers. Subsea Industries' coating can easily last for ten or twelve years without any need for drydocking.

Summary

Ecospeed can be cleaned underwater without risk of chemical pollution to the environment or of damage to the coating. Ecospeed's surface will improve in smoothness with each cleaning. Underwater maintenance prevents the spread of biofouling. For these reasons several economically important ports have already overturned the existing general ban on underwater hull cleaning of Ecospeed.

The coating's qualities make it ideally suited for a very strict preventative underwater maintenance plan. This is part of the requirements to extend a vessel's drydock interval.

Underwater maintenance of Ecospeed is carried out with in-house designed underwater hull cleaning systems. These allow the cleaning of the hull without damaging the coating.

The benefits of a fast and easy Ecospeed application

Subsea Industries coating systems offer many benefits to shipowners, ship managers and operators. This article takes a look at how applying Ecospeed (or any other Subsea Industries coating) to a vessel can save much worry, time and hassle for superintendents and shipyards during drydockings, as well as save expenses for the owner.

Like all Subsea Industries products, Ecospeed is an extremely hard coating system with optimized hydrodynamics that can easily be maintained in service. This has a huge potential for reducing total cost of ownership of the vessel. When ships come out of the water after lengthy periods, there is no delamination of the coating from the hull, there are no paint blisters that would be indicative of anti-corrosive failure and the overall hull is still smooth. There are also the environmentally friendly aspects of the product. Studies done in the Netherlands and Canada have determined that in-water cleaning of Ecospeed produces no materials that are toxic to the marine environment.

High quality application: the secret of long-term durability

The effect of the degradation of a regular paint system and the build-up of paint layers on the fuel efficiency of the ship is largely underestimated. There are very substantial benefits in stripping away all the old paint; immediate fuel savings of up to 20–30% are very realistic numbers.

When Ecospeed is applied this build-up of paint layers is ended forever. Once the hull coating has been applied you will never have to reblast again throughout the entire service life of the ship.

Surface preparation is the foundation of a coating system. As soon as you start tampering with the quality of the surface preparation, you will tamper with the total quality and as a consequence service life of the coating. For this reason at least one Ecospeed coating inspector is present and available for the painters on every job. This is to check the conditions during the application process, but also to work together with them to help ensure a very easy and smooth application. Because the inspectors are closely involved with the application, they know exactly what has happened during the coating process. This allows them to approve the ten-year warranty that comes with an Ecospeed application.

Subsea Industries works with their own team of highly certified and qualified coating inspectors. These inspectors have been working with the company for many

Applying Ecospeed is straightforward and easy to learn.

years. They are not only familiar with all Subsea Industries coating systems, but with a wide variety of other coatings. They are very important in the cooperation with the shipyard and they make sure that the product is applied according to the required standards. This guarantees that the results will be there for the shipowner for the next ten years and beyond.

Flexible and easy to learn application process

The high standards that are demanded for an Ecospeed application do not mean that learning to work with the coating is a difficult process or that the application itself is hard to schedule or carry out.

Applying Ecospeed is quite straightforward and in general it paints like any other paint. When the specifications are followed the application goes very smoothly.

The Ecospeed coating also offers a tremendous flexibility to the shipyard. The minimum overcoating time for all our coating systems is three hours. This means that for smaller surfaces such as rudders, nozzles or bow thrusters, the two coats can often be applied in one single day.

During drydockings there is a lot more going on than just the hull coating, which can easily interfere with the planning of your project. Because Ecospeed has quick and flexible overcoating times, application can be scheduled around other work taking place. This results in minimal interference with other activities.

Ecospeed only requires two layers of 500µm each. This is a major advantage compared with other hull coatings. A classic antifouling coating systems can easily have five or more coating layers that need to be applied and some of the newer silicone based hull coatings also consist of four to five layers of coating. Compared to this a two coat application is quicker, cheaper and more flexible.

The coating schedule can be adapted to that of the yard and it does not have to be the other way around. A traditional paint application schedule is defined by surface preparation and by the weather conditions, which are difficult to predict. The application of Ecospeed is easier to adapt to the application windows that become available. You can apply the coating quite rapidly on a prepared surface and the possible overcoat time ranges from three hours to very extended periods of time. Depending on whatever suits the owner's or the shipyard's schedule the second coat can be applied within a couple of hours or after a few weeks or even months.

Hassle-free planning of drydockings

The durability of Ecospeed makes the planning of future drydockings far easier for the shipowner and the shipyard. Shipowners will not have to do any repainting beyond minor touch-ups. These can easily be done during a short drydock visit, which is in contrast to the full renewal of paint layers that is needed with other paint systems.

The amount of time many ships spend in drydock is directly related to (re)painting the underwater hull. When this can be taken out of the equation for the choice of location and season for drydocking, then the story becomes a lot easier for superintendents, for the shipyards, for everybody involved.

The washable coating

The standard procedure for shipyards when a ship enters drydock is general cleaning of the ship hull to clear away any fouling and residues, especially salt residues that may adhere to the coating system. With Ecospeed the coating is always in a brand new, excellent condition after the high pressure washing. The surface texture is very smooth. It reveals without exception that Ecospeed does not need any additional paint layers.

There is also a very big difference between washing Ecospeed and other paints. With Ecospeed none of the paint material is lost. Only the fouling is removed. The coating stays on the ship instead of dispersing in the water and contaminating the shipyard and the surrounding waters.

There are very substantial benefits in stripping away all the old paint; immediate fuel savings of up to 20–30%.

