INSTALLATION OF EXHAUST GAS CLEANING SYSTEMS (SOX SCRUBBERS) - SOME PRACTICAL RECOMMENDATIONS

Relevant for owners and managers, design offices, shipyards, suppliers and flag states.

As of early October 2018, about 1,700 scrubbers are in operation or on order. With only 15 months to go before the global sulphur cap becomes mandatory, time is the limiting factor to becoming compliant by early 2020.

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 fulfil fuel oil sulphur limitations. Below, we provide some hands-on advice on how to move forward:

Ship owner’s checklist
The most important tasks for a ship owner/operator to do when considering the installation of scrubbers:

- **Perform a thorough financial assessment** to evaluate if the installation of scrubber is a feasible option. The outcome of the assessment particularly depends on the price differential between compliant fuel and high sulphur fuel oil (HSFO) and the future availability of HSFO. However, also the trade pattern, cost of increased power consumption, maintenance and repair costs, costs for alkali and sludge disposal, and possible market rewards should be considered. Various calculation tools exist for performing such a financial assessment, and DNV GL can also provide support in your decision process.

- **Perform a thorough technical study** to assess if the installation of scrubbers is feasible. Items to be considered include: space for the installation and foundations, additional power consumption, routing of pipes, possible alternations of the fire integrity, and impact on stability. 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 a scrubber supplier.** Due to the recent boom in orders for scrubbers, the dominant market players might not be in the position to offer a suitable slot for your installation. If you choose to select a not-so-prominent supplier, make sure the supplier meets quality standards and provides in-service support globally. DNV GL offers Approval in Principle, hardware in the loop (HIL) testing and workshop assessments for new players in the market, thus reducing the risk for real installations.

- **Select a Continuous Emission Monitoring Systems (CEMS) supplier.** When selecting the scrubber supplier, also carefully select the CEMS supplier, which in practice is paramount to prove that the exhaust gas cleaning system is running in compliance, for instance for port state control. Malfunctioning CEMS (e.g. wrong recordings) will result in non-compliance and possibly high fines.

- **Select a docking yard.** Likewise, the selection of a suitable slot at a potential docking yard might be challenging these days. In almost all cases, the installation of scrubbers requires modification of the sea chest, thus a dry docking of the vessel. To minimize the off-hire time, the dry docking could be considered during a class renewal as a suitable time to install the scrubber.

- **Plan the commission test.** A well-planned commission test with all parties involved (scrubber supplier, CEMS supplier, docking yard, DNV GL) is paramount for the successful survey and testing of the scrubber to demonstrate compliance with the requirements stipulated by IMO. It is recommended to rather call for one more meeting before the testing than to try to sort out things after the sea trial.

With the entry into force of the IMO global sulphur limitation in all international waters starting from 1 January 2020, a substantial number of ships are installing exhaust gas cleaning systems, so-called SOX scrubbers, as a compliance method. This statutory news provides some practical recommendations on how to effectively install a system on time.
Approval process
The approval of the installation depends on the quality of the drawings and the related design, which again is reflected in the understanding of the rules, both statutory and class. DNV GL has developed a list of required documents (a DocReq) for the different types of exhaust gas cleaning systems and affected systems. This lists a minimum of drawings that should be submitted for approval. The document will be sent upon request when applying for approval. The approval process should be initiated at least 3 months before scheduled installation to account for handling any comments.

Surveys and testing
The exhaust gas cleaning system is subject to a function and safety test after installation on board. In addition to the required function and safety tests (e.g. pumps, piping, bypass, control and monitoring system, alarms) as per DNV GL Rules for Classification of Ships, the exhaust gas cleaning system shall also be surveyed and tested in accordance with the requirements of IMO Res. MEPC.259(68). After a successful on-board survey and testing, the International Air Pollution Prevention (IAPP) certificate of the ship will be amended with the scrubber.

Recommendations
- Review the “Ship owner’s checklist” above – and take action!
- Start the approval process in due course – at least 3 months before installation.
- Ask class, flag and manufacturers in case of questions.

References
- DNV GL Rules for Classification of Ships Part 4 Chapter 6 Section 8
- IMO Res. MEPC.259(68)
- More information in our webinar “Scrubbers – meeting the Global Sulphur Cap 2020 limits” on 10 October 2018
- Global Sulphur Cap 2020 – extended and updated brochure