DNV·GL

Certificate No:
MEDB00000KT

EC-TYPE EXAMINATION CERTIFICATE (MODULE B)

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 Directorate.
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)
Version TG5.2: OG120C, OG120CW, OG200C, OG200CS, OG200CIS, OG200CW, OG200CSW, OG400C, OG400CS, OG400CI, OG400CIS, OG400CW, OG400CSW

Issued to
TeamTec AS
Tvedestrand, Norway

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 **2021-05-12**.

Issued at **Høvik** on **2016-05-13**

DNV GL local station:
Kristiansand S

Approval Engineer:
Jens Rogge

Notified Body
No.: **0575**

for **DNV GL AS**

Vidar Dolonen
Head of Notified Body

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Job Id:
Certificate No: **MEDB00000KT**

Product description

The incinerator can be used for solid waste only or also in combination with sludge. The feeding is batch loaded or continuous feeded. Optional a type is equipped with a bilge water injection.
The capacity is from 220 kW up to 596 kW

Application/Limitation

Type	Capacity	Sludge	Solid Waste	Water	Principle of feeding	Max. Temp. in comb. Chamber
OG120C	220 kW	29 l/h	200 l/load	-/-	Batch loaded	1200° C
OG120CW	220 kW	-/-	200 l/load	-/-	Batch loaded	1200° C
OG200C	465 kW	53 l/h or	400 l/load	-/-	Batch loaded	1200° C
OG200CS	465 kW	53 l/h or	400 l/load	-/-	Batch loaded	1200° C
OG200CI	630 kW	70 l/h	400 l/load	127 l/h	Batch loaded	1200° C
OG200CIS	630 kW	70 l/h	400 l/load	127 l/h	Batch loaded	1200° C
OG200CW	465 kW	-/-	400 l/load	-/-	Batch loaded	1200° C
OG200CSW	465 kW	-/-	400 l/load	-/-	Batch loaded	1200° C
OG400C	596 kW	74 l/h or	400 l/load	-/-	Batch loaded	1200° C
OG400CS	596 kW	74 l/h or	400 l/load	-/-	Batch loaded	1200° C
OG400CI	727 kW	81 l/h	400 l/load	140 l/h	Batch loaded	1200° C
OG400CIS	727 kW	81 l/h	400 l/load	140 l/h	Batch loaded	1200° C
OG400CW	596 kW	-/-	400 l/load	-/-	Batch loaded	1200° C
OG400CSW	596 kW	-/-	400 l/load	-/-	Batch loaded	1200° C

Type Examination documentation

Job Id:
Certificate No: **MEDB00000KT**

Job Id:
Certificate No: **MEDB00000KT**

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Certificate No: **MEDB00000KT**

Type	Name	Drawing	Rev.
OG120C, OG120CW, OG200C, OG200CW, OG200CS, OG200CSW, OG200CI,OG200CIS, OG400C, OG400CW, OG400CS, OG400CSW, OG400CI, OG400CIS	Nameplate <manufacturer>	3006273	I
OG120C, OG200C, OG200CS, OG200CSW, OG200CI,OG200CIS, OG400C, OG400CS, OG400CI, OG400CIS,	Sluge capactity plate	3008818	B
OG120C, OG120CW, OG200C, OG200CW, OG200CS, OG200CSW, OG200CI,OG200CIS, OG400C, OG400CW, OG400CS, OG400CSW, OG400CI, OG400CIS,	Instruction plate "NOTE SLAGGING"	4005713	D