Subsea Industries White Paper Abstract: 'Biofouling: A Proposed Solution'

One hears and reads a great deal these days about biofouling, also referred to as aquatic invasive species (AIS), non-indigenous marine species (NIMS), non-indigenous species (NIS), aquatic nuisance species, alien species and a number of other names. We shall refer to them here as NIS. NIS are an economical as well as an environmental problem.

For some time the concentration on the shipping industry's role in the spread of NIS centred on ballast water. More recently the focus has extended to include ship hull fouling as a vector of NIS translocation just as important as ballast water if not more so.

The NIS threat is increasing due to more shipping traffic and also perhaps because the antifouling systems in use since the ban of TBT have been generally much less effective in eliminating hull fouling. It is more efficient and far less expensive to prevent the translocation of NIS in the first place than to try to clean up the damage they cause and eliminate the now-established species and prevent their further spread.

Legislation and regulation to prevent the spread of NIS via ship hull fouling is increasing in severity with some quite rigorous measures looming.

Efforts to deal with the problem to date have not been effective. It is generally agreed that in-water cleaning must be part of any handling, yet the antifouling and foul release coatings in general use impose severe restrictions on in-water cleaning. Frequent drydocking is not economically or logistically feasible.

The time is right for a thoroughly workable solution which is acceptable to governments, port authorities, environmental groups and the shipping industry. The ideal solution would also bring with it fuel savings, reduction of GHG and other emissions and elimination of the contamination of ports and oceans caused by heavy metals and other toxicants contained in traditional biocidal antifouling paints.

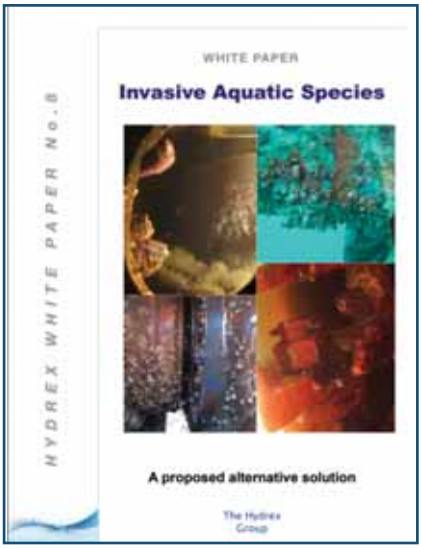
So far the efforts of states and ports have been in the direction of preventing ships arriving in their waters with fouled hulls and NIS. For example, the ANZECC code forbids in-water cleaning of vessels in Australian waters for fear that incoming vessels will bring NIS into Australia which will then establish themselves there. But forbidding in-water cleaning means that vessels leaving Australian ports, especially those that have been laid up for some time, will sail with a fouled hull and carry invasive species picked up in Australia to other parts of the world. This may appear to help with the local problem but in fact magnifies the international situation. And NIS is by its very nature an international problem.

A novel approach would be for ports and states to at least place equal emphasis on ships sailing from their port of departure with a clean hull. This would require international co-operation but the IMO is there to make sure that such international cooperation on important shipping related matters is obtained. And if such a solution also carried with it great financial benefits to shipowners/operators the world over, then it is quite likely to be accepted and adopted.

The two major barriers to effective handling of the global NIS problem are:

1) the hull coatings in general use are not suitable for in-water cleaning, but in-water cleaning is an essential part of the solution to NIS;

2) in order for the NIS spread to be curtailed, ships must leave their port of origin with a clean hull and concentration needs to be on the beginning of the voyage just as much or more than on the state of the hull at the port of destination. Ships do not foul while sailing. They foul when they are stationery.



A great deal of work has been done on the subject of NIS by the IMO Marine Environmental Protection Committee's Correspondence Group on the development of measures to minimize the transfer of invasive aquatic species through biofouling.

This White Paper outlines an existing, workable, environmentally and economically beneficial method of eliminating the threat of further spread of NIS via the ship and boat hull fouling vector using only currently extant, proven technology and methods.

First global standard for ship hull cleaning essential for marine ecosystems

BIMCO, the world's largest shipping association, has moved a step closer to finishing a global set of guidelines needed to protect the marine environment from invasive species and reduce CO_2 emissions. Currently, there is no common global standard for cleaning ships' hulls to avoid transferring invasive aquatic species, nor for the potentially damaging debris washed off in the process.

Every time one of the world's 80,000 large merchant ships calls at a port, it brings foreign aquatic species on the submerged parts of the ship, also known as fouling. In a country like Australia alone, around 30,000 commercial port calls are carried out every year and if their hulls aren't fairly clean organisms can move from one continent to another, transferring invasive species between marine environments and potentially harm local aquatic ecosystems. The organisms growing on the hull also increase drag and reduce fuel efficiency of the ship by as much as 35%, leading to higher fuel bills and more CO_2 emissions.

To ensure that hull cleaning can be carried out in a safe and environmentally sustainable way in the future, a global standard is essential.

"The new in-water cleaning standard puts great emphasis on capturing what is removed from the ship, thereby ensuring that the marine environment is not negatively affected. We believe that a global standard will create much-needed transparency along with economic and environmental benefits for shipowners, ports, port authorities and in-water cleaning companies," says Aron Sørensen, BIMCO's Head of Marine Environment.

He emphasizes that it is imperative that the cleaning can be done "in-water", as there is limited availability of dry docks for very large ships, for example carrying iron ore or crude oil. In addition, the cost to deviate to docks in Asia and unload the ship is extremely high and the added trip to drydock adds to GHG emissions, which can