

TYPE EXAMINATION CERTIFICATE (MODULE B)

Certificate no.:
MERB0001N6Y
Revision no.:
0

This Certificate is issued by DNV UK Limited based on authorisation of the Maritime & Coast Guard Agency (MCA) as an UK Approved Body to undertake conformity assessments on marine equipment in accordance with the requirements of the Merchant Shipping (Marine Equipment) Regulations 2016 as amended.

This is to certify:

that the **Shipboard incinerators (Incinerator plants with capacities up to 4000 kW)**

with type designation(s)

Version TG5.2 models: OG120C, OG120CW, OG200C, OG200CS, OG200CI, OG200CIS, OG200CW, OG200CSW, OG400C, OG400CS, OG400CI, OG400CIS, OG400CW, OG400CSW, GS500C, GS500CS, GS500CICS, GS500CI, GS500CIS, GS500CSW, GS500CGSW, GS500CFGSW, GS500CW MKIII, GS900CX, GS900CRSX, GS1000CX, GS1000CRSX

issued to

TeamTec AS
Tvedestrand, Norway

is found to comply with the Regulation (UK) **MSN 1874 Amendment 10** for
Item no. **UK/2.7 (Row 2 of 2)**

according to the following requirements:

MARPOL 73/78 Annex VI, Reg. 16, IMO Res. MEPC.244(66), IMO Res. MEPC.368(79)

Further details of the equipment and conditions for certification are given overleaf.

Date of issue: **2025-06-23**

Expiry date: **2030-06-22**

DNV local unit:
Kristiansand S



for **DNV UK Ltd.**

Approval Engineer:
Anna Piotrowska

Approved Body No.: **0097**

Christine Mydlak-Röder
MER Service Responsible



**Maritime &
Coastguard
Agency**

UK Approved Body Authorised
by the MCA

This certificate will not be valid if the manufacturer makes any changes or modifications to the approved type of equipment, which have not been notified to, and agreed with the approved body named on this certificate.

During the period of validity of this certificate the applicable regulations (international conventions and the relevant resolutions and circulars of the IMO) and testing standards may change, therefore the product conformity may need to be re-assessed by the Approved Body.

"The Mark of Conformity" may only be affixed to the above type approved equipment and a Manufacturer's Declaration of Conformity issued when the production-control phase module (D, E or F) of Schedule 2 of the Merchant Shipping (Marine Equipment) Regulations 2016, as amended is fully complied with and controlled by a written inspection agreement with an approved body. In case limitations of use apply, these should be indicated in the Annex.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to USD 300 000.

Product description

The OG and GS series version TG5.2 incinerators are intended for installation on board ships and other marine installations for the incineration of oil residue (sludge) and solid waste. There is also an option of burning solid waste in combination with oil residue (sludge); and oil residue (sludge) in combination with oily bilge water injection. The incinerator models covered by this certificate are classified as batch loaded and the capacity range from 220 kW up to 1500 kW.

In addition to the incinerator unit, a complete incinerator system includes a flue gas fan, flue gas damper and exhaust pipe expansion units. An incinerator system may also include a spark resistor, an oil residue (sludge) service tank, diesel oil service tank, and an oily bilge water service tank. The oil residue (sludge) service tank may be delivered with an option for forced evaporation to reduce water mixture to achieve an improved combustibility.

The product description with the incinerator type designation and configuration identifiers are listed in the Appendix to this certificate.

Please see Appendix: Product Description

Application/Limitation

The full application details are listed in the Appendix to this certificate.

The equipment is not permitted to be installed in spaces subject to explosion hazards.

The optional free-standing fuel tank installation is allowed for cargo ships and special purpose ships with not more than 60 POB (people on board). If situated near to hot surfaces, the tanks shall be well insulated, and care shall be taken that the free air circulation is not impeded.

The design of the fuel and heating system with the associating piping is not covered by this type examination and must be evaluated for each installation.

The arrangement for the sounding pipes and level indicators shall be in accordance with DNV-RU-SHIP Pt.4 Ch.6.

The overflow and all drains from the sludge tank shall be led to ship's waste oil (sludge) system. If drains are led to the ship's bilge system, manually operated self-closing valves with subsequent visual monitoring are required.

A copy of the Operation and Maintenance Manuals listed under Type Examination documentation shall be on board the ship at all times.

