CERTIFICATE OF CONFORMITY – EC (MODULE G)

Certificate No:
MEDG0000076

Application of: Council Directive 96/98/EC of 20 December 1996 on Marine Equipment as amended by directive (EU) 2015/559, issued as "Forskrift om Skipsutstyr" by the Norwegian Maritime Authority. This Certificate is issued by DNV GL AS under the authority of the Government of the Kingdom of Norway.

This is to certify:

That the On board exhaust gas cleaning systems
with type designation and serial number
CLB3500 installed onboard Orasund (IMO 9336701) - CLB35001601001
Issued to

Marine Exhaust Solutions Inc.

Montreal QC, Canada

is, by design assessment and product verification, found to comply with
Annex A.1, item No. A.1/2.10 and Annex B, Module G in the Directive. Marpol 73/78 as amended, Annex VI Regulation 4 and IMO Res. MEPC.259(68)

USCG Approval No: **N/A**
Further details of the equipment and conditions for certification are given overleaf.

Issued at **Høvik** on **2016-09-02**

Notified Body
No.: **0575**

DNV GL local station:
Høvik Machinery
Approval Engineer:
Terje Sollie

for **DNV GL AS**

Vidar Dolonen
Head of Notified Body

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Product description

The CLB3500 Exhaust Gas Cleaning System (EGCS) is a closed-loop system for reduction of the SOx emissions while combusting residual fuel oil of up to 3.5% Sulphur in compliance with MARPOL Annex VI Regulation 14 and MEPC.259(68).
The EGCS consists of the following subsystems:

- Exhaust Gas Cleaning Unit (EGCU)
- Washwater Circulation System (WWCS)
- Washwater Treatment System (WWTS)
- Treatment Fluid System (TFS)
- Seawater Cooling System (SCS)
- Technical Water System (TWS)
- Emergency Shutdown System (ESS)
- Control and Monitoring System (CMS)

The EGCS has 3 modes of operation: dry mode, wet mode and emergency shut-down mode. The EGCUs are installed in the funnel replacing the existing exhaust silencers. The units are installed in-line in the exhaust stream and the exhaust gases always flow through the EGCUs which are all metal and designed for the maximum operating temperature of the exhaust gases.
The EGCS operates in closed loop with some overboard discharge. The washwater solution is comprised of freshwater and treatment fluid (Sodium Hydroxide). Freshwater is used for make-up of water lost through evaporation in the system and discharge of sludge.
The SOx and particulates in the exhaust gases are absorbed and collected in the washwater solution. The washwater solution is then treated in the WWTS. The neutralized SOx, salt precipitate, suspended particles, and washwater residue are extracted as "sludge waste bids" with low water content for shore side disposal. The treated water is then discharged overboardm while conforming to to the applicable regulations.
The exhaust gas outlet is continuously monitored by the Continuous Emission Monitoring System (CEMS) and the emissions are recorded as necessary to comply with Scheme B of MEPC.259(68).

Application/Limitation

Exhaust Gas Cleaning Systems (EGCS) are intended for reducing the SOx emissions to a level below the current and upcoming requirements in worldwide and ECA areas. In scheme B, compliance with emission requirements are demonstrated by continuous exhaust gas and washwater discharge monitoring. The monitoring system is to be approved by the Administration.
The monitoring equipment is to have yearly surveys according to MEPC.259(68)

Type Examination documentation

MES-SECP-001	3.25MW EGCS SOx Emission Compliance Plan (SECP)
MES-ETMB-001	3.25MW EGCS Technical Manual Scheme B (ETM-B)
MES-RBM-001	3.25MW EGCS Record Book Manual (OMM)
MES-RBM-001	3.25MW EGCS Record Book Manual
28953-21622521/DNV	Washwater Analysis Reports

Tests carried out

28953-21622521/DNV	DNV GL MARPOL survey checklist EGCS

Marking of product

The product is to be indelibly marked with name of manufacturer, type designation, dimensions and date of manufacture. In addition, the manufacturer shall affix the Mark of Conformity followed by the DNV GL Notified Body No. 0575 and the two last digits of the production year.
END OF CERTIFICATE