



MERUS

MARITIME | OFFSHORE



SCALING

Lime scale or other deposits are found in almost all water in dissolved forms. Depending on the amount of calcium carbonate, dissolved carbonic acid and the temperature of the water, the minerals start to crystallize and start depositing on surface areas. This phenomenon can cause substantial problems for technical applications.

Lime scale reduces the pipe diameter and consequently, lowers the flow rate. The deposits reduce heat transfer in heat exchangers and lower the efficiency of the heating installation or cooling system significantly. Increasing pressure losses and decreasing flow rates are other symptoms associated with the same problem. In many cases the water is treated chemically to avoid these problems. The Merus ring, however, provides an environment-friendly solution.



BEFORE MERUS



WITH MERUS

CORROSION

The metal of the pipes react with oxygen in the water – this is where corrosion occurs. What is known as rust can be seen as the brownish water that comes out of the pipes.

Under unfavourable conditions, rust can cause holes in the metal – this is called pitting corrosion. Consequently, the lifetime of the equipment is reduced. Damages caused by corrosion are the main reason for expensive emergency shut downs or replacement investments. Extensive sanitation measures can be necessary as well.

The Merus ring is able to change the corrosion behaviour of iron in watery solutions (tendency shifts from Fe_2O_3 to Fe_3O_4 , thus from red rust to a magnetite layer). Rust particles are dislodged and flushed out until a protective film of the more saturated iron oxide is formed on the surface.





References

Boskalis, CNOOC, ConocoPhillips, Dolphin Energy, Dredging International, DSM Delft, Fleet Pro, Fugro Marine Services BV, GDF Suez, GloMar Shipmanagement, Greenpeace, Hamburg Süd, Hapag Lloyd, Heerema Fabrication Group, Holland America Line, Intercontinental Waterways, Jan de Nul, John T. Essberger, Köln Düsseldorf, Leonhardt & Blumberg, MS Cruiseliners, Odfjell Terminal Botlek, Q8 – Kuwait Petroleum, Rivertech BV, Shell, Statoil, Teekay Petrojarl, TESO – Texel, Thenamaris Shipping, Transocean, Uniworld, Van Oord, Vico, Viking Life-Saving Equipment, Vroon Offshore Services, Wagenborg Offshore, Weka Boxcoolers BV, Wintershall, Yara

BIOFOULING

Seawater intake lines and cross-overs can grow full with sea life. Marine growth, barnacles and sea shells hold on to rough surfaces, such as scale deposits.

As a result, the pipes get blocked and show a reduced flow. In turn, this affects for example the cooling capacity of the engines. Most vessels make use of strainers to prevent the organisms from further entering the water network inside the vessel. Yet, the larvae pass these filters and barnacles and mussels can still grow until the pipes will be completely blocked.

The Merus technology can counteract these problems, without harming the biology in the water. The Merus rings will change the process of scaling and the formation of biofilm, and will ensure the new larvae will not find so much breeding ground due to cleaner pipes. This will slow down the marine growth in the water system.



BEFORE MERUS



WITH MERUS

WHY MERUS

Where water causes problems...

- Heat exchangers
- Pumps
- Seawater lines
- Freshwater lines
- (Steam) boilers
- Reverse osmosis systems
- Hydrophores
- etc.

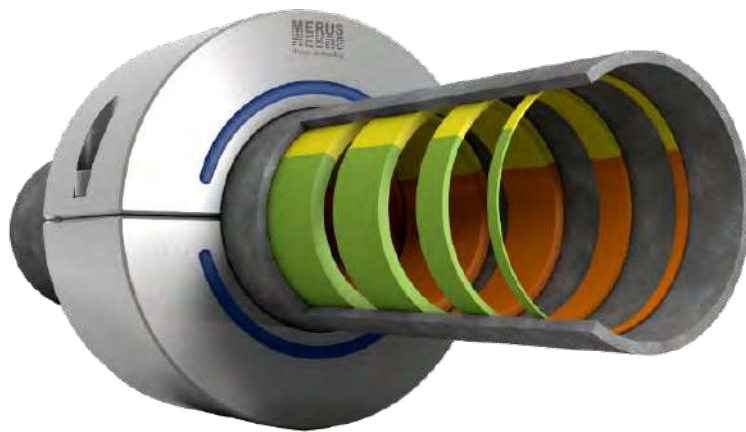
...MERUS is the solution!

The Merus technology, which basically consists of a ring that is installed around water lines, gives off molecular overlapping frequencies disturbing lime scale, rust, bacteria, algae and barnacles in your fresh- or seawater lines and applications. Afterwards, the substances are flushed away, leaving water lines and applications mostly free of harmful build-up and bringing them back to high performance levels.

The same counts for hydrocarbon lines and applications where paraffin wax, biofouling and corrosion often cause efficiency drops due to blockage or leakage.

The Merus technology does not change the composition of the water, which means vital and healthy minerals remain. The special thing about Merus is that no chemicals or additional energy are needed. Instead, physics plays a big role.

The Merus ring is made out of two halves of treated alloy. The two halves can easily be installed on the outside of a pipe as a collar. Once the Merus ring is installed, it automatically starts to emit different kinds of oscillations. There is a dedicated oscillation to fight each specific troublesome deposit.



ENVIRONMENTALLY
FRIENDLY



REDUCES
CO2 EMISSIONS



TIME
SAVING



INCREASES
LIFESPAN

DID YOU KNOW?

- No chemicals or additional energy resources are needed.
- Merus ensures an improved efficiency of your fresh- and seawater lines.
- Merus prolongs your equipment's lifespan and reduces maintenance cycles.
- Machinery connected to the water system will return to high performance levels.
- Depending on the application, savings of € 10.000 – € 250.000 per year can be realized.
- You can reduce the use of cleaning supply expenses – which is also great for the environment!