Please see Appendix: Application/Limitation

Type Examination documentation

Tests carried out

Capacity and emissions tests:

- IMO tests of incinerator OG 120C (and OG 120CW), witnessed by DNV report no.: 2000-3507 rev. 01, dated 2000-12-20
- IMO tests of incinerator OG 200C (and OG 200CSW), witnessed by DNV report no.: 2000-3508 rev. 01, dated 2000-12-20
- IMO tests of incinerator OG 400C (and OG 400CSW), witnessed by DNV report no.: 2000-3509 rev. 01, dated 2000-12-20
- IMO test of incinerator OG200C, witnessed by DNV report no.: 2010-3400 rev. 01, dated 2010-08-10
- IMO test of incinerator OG400C, witnessed by DNV report no.: 2010-3401 rev. 01, dated 2010-08-10

- IMO tests of incinerator GS 500C (and GS 500CSW), witnessed by DNV
report no.: 2000-3485 rev. 01, dated 2001-01-24
- The documents for type approval test of marine incinerator GS500CIC (and GS500CICS) S.N.08510
Nanjing energy conservation monitoring & testing station (witnessed by DNV), dated 2008-12-25
- IMO test of incinerator GS500C (now GS500CI) w/water injection, witnessed by DNV
report no.: 2009-3596 rev. 01, dated 2010-01-05
- IMO test of incinerator GS500CGSW, Applica test & certification, witnessed by DNV GL
report no.: 20360 rev. 3, dated 2015-03-02
- IMO test of incinerator GS500CFGSW, Applica test & certification, witnessed by DNV GL
report no.: 20441 rev. 1, dated 2015-03-02
- IMO tests of incinerator GS900C sludge oil and solid waste, witnessed by DNV
report no.: 2008-3115 rev. 01, dated 2008-02-20
- IMO tests of incinerator GS900CX, witnessed by DNV
report no.: 2009-3334 rev. 01, dated 2009-08-11
- IMO test of incinerator GS1000, witnessed by DNV
report no.: 2008-3070 rev. 01, dated 2008-02-05
- IMO tests of incinerator GS1000CX, witnessed by DNV
report no.: 2009-3335 rev. 02, dated 2011-05-20

Safety and control tests:

- Safety and control test for GS1000C TG5.2, TeamTec AS, witnessed by DNV GL
report dated 2015-12-21

Electromagnetic compatibility testing:

- EMC testing of control system for incinerator type OG 200 and OG 400, Det Norske Veritas AS
report no.: 96-1195, dated 1996-09-27

Marking of product

The marking shall give the following information:

- Manufacturer's name or trademark
- Type designation
- Serial number
- Capacity (net design heat release)
- UK Mark of Conformity for marine equipment

A copy of this certificate should be carried on board any UK flagged ship equipped with the system described above.
The revisions history are listed in the Appendix to this certificate.

Please see Appendix: Marking of product

APPENDIX

Product Description

Certificate no.:
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Revision no.:
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The incinerator type designation is given in the following format:

Model series	Configuration identifier
OG120	C
	CW
OG200	C
	CS
	CI
	CIS
	CW
	CSW
OG400	C
	CS
	CI
	CIS
	CW
	CSW
GS500	C
	CS
	CI
	CIS
	CICS
	CSW
	CGSW
	CFGSW
	CW MKIII
GS900	CX
	CRSX
GS1000	CX
	CRSX

Identifier	Description
C	Computer controlled by a PLC (applicable to all systems and always listed first)
S	Fitted with a sluice for solid waste feeding in batches
W	Designed for incineration of solid waste only
I	Designed for bilge water injection, including a separate oily bilge service tank
IC	Increased capacity
G	Equipped with a stirrer and pusher
F	Fitted with a stoker unit for feeding in batches
R	Fitted with a roof mounted sluice for solid waste feeding in batches
X	Fitted with an extra-large service door
MKIII	Optional configuration
D	Optional dual tank (two sludge tanks in series)

Electrical and control components

The units are controlled through automation systems of a type tested and accepted by a nationally recognized testing agency, according to international standards. Critical components are listed in the table below:

Component type	Component name and model	Maker
Programmable Logic Controller (PLC)	Modicon TM221 Series Logic Controller Model TM221CE24R	Schneider Electric
Human Machine Interface (HMI)	Harmony GTO Series 7.5" Touchscreen Panel Model HMIGTO4310	Schneider Electric

Changes to these components shall be approved by DNV. Documentation confirming the approval shall be kept together with the certificate, or the certificate shall be updated.

