EC-TYPE EXAMINATION CERTIFICATE (MODULE B)

Certificate No:
MEDB00001J7

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 Shipboard incinerators
with type designation(s)
MAXI NG25SL WS, NG50SL WS, NG100SL WS, NG150SL WS, 1200SL WS, 1500SL WS
Issued to

Hyundai Marine Machinery Co., Ltd.

Seo-gu Incheon,
is found to comply with the requirements in the following Regulations/Standards:
Annex A.1, item No. A.1/2.7 and Annex B, Module B in the Directive. Marpol 73/78 as amended, Annex VI Regulation 16, IMO Res. MEPC.244(66)
Further details of the equipment and conditions for certification are given overleaf.
This Certificate is valid until **2021-07-08**.

Issued at **Høvik** on **2016-07-09**

Notified Body
No.: **0575**

DNV GL local station:
Seoul
Approval Engineer:
Pål Evang Nundal

for **DNV GL AS**

Vidar Dolonen
Head of Notified Body

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Product description

Waste Oil Incinerators MAXI NG25SL WS, NG50SL WS, NG100SL WS, NG150SL WS, 1200SL WS, 1500SL WS are multi chamber incinerators consisting of a primary combustion chamber for burning oil and solid waste and a secondary combustion chamber and an after-burning chamber for burning out uncombusted exhaust gases. The combustion chambers are equipped with diesel oil burners. The sluice is automatically operated.
The equipment is intended for installation onboard ships.

Application/Limitation

Model	NG25SL WS	NG50SL WS	NG100SL WS
Calorific capacity kW(kcal/h)	209 (180,000)	372 (320,000)	581 (500,000)
Solid waste (kg/h)	40	80	100
Liquid waste (kg/h)	21	38	58
Bilge injection (kg/h)	27 (bilge water 75 l/h)	48 (bilge water 144 l/h)	76 (bilge water 175 l/h)
Model	NG150SL WS	1200SL WS	1500SL WS
Calorific capacity kW(kcal/h)	814 (700,000)	1163 (1,000,000)	1500 (1,290,000)
Solid waste (kg/h)	100	230	230
Liquid waste (kg/h)	81	116	150
Bilge injection (kg/h)	106 (bilge water 188 l/h)	151 (bilge water 288 l/h)	195 (bilge water 300 l/h)

Meaning of model codes: S=Solid Waste; SL=Solid Waste and Liquid (oil sludge); SL WS=Solid Waste and Liquid (oil sludge) with Waste Sluice
When the approved software is revised (affecting all future deliveries) DNV GL is to be informed by forwarding updated software version documentation. If the changes are judged to affect functionality for which rule requirements apply a new functional type test may be required and the certificate may have to be renewed to identify the new software version.

Combustion Chamber and Flue Gas Records

Parameters	*Solid waste and sludge*
O_2 average in combustion chamber/zone	**6-12 %**
CO average in flue gas	**200 mg/MJ**
Soot number average	**Ringelman 1/Bacharach 3**
Combustion chamber flue gas outlet temperature average	**850-1200 °C**
Amount of unburned components in ashes	**Max 10 % by weight**

Hardware and Software

Hardware: PLC: Allen-Bradley or Siemens
HMI: Allen-Bradley or Proface
Software: PLC: RS Logix 500 V8.XX or TIA potal V13.XX
HMI: FT View Studio V7.XX or GP-proEX V4.XX

Type Examination documentation

DWG. No.:	Rev.	Date	Name	Model
VHS-NG0025SL WS-1 ~ 3	R0	2016.04.12	Main specification	MAXI NG25SL WS
VHS-NG0050SL WS-1 ~ 3	R0	2016.04.12	Main specification	MAXI NG50SL WS
VHS-NG0100SL WS-1 ~ 3	R0	2016.04.12	Main specification	MAXI NG100SL WS
VHS-NG0150SL WS-1 ~ 3	R0	2016.04.12	Main specification	MAXI NG150SL WS
VHS-1200SL WS-1 ~ 3	R0	2016.04.12	Main specification	MAXI 1200SL WS
VHS-1500SL WS-1 ~ 3	R0	2016.04.12	Main specification	MAXI 1500SL WS
HIE-P02020022	R2	2016.03.24	Piping diagram	MAXI NG25SL WS
HMM-NINC202-01	R2	2016.03.24	Outline dimension drawing	MAXI NG25SL WS
HID-BOD020201	R7	2013.04.30	Assemby drawing of Basis part	MAXI NG25SL WS
HMW-0253010 ~ 14	R1	2013.04.30	Assemby drawing of Refractory Lining	MAXI NG25SL WS
HIE-P04020022	R2	2016.03.24	Piping diagram	MAXI NG50SL WS
HMM-NINC402-01	R2	2016.03.24	Outline dimension drawing	MAXI NG50SL WS
HID-BOD040203	R5	2013.04.30	Assemby drawing of Basis part	MAXI NG50SL WS
HMW-0253010 ~ 14	R1	2013.04.30	Assemby drawing of Refractory Lining	MAXI NG50SL WS
HIE-P06020022	R2	2016.03.24	Piping diagram	MAXI NG100SL WS
HMM-NINC602-01	R2	2016.03.24	Outline dimension drawing	MAXI NG100SL WS
HID-BOD060203	R5	2013.04.30	Assemby drawing of Basis part	MAXI NG100SL WS
HMW-1002010 ~ 14	R1	2013.04.30	Assemby drawing of Refractory Lining	MAXI NG100SL WS
HIE-P08020022	R2	2016.03.24	Piping diagram	MAXI NG150SL WS
HMM-NINC802-01	R2	2016.03.24	Outline dimension drawing	MAXI NG150SL WS
HID-BOD080203	R4	2013.04.30	Assemby drawing of Basis part	MAXI NG150SL WS
HMW-1502010 ~ 14	R1	2013.04.30	Assemby drawing of Refractory Lining	MAXI NG150SL WS
HIE-P12020022	R2	2016.03.24	Piping diagram	MAXI 1200SL WS
HMM-NINC1204-01	R2	2016.03.24	Outline dimension drawing	MAXI 1200SL WS
HID-BOD120203	R4	2013.04.30	Assemby drawing of Basis part	MAXI 1200SL WS
HMW-12005010 ~ 14	R1	2013.04.30	Assemby drawing of Refractory Lining	MAXI 1200SL WS
HIE-P15020022	R2	2016.03.24	Piping diagram	MAXI 1500SL WS
HMM-NINC1502-01	R2	2016.03.24	Outline dimension drawing	MAXI 1500SL WS
HID-BOD150203	R4	2013.04.30	Assemby drawing of Basis part	MAXI 1500SL WS
HMW-1505010 ~ 14	R1	2013.04.30	Assemby drawing of Refractory Lining	MAXI 1500SL WS
HID-VM202010	R1	2013.04.30	Detail drawing of Cleaning cover	MAXI NG25SL WS
HID-S15002010	R1	2013.04.30	Assemby drawing of Waste sluice	MAXI 1500SL WS
AT-ABB020010	R0	2008.01.01	Outline of primary blower	MAXI NG25SL WS

