



Aderco 2055G
Scrubber Equipped Vessels

SCRUBBER EQUIPPED VESSELS & ADERCO 2055G

1. Scrubber operations and why it matters

for years, powerplant diesel engines, fitted with scrubbers and running on HFO HS (Heavy Fuel Oil High Sulphur), have provided highly satisfactory results.

For environmental reasons, the IMO introduced MARPOL Annex VI in order to reduce overall emissions worldwide. Among the solutions for Marine applications, three (3) methods of “wet washing” exhaust fumes have been adopted in order to reduce SOx emissions, namely:

- Open loop wet scrubber, using seawater;
- Closed loop wet scrubber, using freshwater; and
- Hybrid system, using seawater or freshwater, depending on the situation.

In all three systems, wash water discharges must comply with strict obligations, pH, Turbidity and PAHs (Polycyclic Aromatics Hydrocarbons). Operating a scrubber-equipped vessel is, therefore, strictly controlled and needs to function to its optimal efficiency, regardless of the quality of fuel oil burned.

2. HFO high sulphur characteristics

HFO is a blend of residual fraction straight off the refineries, blended with lower Density & Viscosity fractions (cutter stocks) in order to comply with the ISO 8217 standard.

HFO's with high density and relatively low viscosity are well known for their reduced performances in terms of combustion. This is reflected by the CCAI, an easy calculation but also more accurately shown by performing a Fuel Combustion Analysis.

On top of these potential issues of degraded CCAI, the nature of residual fractions and cutter stocks can chemically react and cause sludging and incompatibility issues.

Ultimately, a reduced pattern of combustion will impact exhaust fumes (high Particulate Matter content – PM), as well as fouling of the water sprinklers and sensors. More carbon residues will be collected, which will require to be discharged, incurring costs.

3. Potential issues with HFO HS

potential issues can arise immediately after bunkering, including the following:

- Low fuel stability over time, as well as storage.
- Fuel incompatibility.
- Heavy aromatics (Asphaltenes) dropping from suspension and forming sludge.
- High Micro Carbon Residue MCR.

These factors can seriously impact fuel handling and, most importantly, combustion. Scrubber operations can fluctuate according to these factors, impacting exhaust emissions, wash water handling and wash water rejects.

4. Aderco 2055G action on HFO HS

aderco 2055G is an environmentally-friendly organic-vegetal surfactant fuel treatment:

- The action all commences in the Fuel Storage Tanks – asphaltenes are kept in suspension in the fuel matrix and organic sludge minimized.
- Fuel oil conditioned with 2055G will improve fuel oil settling, filtering and purification, the final result being a cleaner and stable fuel oil at the injection phase.
- The surfactant action will reduce surface tension between hydrocarbon molecules injected, improving fuel atomization. For the same volume of fuel oil injected, more fuel droplets having a perfect spraying pattern, will enhance the combustion process.
- The results, post-combustion, being less PM and greasy soot, less carbon fouling and, ultimately, a reduction of PAH collected in the wash water system.

5. BENEFITS OF ADERCO 2055G FOR SCRUBBER OPERATIONS

Depending on the way the scrubber is operated – open loop in deep sea – closed loop in areas close to shore – the different benefits are the following:

1 At Scrubber Tower and Exhaust side.

This is valid for both open and closed loop operations. Cleaner exhaust gasses due to a cleaner combustion impact positively:

- Less fouling and clogging of absorber filters – resulting in less issues of back pressure and cleaning.
- Cleaner water sprinklers, water spray dispersion will be kept at its optimum
- Cleaner electronic sensors
- Less PM emissions (it is generally accepted that 50% of PM pass through the scrubber system). Heavier particles being collected in the water treatment system.
- Improved operation at low engine MCR – due to improved combustion at economical speed. This aspect being of the utmost importance with regards to future EEXO and CII regulations.

2 At Wash Water treatment side – open loop operation.

- Less PM and soot collected in the scrubber will help to ease the wash water treatment operation (Point 2). Less carbonaceous material to be stored in the sludge tank and disposed off onshore.

