

Scrubbing with a green and financial dividend!



TECHNICAL SPECIFICATIONS

INTRODUCTION

This technical specification is prepared by Value Maritime B.V. and is to evaluate the technical feasibility of installing a Value Maritime Exhaust Gas Cleaning System ("EGCS") 6.0MW 0,1% on your vessel.

The EGCS concerns a transportable module that houses all components you will need to run the scrubber, with the exception of:

- Seawater feed pumps. In most cases your current Ballast / General service pumps can be used.
- Piping for the feed water and the wash water discharge
- One electric cable for the power supply (approximately 34kW), LAN cable for the slave HMI (supply Value Maritime and to be placed at a position in the ER to your convenience), alarm connections to the ship's system (fire detection connectors and alarm column are in the casing)
- Exhaust gas line three-way damper plus by-pass piping from ME exhaust to casing (position of by-pass pipe indicated on side view of GA)
- The supporting and securing structure.

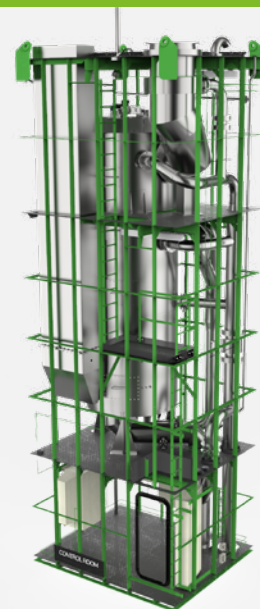
This modular concept makes installation, both during new building and retrofit, very simple. It enables you to time the installation to meet your program, to have a standard that covers your entire fleet (old and new), and allows you to move the units from ship to ship (sales) at moderate costs should you need to.

Our EGCS comes in three sizes suitable for vessels with different size engines. 3.0MW (0,1%), 6.0MW (0,1%) and 9.0MW (0,1%).

Our systems are delivered Hybrid ready and we can include optional offer for a closed-loop module. Last but not least, this all-inclusive modular concept supports financing arrangements totally separated from the present ship's financing.

Value Maritime EGCS Module:

EGCS UNIT 6.0 MW (0,1%) Open Loop, Hybrid Ready



DESIGN PARAMETERS

Maximum sulphur content HSFO	3.5%
Minimum alkalinity Seawater	1200 micromol/liter
Minimum Temperature Seawater	0 °C
Maximum Temperature Seawater	32 °C
Maximum Ambient Temperature	45 °C
Humidity max	96%
Maximum Exhaust gas flow	43.000 kg/hr
Maximum Engine Exhaust temperature	365 °C
Back Pressure Scrubber	1000 Pa
SO ₂ removal Efficiency	98% (equivalent to 0.1 % sulphur content fuel)
SO ₂ compliance	according to Marpol MEPC 259 (68)
Flanges Seawater	EN 1092-1 unless specified otherwise.
Flanges Exhaust gas piping	DIN 86044 unless specified otherwise.
Auxiliary engines	Multiple intake of the Value Maritime EGCS is possible to a max. Exhaust gas flow of 43.000 kg/hr for 98% removal (equivalent to 0,1% sulphur content fuel).
Required seawater flow	500 m ³ /h @ 1,3 bar at EGCS Unit's S.W. intake.

MODULE POSITION

The best position for the module to be discussed and determined. In most cases the position of the EGCS Module is aft of the funnel (see pictures).



SCOPE OF SUPPLY	Vessel Owner	Value Maritime
A. Mechanical components		
VMS precooler		•
VMS scrubber		•
VMS Casing		•
Seawater filters (3 mm strainers)	•	
Interconnecting piping	•	
Equipment supporting	•	
Platforms, ladders supports etc outside the Module	•	
B. Valves		
Class approved overboard valve	•	
Handvalves as per P&ID.		•
Exhaust gas diverter valve	•	
Valve position indicators	•	
C. Electrical equipment		
Field instrumentation as per P&ID		•
Control cabinet (PLC & HMI) –Master & slave		•
1 Exhaust gas analysers (CEMS CO ₂ & SO ₂)		•
Water analysers (1 PAH, 2 pH, 1 Turbidity)		•
Electrical supply and cabling (outside the module)	•	
1 Datalogging equipment including GPS		•
D. Electrical installation		
VMS Module & FAT		•
E. Installation onboard		
Erection onboard and connecting piping	•	
Electrical installation	•	
commissioning on board after installation (3 days)		•
F. SO₂ compliance		
Marine Equipment Directive Certificate		•
Classification certificate scheme B		•
Onboard compliance monitoring plan		•
Active compliance and performance monitoring		•
Class Plan approval and installation survey retrofit	•	
G. Documentation (1 digital & 2 hard copies)		
Installation manuals		•
Maintenance manuals		•
Operation manuals		•
Spare equipmentlist		•

Supply of Electricity, instruments and seawater are provided by ship infrastructure, to be specified in detailed engineering.

MODULE SIZING – DIMENSIONS AND WEIGHTS

VALUE MARITIME EGCS UNIT

Length	3.500 mm
Width	3.000 mm
Height	8.500 mm
Weight (dry)	20.000 kg
Weight (wet)	22.000 kg

MAINTENANCE AND SPARE PARTS

Annual Maintenance and recommended Spare Parts are:

- Value Maritime replacement program (sensors, bearings) EUR 20.000 once every two years (average costs of EUR 10.000 per year)
- Yearly inspection by Value Maritime EUR 2.000 per year
- In line with IMO requirement calibration of Gas EUR 1.500 and Water EUR 2.000 once every two years (average EUR 1.750 per year)

PAYBACK TIME

ESTIMATED PAYBACK TIME PER ENGINE TYPE

3.0MW	15-17 months
6.0MW	10-12 months
9.0MW	8-10 months

KEY Benefits

- Pre-installed “plug and play” casing
- Equipment leasing
- Suitable for small vessels



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