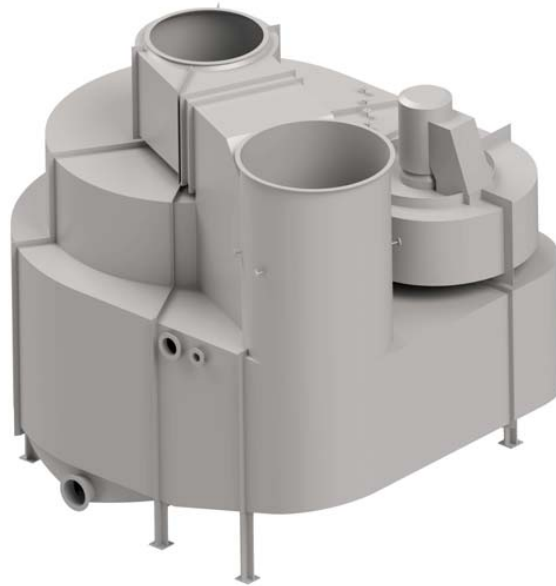


CLEAN SOX COMPACT



The optimal EGCS solution for SOx compliance

The new CleanSOx Compact EGCS, through its significant size and weight reduction design allowed by the unique patented gas recirculation technology, brings maritime scrubbers to the next level. The compact size of this scrubber does therefore not necessitate or involve a major design change or rebuilding of a vessel to fit the equipment onboard. The CleanSOx Compact scrubber therefore represents the optimal solution for owners opting for scrubbers when considering parameters like: hybrid, Allstream, Size, Weight, Design and the Total Cost to have it installed and commissioned.

The patented CleanSOx EGCS is designed to meet the needs of the maritime industry and offers proven Allstream exhaust gas handling meaning all exhaust sources on board can be served by one common EGCS unit; enabling a fast return on investment.

Our EGCS systems work equally well in open (liquid one time through) and closed (liquid recirculation) modes while seawater and alkali is used to regulate the sulphur trapping efficiency in both modes. The EGCS can operate in all types of water (including low alkaline and saline water) in either mode and without loss of efficiency.

The CleanSOx EGCS is therefore an optimal solution for the marine environment and represents a futureproof system for the ship owner, adhering to regulatory variety in all waters. Our system has also the ability to combine natural and added alkalinity in open loop operation. This means it will provide high cleaning efficiency while maintaining a pH > 6 at the outlet, making the effluent compliant with all IMO and regional/local regulations.

The CleanSOx Compact EGCS are tailor made to any engine size and vessel. More details to be found on page 2.

Key features

No back pressure:

- No fuel penalty
- AE's can start connected to EGC unit(s)
- No restrictions running AE's in part load - no impact on engine parameters (EIAPP)
- Boilers connected

Closed loop/open loop operation:

- Open loop 0,5% Sulphur - sea water only when Sulphur < 3,0%
- Open loop 0,1% Sulphur - sea water + NaOH dosing; can transit any water - no alkalinity restrictions
- Closed loop - sea water + NaOH dosing; only required where zero discharge is called for

pH :

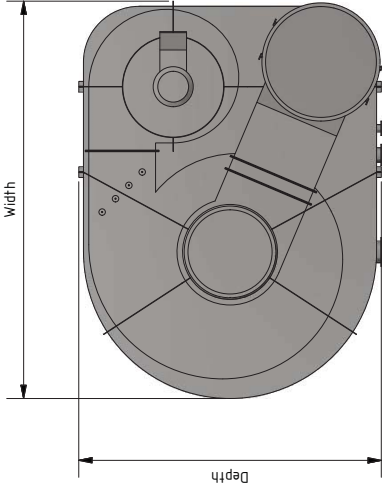
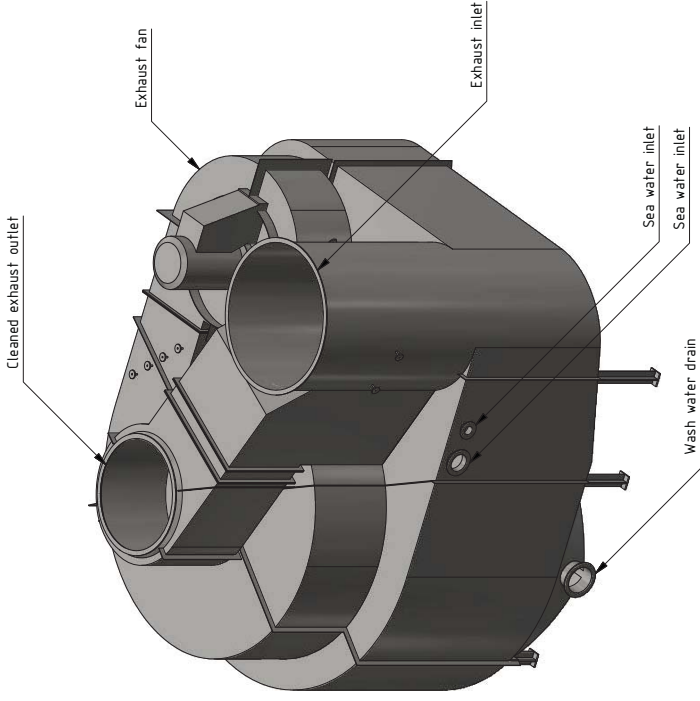
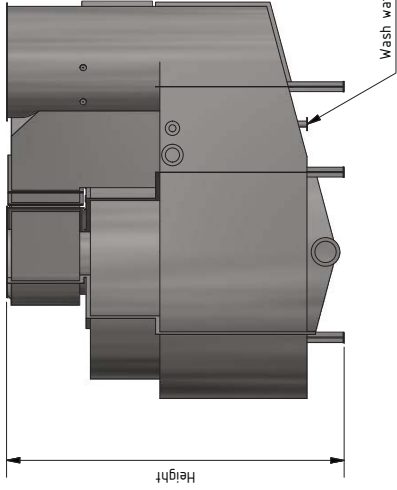
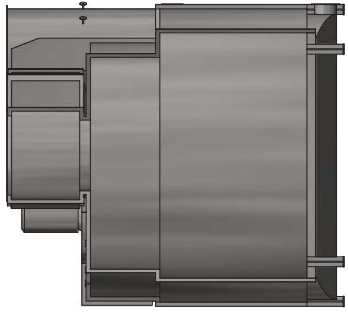
- Open loop 0,5% Sulphur - process water + cooling water + dilution device
- Open loop 0,1% Sulphur - plus NaOH (pH 6,5 at 4m or pH 6 overboard)

Benefits

One Fuel, All sources, All waters, All time



System size	Typical values									
	60	70	80	90	100	120	140	160	180	200
Height [m]	4,5	4,7	5,1	5,2	5,5	6,0	6,3	6,7	7,0	7,4
Width [m]	5,3	5,4	5,9	6,0	6,5	7,2	7,4	8,1	8,3	9,0
Depth [m]	3,9	4,1	4,4	4,6	5,0	5,4	5,7	6,1	6,3	6,9
Dry mass [metric ton]	9,1	10,2	11,7	12,8	14,5	17,2	19,4	22,2	24,4	27,5



REV	DATE	MADE BY	Update	TAM
2	12.09.2017	LP	First issue	TAM
1	21.07.2017	LP	DESCRIPTION	APPR

REASON FOR ISSUE	PROJECT NO.	HULL NO.
Issued for information		

DRAWING NO.	REVISION	SHEET NO.
17000-20000-002	2	A3
CleanSOx Compact		1 of 1
EGC-unit typical dimensions		

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PRELIMINARY