# F.A.Q.

What are the benefits and challenges of using scrubbers?

The table below lists the different benefits and challenges of using scrubbers:

What operational issues must be considered when using scrubbers?

Space and weight: Some systems can be fitted in an existing or extended funnel or outside the funnel, but the weight of the unit when full and its effect on the ship’s stability must be considered. The water treatment plants required for wet systems can be located in the ship’s engine room or, dependent on the design, in one of a number of other possible locations on the ship. Manufacturers should be able to advise operators on the best location for individual ships.

Waste: As the sludge from the washwater treatment system cannot be incinerated onboard arrangements must be made for its storage and subsequent discharge ashore. Washwater from scrubbers should be monitored and its discharge should comply with special discharge criteria as set out in Resolution MEPC.184(59).

Power: Power requirements for a wet scrubber are estimated to be generally around 10-30kW for each MW of engine power. By contrast, dry scrubber power consumption is given as being as low as 1.5-2 kW per MW of engine power.

Reliability: The various monitoring systems required will need to be reliable enough to operate continuously as required without undue maintenance demands. The same applies to the washwater treatment system components. Scrubber performance also needs to be guaranteed: operators need to have confidence that Annex VI requirements will be met 100% of the time.

What guidelines are in place to ensure the certification of the scrubber?

Scrubbers have to comply with the 2009 Guidelines for Exhaust Gas Cleaning Systems. They specify the requirements for the testing, survey, certification and verification of the scrubber.

Please note that the ship’s flag State (the Administration) has to approve of the use of scrubbers and is not mandated to accept such proposals automatically. It may furthermore impose additional requirements to those given in the Guidelines (Resolution MEPC.184(59)). Consequently, before ordering or installing a scrubber, ship owners should check with the Administration whether it accepts such arrangements and whether there are any specific requirements.

What should be considered when selecting a scrubber?

When selecting a system, ship owners must consider the different timescales of ECAs and other emissions-limiting zones and the consequential variations in SOx limits the ship may encounter globally. Care must be taken to ensure that the system selected and installed is capable of ‘cleaning’ the quantity of exhaust gas produced to bring eventual emissions down to the lowest level required by the regulations in every zone the ship may enter.

What types of scrubbers currently exist and what distinguishes them from each other?

Currently there are two main types of scrubbers:

• Wet scrubbers that use water (seawater or fresh) as the scrubbing medium; and

• dry scrubbers that use a dry chemical.

Wet systems are further divided into:

• ‘open-loop’ systems that use seawater;

• ‘closed-loop’ systems that use fresh water with the addition of an alkaline chemical; and

• ‘hybrid’ systems, which can operate in both open-loop and closed-loop modes.