Background
To comply with the new sulphur limits in ECAs (Emission Control Areas), many owners and operators have turned to ultra-low sulphur distillate fuels. But exhaust gas treatment systems, commonly known as scrubbers, are also among the most popular options for meeting the new ECA requirements, which were introduced in January 2015.

Ferry operators and passenger ships were some of the first to install scrubber technology, along with several vessels from other segments that operate in Emission Control Areas for long periods of time. Tanker, bulk carrier and container ship owners have been more hesitant in adopting the technology, as scrubbers are relatively new to the maritime industry and still face several challenges in terms of design, installation (particularly retrofits) and operation.

Optimizing designs for existing vessels and minimizing installation time, technological choices considering future operational restrictions and integrating scrubber operation with daily crew routines and vessels logistics are among the top concerns for operators when considering investment in the technology.

Sharing operational experience and insights on scrubber technology

Through a series of consultations with industry partners discussing compliance with the latest regulations on sulphur content, DNV GL has developed a guidance document for scrubber systems to help ship owners and operators understand the technology and its operational challenges.
DNV GL contribution

By combining our knowledge and expertise with actual operational experience gained from industry partners, we have been able to develop a guide which addresses operational considerations beyond class and statutory compliance.

Our experts have been working together with system end users and technology makers, have analysed publicly available information and combined it with their own knowledge – all resulting in a series of “lessons learned” and practical knowledge based on real-life operational experience.

The guide contains seven main sections:

1. **Challenges of scrubber installation**: different options and challenges to optimizing the process for newbuilds and the more challenging retrofits from a technical and an economical point of view.

2. **Main operational challenges**: the impact of installing a scrubber in day-to-day operations, considering maintenance aspects, handling of chemicals and residues, crew issues, integration of the system in the machinery operations and monitoring aspects.

3. **Performance issues**: how the scrubber affects energy performance of machinery systems and what has to be accounted for.

4. **Regulatory issues**: forecast about possible future regulatory development based on current discussions on wash water and other issues.

5. **Environmental considerations**: additional environmental impact considerations beyond IMO and national current regulations.

6. **Safety considerations**: aspects related to the safety of the crew and passengers during regular operations as well as the integrity of the machinery systems and vessel in general.

7. **Future of the technology**: discussion about the current status of the technology and how it may develop in the future as more restrictive limits for sulphur content of fuel enter into force.

The guide will be published by the end of 2015 and made available to the public.

**A future outlook for scrubbers**

Although bunker prices collapsed in 2014 and the price difference between heavy fuel and distillates has remained relatively constant, investments in scrubbers are still attractive. With the global 0.50% sulphur limit possibly entering into force in 2020, scrubbers may see an increased uptake. New ship types adopting the technology and different approaches towards global cap and ECA requirements may result in new designs and novel compliance options, which could be combined with NOx reduction technologies.

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