Knowledge grows

Yara Marine Technologies' Exhaust Gas Cleaning Systems

Yara Marine Technologies

SOx scrubber systems to comply with IMO's Sulphur emission regulations

www.yaramarine.com

The burning of fossil fuels in engines creates toxic SOx – Sulphur Oxides – that can disrupt the marine environment and cause harm to human health. Ships are heavy emitters of SOx and Yara Marine Technologies delivers exhaust gas cleaning technology – SOx scrubbers, to help shipowners reduce the SOx emission levels according to the International Maritime Organization's (IMO) SOx regulations.

By installing an exhaust gas cleaning system such as the Yara Marine Technologies' SOx scrubber, the ship-owner can operate on cheap, heavy fuel oil and still be compliant with all the IMO SOx emission regulations.

- Yara SOx scrubber can clean the exhaust gas down to strictest 0,1% ECA Sulphur requirements and therefore automatically makes the vessel 2020 compliant.
- More than a hundred systems already successfully delivered since 2011.
- Our inline scrubber can handle any Sulphur content in the fuel up to 3,5%.
- Yara Marine Technologies offers scrubbers that can operate in both open and closed loop as well as hybrid scrubbers that can automatically transit between open and closed loop depending on the specific geographical regulation.
- Yara is the only abatement company that can offer scrubber design that allows for both Magnesium Oxide (MgO) and Caustic Soda (NaOH) as the alkali in closed loop.
- For those applications where Caustic Soda is a more suitable alkali, Yara will design the scrubber accordingly.
- For retrofits on sailing cruise vessels, Yara Marine Technologies scrubbers can be fitted while in operation and no valuable commercial sailing time is lost.
- We build our scrubbers in high grade stainless steel and we can offer extended guarantees against corrosion.
- Our small, lightweight inline scrubbers are easily installed in the funnel area.
- There is no regulatory requirement to have a bypass for an inline scrubber.

From 2020, the global 0,5% SOx cap will apply worldwide and the ECA's around the world are expected to grow and expand in the years to come. The demand for exhaust gas cleaning technology, such as the SOx scrubber, is expected to increase in pace with the tightened SOx regulations.

Installing a Yara SOx scrubber is the most economical and efficient way to achieve full compliance with both current and future emission regulations from the International Maritime Organization.

Compliant with all IMO regulations

According to the IMO's maritime regulations, ships are required to reduce their Sulphur Oxides (SOx) emission in certain waters in the world. These areas are called emission control areas (ECA). From 2015 the allowable SOx emission in these areas can not exceed 0,1%. In October 2016 the IMO decided that a global 0,5% Sulphur cap will take effect from 2020.

Each Yara scrubber can handle Sulphur content in the fuel up to 3,5% and clean it down to the strictest future and current ECA requirements. Installing a Yara Marine Technologies' SOx scrubber will therefor make your vessel both ECA and 2020 compliant.

Flexible design and installation

Yara Marine Technologies' scrubbers are designed and custom built to fit any vessel and engine type. The scrubber also works as a silencer and therefore only requires the space as the silencer it's replacing and no cargo nor passenger space is lost. On RoPax vessels, Yara scrubbers can also be installed while the vessel is in operation and therefore no commercial sailing time is lost.

Magnesium Oxide

When the scrubber system works in closed loop, an alkali, such as Caustic Soda (NaOH) or Magnesium Oxide (MgO) is needed to clean the washwater that is held in the washwater tank.

Yara Marine Technologies recommends using Magnesium Oxide or MgO as the alkali due to its supreme efficiency. MgO requires about ¼ of the equivalent dosage of Caustic Soda or NaOH and is therefore also a substantially less expensive alkali.

Due to the hazardous nature of NaOH it has been known to cause bunkering challenges in certain harbours. MgO is completely harmless for the onboard crew and guaranties no bunker limitations or challenges.

The less dosage needed for MgO also makes it more convenient in terms of onboard storage capacity for the vessel.

Yara Marine Technologies is the only producer that can deliver scrubber systems operating with both Magnesium Oxide and Caustic Soda as the alkali in closed loop.

About Yara Marine Technologies

The company was established in 2014 following the acquisition of Green Tech Marine, by global industrial chemical corporation Yara International ASA.

Green Tech Marine has since its origin in 2010 been a forerunner in the emission reduction technology industry being the first company offering the inline SOx scrubber to the marine segment. Yara Marine Technologies was also the first company to introduce the multi engine inlet and the flexible mini scrubber that both drastically reduce the design footprint on the vessel.

With more than a hundred scrubber systems delivered and over one million operating hours, the company has an impressive amount of experience in the marine exhaust gas cleaning industry.

Yara is also the largest supplier of NOx abatement equipment – Selective Catalytic Reduction Reactors (SCR) – in the world, with close to 1600 SCR systems installed since year 2000. Installing Yara SCR systems allows marine customers to easily achieve reduction in NOx emissions by up to 99%.

Regardless of vessel and engine type, Yara has the solution to all your SOx and NOx abatement needs.

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Reference Projects

Yara Marine Technologies has an impressive amount of experience in the maritime exhaust gas cleaning industry with more than a hundred scrubber systems delivered and over one million operating hours.

STX FRANCE
MEYER WERFT
SINOTRANS&CSC
HYUNDAI
FINCANTIERI
ZHOUSHAN CHANGHONG INTERNATIONAL SHIPYARD CO LLD
NORWEGIAN CRUISE LINE
BRITTANY FERRIES
REEDERI JUNGERHANS
SAGA
TOLL
MSC CRUISES
ROYAL CARIBBEAN INTERNATIONAL

About Yara

Yara's knowledge, products and solutions grow farmers', distributors' and industrial customers' businesses profitably and responsibly, while protecting the earth's resources, food and environment.

Our fertilizers, crop nutrition programs and technologies increase yields, improve product quality and reduce the environmental impact of agricultural practices. Our industrial and environmental solutions improve air quality by reducing emissions from industry and transportation, and serve as key ingredients in the production of a wide range of goods. We foster a culture that promotes the safety of our employees, contractors and societies.

Founded in 1905 to solve emerging famine in Europe, today Yara has a worldwide presence, with close to 15,000 employees and sales to about 160 countries.

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"Norwegian Cruise Line selected Yara Marine Technologies Scrubbers for our fleet for several reasons; most importantly, because they have the best scrubber technology available for cruise vessels and provide the best ROI compared to all other existing technologies. Other benefits that are important to us include the installation area needed, which does not affect existing guest stateroom or outer deck areas and the ability for the scrubbers to be installed while subject vessel is underway."

Brian W. Swensen
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