3 At Wash Water treatment side – closed loop operation.

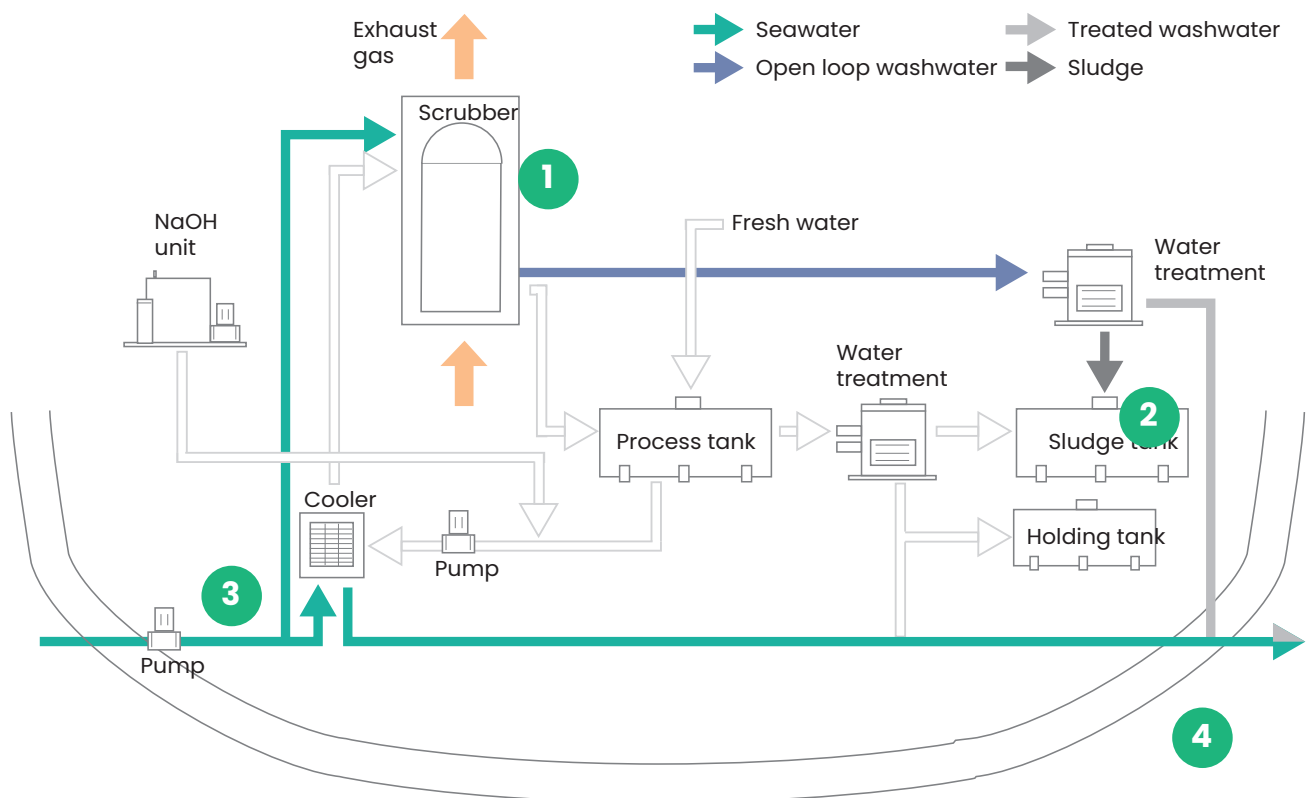
When running in closed loop configuration, washwater out of the scrubber needs to be cooled down in a cooler unit.

- The metal plates of the cooler units will be cleaner (less sticky carbon deposits) and maintenance will be minimal.

4 At Wash Water rejects side – open loop operation.

After passing through the wash water treatment unit, water is discharged into open seas.

- Experience with customers running with scrubber and ADERCO 2055G shows that less aromatic carbon is discharged into the seas. The optical measurement of Phenanthrene (PAHphe) remains constantly below the upper regulatory limit of Max. PAHphe discharge.



ADERCO STOCKS



For more information contact technical@aderco.com or info@aderco.com