

# Water Treatment and the Environment

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In my 26 year's as a Marine Engineer I have used a lot of chemicals for water treatment in boilers and jacket cooling water on board the ships I sailed on.

We knew that the product we were using was dangerous to handle, it could be a fire hazard if not properly stored and it was a hazard to the crew who had to handle it.

As a technical manager for a US company with a number of vessels in operation in Alaskan waters, we were looking for alternatives to the Hazardous Chemicals both for water treatment and cleaning on board.

This was late 80's and early 90's and we could not find any usable product on the market.

In the early 90's an alternative water treatment product was introduced to the Marine Industry by a Norwegian company, IWTM A/S.

The product name is ELYSATOR. This is a non chemical method of corrosion protection.

This was originally a Swiss product for water softening and corrosion protection in potable water and heating systems.

Over the years IWTM A/S gained lots of experience with the ELYSATOR and learned that it worked very well in engine jacket cooling water, chilled water for air conditioning, boiler and steam systems and all types of technical cooling water.

Today there are thousands of units in service worldwide in many of the major shipping companies. The oldest units have been in service for 14 years.

As mentioned already, the ELYSATOR started as a water softener in the 60's in Switzerland.

The ELYSATOR has the Det Norske Veritas approval as Clean Machinery water Treatment and is a real alternative to the use of Chemicals in the on board water treatment needs.

There is only clean water in a system with ELYSATOR water treatment.

## How does the ELYSATOR work?

The ELYSATOR works on the anodic/cathodic principle by using high purity Magnesium Anodes in a controlled water flow.

The water swirl's around the Anodes, so it creates a cyclonic motion that makes particles settle too the bottom of the tank where it can be drained out of the system.

The Anodes scavenge the Oxygen from the water and a chemical reaction starts and this will create Magnesium Hydroxide.

The Magnesium Hydroxide will coat the entire system with a microscopic film that is the protection against corrosion.

In the same reaction, the water will be more Alkaline and the Ph will increase and balance it self to the correct level for the water treated.

The water gets ionized and this prevents scaling in the system, plus it will over time remove old scale and chemical residue from the system.

The ELYSATOR has a softening effect on the water, salts, minerals and heavy metals will be removed from the water.

The main criteria for an ELYSATOR to protect the system and function properly, is correct information about the total volume of water in a system, including any make up water.

When the correct size ELYSATOR is determined, the technical staff which is responsible for the daily operation of the unit, has to set the correct water flow as instructed in the operation manual.

The correct water flow at all times is a must.

The ELYSATOR should be installed as close to the circulating pumps as possible, and always even with or lower then the system it is treating.

The main reason for this is to remove particles from the system as quickly as possible.

## What about maintenance?

The ELYSATOR is not maintenance free, but very low maintenance.

To service/clean a unit will take a technician from ½ hour for the smaller units, up to 2 hours for a large unit.

The Anodes have to be removed from the unit and cleaned with a scraper to remove oxidation that may build up on the anodes.

How often the Anodes need cleaning depends on the system and the quality of the make up water.

The manufacturer recommends to open and clean after one month in service when first started in a system, because there will always be some contamination in the piping system.

The amount of oxidation/build up on the Anodes will give the operator an indication of how often it needs to be cleaned.

In a clean system with low make up, cleaning two or three times a year may be enough.

In Boiler systems it is recommended to clean anodes once a month.

The Anodes last an average of 4 to 6 years in a boiler system and 5 to 7 years in a closed loop system. The tank itself is today made entirely of stainless steel, so the Anodes are the only consumable part in the treatment system.

More information can be found on the following web sites: [www.iwtm.no](http://www.iwtm.no) and [www.iwtna.com](http://www.iwtna.com)