Exhaust Gas Cleaning Scrubbers, Operation Monitoring and Maintenance

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The objective of this thesis project was to study operation monitoring and maintenance requirements of exhaust gas cleaning scrubbers being used onboard merchant vessels. The aim of the study was to gather information and present it in a way that engineers and other operators of exhaust gas cleaning scrubbers onboard a merchant vessel would know what they need to be monitoring and why they need to be doing that. Furthermore, the intention was to explain general maintenance routines of such installation and common indicators suggesting a need for additional maintenance.

Project was conducted as a literature review by searching for information from books and internet sources. Scrubbers are new technology on marine applications even though they have been used on land-based facilities for decades. Because of that, most of the literature used as information source is based on scrubbers used on coal and fuel burning power plants on land. Regardless of the operating environment, the technology and the scrubbing process are the same, only difference being the regulatory requirements, which this study investigated also, since they have a major impact on operating, monitoring and maintaining the scrubber installation.

There are several manufacturers on the scrubber market, all with their unique technological construction. Therefore, it was not possible to give...
DNV GL has a long experience with exhaust gas cleaning systems and is working closely with the industry and regulators to support ship owners in a smooth and pragmatic way to ensure compliance and approve their alternative means to fulfill fuel oil sulphur limitations. Below, we provide some hands-on advice on how to move forward. When performing the technical study, local legislation for the operation of scrubbers should also be considered, as the usage of the selected scrubber type might be restricted in certain ports. Select scrubber supplier. Surveys and testing The exhaust gas cleaning system is subject to a function and safety test after installation on board. Fuji Electric proposes marine exhaust gas cleaning system (EGCS) including SOx scrubber with innovative cyclone technology developed for marine use and the latest laser gas analyzer with easy maintenance. World’s smallest SOx scrubber Removes over 98% of SOx. By adopting cyclone technology, Fuji Electric’s SOx scrubber keeps pressure loss to less than 1kPa and has achieved significant downsizing. Our scrubber is 50% more compact than other SOx scrubbers on the market: it is lightweight, facilitating installation in ships. Our SOx scrubber can remove over 98% of sulphur in exhaust gases. Its op... Australia’s approach to exhaust gas cleaning systems. As a party to MARPOL Annex VI, Australia permits the use of EGCS to comply with the low sulphur fuel oil limit, provided the: system is approved by the ship’s flag State, or a recognised organisation appointed by the flag State. crew are trained on the use of the system and the system is kept in good working order, with maintenance up to date and monitoring devices fully operational. EGCS approval documents, as well as operational and maintenance records for the EGCS are maintained on board the vessel and made available for inspection upon Port State Control Officer (PSCO) request. following information is provided to AMSA at EGCS@amsa.gov.au before arrival at the first Australian port Exhaust gas cleaning. How to choose the correct scrubber. Contents. Fuel type Exhaust gas cleaning Particulate Matter (PM). Not regulated - both HFO and distillate are permitted. Permitted alternative under Regulation 4 to achieve regulated limit. No limit values. Scrubbing technology and the environment. This will add a lot of cost to maintenance. Another thing to consider is the amount of water running through the system, as one of the biggest costs when operating a scrubber is the power used for the pumps. The amount of water needed will be higher in an open loop than in a closed loop, and therefore the power consumption will also be higher. If a continuous exhaust gas monitoring system is fitted, only daily spot checks of the parameters listed in paragraph 4.4.7 would be needed to verify proper operation of the EGC unit. 4.4.9 If the EGC system manufacturer is unable to provide assurance that the EGC unit will meet the Certified Value or below between surveys, by means of the verification procedure stipulated in paragraph 4.4.1, or if this requires specialist equipment or in-depth knowledge, it is recommended that continuous exhaust gas monitoring of each EGC unit be used. Scheme. Compliance demonstrated in service by continuous exhaust gas monitoring. • inlet water (for background); • water after the scrubber (but before any treatment system); and • discharge water.