The software and firmware editions are listed in the table below:

Component	Software/Firmware edition (*)	Revision
Programmable Logic Controller (PLC)	Software OG120 models: PLC120.xxxxxxx	001
	Software OG200 models: PLC204.xxxxxxx	001
	Software OG400 models: PLC204.xxxxxxx	001
	Software GS500 models: PLC500.xxxxxxx	001
	Software GS900 models: PLC900.xxxxxxx	001
	Software GS1000 models: PLC1000.xxxxxxx	001
	Firmware: V1.3.2	1
Human Machine Interface (HMI)	Software OG120 models: HMI120.xxxxxxx	001
	Software OG200 models: HMI204.xxxxxxx	001
	Software OG400 models: HMI204.xxxxxxx	001
	Software GS500 models: HMI500.xxxxxxx	001
	Software GS900 models: HMI900.xxxxxxx	001
	Software GS1000 models: HMI1000.xxxxxxx	001
	Firmware: V1	1

(*) xxxxxxxx is identifying delivered options within the equipment and has no influence on capacity, emissions, or safety functions for the incinerators according to IMO Resolution MEPC.244(66).

Changes in the software which can alter the performance of the system shall be approval by DNV. Note that testing of the system with the revised software may be required. Documentation confirming the approval (and any testing) shall be kept together with the certificate, or the certificate shall be updated.

APPENDIX

Application/Limitation

Certificate no.:
MERB0001N6Y
Revision no.:
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Applicable models covered in this certificate are listed below:

Model	Maximum capacity (kW)	Maximum feed rate		
		Oil residue (sludge) capacity (l/h)	Solid waste capacity (l/batch) ¹⁾ or (kg/h) ²⁾	Oil residue (sludge) ³⁾ and bilge water ⁴⁾ (l/h)
OG120C	220	29	200 ¹⁾	-
OG120CW	220	-	200 ¹⁾	-
OG200CW	422	-	400 ¹⁾	-
OG200CSW	422	-	400 ¹⁾	-
OG200C	560	73	400 ¹⁾	-
OG200CS	560	73	400 ¹⁾	-
OG200CI	630	73	400 ¹⁾	87 ³⁾ 127 ⁴⁾
OG200CIS	630	73	400 ¹⁾	87 ³⁾ 127 ⁴⁾
OG400CW	422	-	400 ¹⁾	-
OG400CSW	422	-	400 ¹⁾	-
OG400C	616	87	400 ¹⁾	-
OG400CS	616	87	400 ¹⁾	-
OG400CI	727	87	400 ¹⁾	87.5 ³⁾ 140 ⁴⁾
OG400CIS	727	87	400 ¹⁾	87.5 ³⁾ 140 ⁴⁾
GS500C	850	100	62 ²⁾	-
GS500CS	850	100	62 ²⁾	-
GS500CICS	930	105	135 ²⁾	-
GS500CI	901	120	500 ¹⁾	120 ³⁾ 153 ⁴⁾
GS500CIS	901	120	62 ²⁾	120 ³⁾ 153 ⁴⁾
GS500CSW	642	-	62 ²⁾	-
GS500CGSW	791	-	87 ²⁾	-
GS500CFGSW	808	-	97 ²⁾	-
GS500CWMKIII	808	-	97 ²⁾	-
GS900CX	1369	162	600 ¹⁾	-
GS900CRSX	1369	162	600 ¹⁾	-
GS1000CX	1500	171	600 ¹⁾	171 ³⁾ 237 ⁴⁾
GS1000CRSX	1500	171	600 ¹⁾	171 ³⁾ 237 ⁴⁾

There are two optional modes for burning combinations of solid waste and oil residue (sludge):

- “Sludge solid waste” mode, where diesel oil (pilot fuel) is used in the start-up process until the minimum temperature is achieved. Then the incinerator burns solid waste with support from oil residue (sludge) to maintain the temperature. No fuel oil is used after the “start-up” process is completed.
- “Solid waste sludge” mode, where a batch of solid waste is placed in the combustion chamber before starting. When the combustion chamber temperature is high enough for burning oil residue (sludge), the control system changes to “sludge” mode and continues burning the oil residue (sludge), only.

APPENDIX

Marking of product

Certificate no.:
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Revision history

Revision	Date of issuance	Description
0	2025-06-23	Initial certificate, based on models OG and GS with reference to the certificates MEDB00000KT and MEDB00000S7