AT-ABB040010	R1	2008.01.01	Outline of primary blower	MAXI NG50SL WS
AT-ABB060010	R1	2008.01.01	Outline of primary blower	MAXI NG100SL WS
AT-ABB080010	R1	2008.01.01	Outline of primary blower	MAXI NG150SL WS
AT-ABB120010	R1	2008.01.01	Outline of primary blower	MAXI 1200SL WS
AT-ABB150010	R1	2008.01.01	Outline of primary blower	MAXI 1500SL WS
VHS-LOCSA-STD-1	R0	2016.04.12	List of control /Safety / Automation	All Models
VHS-PROCEDIA-STD-1	R0	2016.04.12	Process diagram incinerator	All Models
HID-VM1502210	R0	2013.04.30	Detail drawing of Cleaning cover	All Models
HID-S12002010	R1	2013.04.30	Assemby drawing of Waste sluice	All Models
HIF-NGTSTD002 ~ 4	R2	2016.03.24	ELECTRIC PANEL-LAYOUT/FRONT	All Models
HIF-NGTSTD005 ~ 7	R2	2016.03.24	ELECTRIC PANEL-LAYOUT/FRONT	All Models
HIF-NGTSTD008	R2	2016.03.24	ELECTRIC PANEL-CONTROL SOURCE	All Models
HIF-NGTSTD015 ~ 24	R2	2016.03.24	ELECTRIC PANEL-CIRCUIT DIAGRAM	All Models
HIF-NGTSTD025	R2	2016.03.24	ELECTRIC PANEL-CIRCUIT OPTION	All Models
HIF-NGTSTD030	R2	2016.03.24	ELECTRIC PANEL-EXTERNAL SIGNAL	All Models
HIF-NGTSTD040 ~ 43	R2	2016.03.24	ELECTRIC PANEL-PART LIST	All Models
HIF-NGTSTD501 ~ 3	R2	2016.03.24	ELECTRIC PANEL-TERMINAL STRIP	All Models
HNP-MAXINC-EPA7	R7	2011.11.26	MAIN NAME PLATE	All Models
NP-SIMENS-OPAPLC-NGT	R7	2014.09.11	OPERATION INSTRUCTION PLATE	All Models
NP-WNPLC	R9	2014.09.11	WARNING PLATE	All Models
HINC-PGM-MAXIJAL	R0	2015.09.11	PLC LADDER SYSTEM SOFTWARE QUALITY PLAN	All Models
V13-NGDO(PLC_SIMENS)	R13	2015.06.03	INSTRUCTION MANUAL	All Models
sV13-BIG(PLC_SIMENS)	R13	2015.06.03	INSTRUCTION MANUAL (MAXI 1200, 1500)	All Models
HINC-PGM-MAXIJAL-R0	R0	2015-09-11	PLC Ladder System Software Quality Plan	All Model

Tests carried out

Test Reports
HTTR-HM2404786 dated 31 March 2004;
HTTR-HM2404787 dated 31 March 2004;
HTTR-HM2401748 dated 05 March 2004;
HTTR-HM2401750 dated 05 March 2004;
HTTR-SK111 dated 27 May 2008;
HTTR-HM2411896 dated 23 March 2005;
HTTR-S152 dated 7 January 2003
from Hyundai Marine Machinery Co., Ltd, Rep. of Korea.

Marking of product

For traceability to this type approval, each incinerator is to be marked with;
-Manufacturer’s name or trade mark
-Type designation
-Serial No.

-Capacity (net design heat release)
-Revision information, as applicable, for all firmware or software modules installed per hardware unit, necessary to identify the equipment, permanently marked somewhere on the final product.