

Seawater Scrubbing Technology



Legislation to reduce the impact of the marine industry on the environment means tough choices ahead for ship owners and operators. Whilst it is possible to switch to a lower sulphur fuel in order to comply with the latest MARPOL (Annex VI) Regulations, this is likely to prove to be an ever more costly option. As more owners and operators choose this way to comply with the legislation, the premium that these lower sulphur fuels attract will inevitably start to rise. When the bunker fuels market moves to a surplus of high sulphur fuel there will be a growing shortage of lower sulphur fuels. The price differential between these products is predicted to increase sharply. Experts agree that, in the longer term, high sulphur fuel oil will become increasingly disconnected from the wider fuel market, further increasing the price differential.



Opting for our Hamworthy Krystallon sea water scrubbing technology instead of switching fuel means;

- ▶ **lower operating costs through access to less costly fuel**
- ▶ **avoiding fuel switching, storage and availability issues**
- ▶ **reducing your operational impact on the environment**

The Hamworthy Krystallon sea water scrubbing technology will remove more than 98% of Sulphur along with the majority of particulate matter from a 3.5% sulphur residual fuel. The technology is suitable for both new build and retrofit applications and will deliver ease of operation and low maintenance costs.

The technology is available for a wide range of vessel and engine configurations. Hamworthy Krystallon can offer;

- ▶ **pre-installation design support and shipyard supervision**
- ▶ **a full post-installation commissioning service**
- ▶ **after sales and service support through Hamworthy's extensive Service network worldwide**
- ▶ **access to innovative project financing and fuels supply risk management**

Seawater Scrubbing Technology Inert Gas Systems

Product Features

Seawater Scrubber

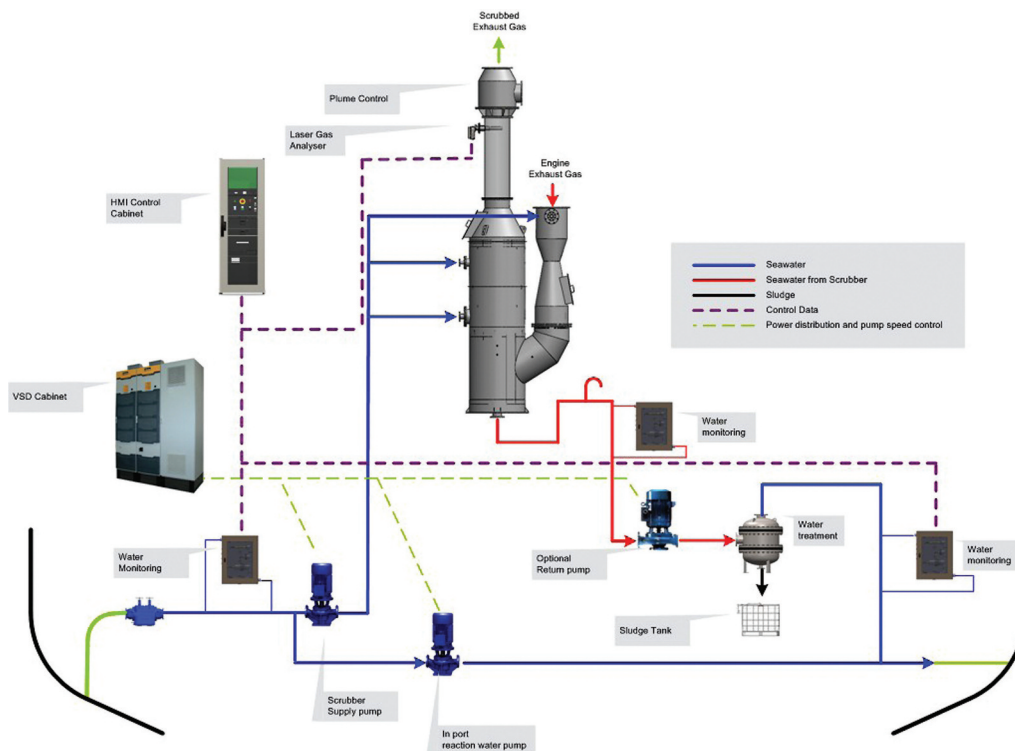
The Hamworthy Krystallon Sea Water Scrubber unit is manufactured from high nickel chrome alloy steels ensuring long lifetime and reliable operation. It can fit into the funnel space being both lightweight and self supporting. Whilst the Scrubber is designed to run cool, operating on a constant supply of sea water, under emergency conditions it can be operated at temperatures of up to 450°C. It also provides for silencing of the engine exhaust noise, and may therefore replace a typical exhaust gas silencer.

Wash Water Treatment System

The main sea water intake pipe work is manufactured from glass reinforced epoxy. This provides high corrosion resistance, low flow losses, light weight and ease of installation. Water is transferred around the system via Hamworthy's own trusted centrifugal pumps.

The wash water treatment system will handle the full Scrubber Unit water flow. It is designed to remove both solid particulate matter and liquid hydrocarbon waste products. All exposed materials and wash water transfer pipe work are also manufactured from corrosion proof glass reinforced epoxy. The high efficiency design complies with the requirements of MARPOL Annex VI Regulation 14 Sea Water Scrubbing Wash Water Criteria.

Seawater Scrubber Schematic



Hamworthy has over 25 years experience of sea water scrubbing through its Inert Gas operation in Moss. Our knowledge and detailed engineering capability allied with Hamworthy Krystallon technology is unique in the marine market place. Let Hamworthy Krystallon be your choice for reliable cost effective compliance with the exhaust emissions needs of today and tomorrow.

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The manufacturers reserve the right to alter the specification and data to incorporate improvements in design. Certified drawings will be issued on request.

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