Type	Name	Drawing	Rev.
OG120C, OG120CW, OG200C, OG200CW, OG200CS, OG200CSW, OG200CI,OG200CIS, OG400C, OG400CW, OG400CS, OG400CSW, OG400CI, OG400CIS,	Instruction plate "DO NOT OPEN WHILE BURNING"	4006109	C
OG120C, OG120CW, OG200C, OG200CW, OG200CS, OG200CSW, OG200CI,OG200CIS, OG400C, OG400CW, OG400CS, OG400CSW, OG400CI, OG400CIS,	Instruction Plate "Atomizing Regulator"	4006114	G
OG120C, OG120CW, OG200C, OG200CW, OG200CS, OG200CSW, OG200CI,OG200CIS, OG400C, OG400CW, OG400CS, OG400CSW, OG400CI, OG400CIS,	Instruction Plate Garbage Door	4006121	G
OG120C, OG120CW, OG200C, OG200CW, OG200CS, OG200CSW, OG200CI,OG200CIS, OG400C, OG400CW, OG400CS, OG400CSW, OG400CI, OG400CIS,	Instruction Plate D O Heater	4007144	A
OG120C, OG120CW, OG200C, OG200CW, OG200CS, OG200CSW, OG200CI,OG200CIS, OG400C, OG400CW, OG400CS, OG400CSW, OG400CI, OG400CIS,	Instruction Plate "WARNING DO NOT ADJUST"	4007764	B
OG120C, OG120CW, OG200C, OG200CW, OG200CS, OG200CSW, OG200CI,OG200CIS, OG400C, OG400CW, OG400CS, OG400CSW, OG400CI, OG400CIS,	Sign Marine Equipment Directive	4006876	D
OG200CS, OG400CS, OG200CSW, OG400CSW, OG200CIS, OG400CIS	Sluice Feeding Instructions	3006943	E
OG120C	Running Instructions OG120C	3010148	
OG120CW	Running Instructions OG120CW	3010149	
OG200C, OG400C	Running Instructions OG200/400C	3010075	
OG200CW, OG400CW	Running Instructions OG200/400CW	3010079	
OG200CS, 400CS	Running Instructions OG200/400CS	3010073	A
OG200CSW, 400CSW	Running Instructions OG200/400CSW	3010075	A
OG200CI, OG400CI	Running Instructions OG200/400CI	3010074	A
OG200CIS, OG400CIS	Running Instructions OG200/400CIS	3010069	A

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			1

Job Id:
Certificate No: **MEDB00000KT**

Tests carried out

Marking of product

For traceability to this type approval, each incinerator is to be marked with:

- Manufacturers name or trade mark
- Type designation or model identification
- Capacity (net design heat release)
- Serial No.
- 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

This certificate replaces previous EC Type-Examination Certificates No. MED-B-6767, MED-B-6768 and MED-B-6784 it has a new general revision of the types given there (TG5.2)

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APPENDIX REV.0

Capacity and emission test data

This is to certify that the shipboard incinerators listed below have been examined and tested in accordance with the requirements of the standard for shipboard incinerators MEPC.244(66) for disposing of ship-generated waste appended to the Guidelines for the Implementation of Annex V of MARPOL 73/78.

Incinerator manufactured by: **TeamTec AS**
Tvedestrand, Norway

Incinerator type and model: **OG120C**

Place and date of test: **Test area of TeamTec in Tvedestrand**
1994-04-12 and 2000-12-20

Max. capacity:

Solid waste:	**220**	**kW**
	200	**l/load**
Sludge Oil:	**220**	**kW**
	29	**l/h**

COMBUSTION CHAMBER AND FLUE GAS RECORDS

Type of waste / Parameters	*Solid waste*	*Sludge Oil*
O_2 average in combustion chamber/zone	**11 %**	**9 %**
CO average in flue gas	**23 mg/MJ**	**17 mg/MJ**
Soot number average	**Bacharach 1.5**	**Bacharach 0.4**
Combustion chamber flue gas outlet temperature average	**910 °C**	**1064 °C**
Amount of unburned components in ashes	**0.5 %**	**0 %**

Place and date: Høvik, 2016-05-13

Job Id:
Certificate No: **MEDB00000KT**

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Capacity and emission test data

This is to certify that the shipboard incinerators listed below have been examined and tested in accordance with the requirements of the standard for shipboard incinerators MEPC.244(66) for disposing of ship-generated waste appended to the Guidelines for the Implementation of Annex V of MARPOL 73/78.

Incinerator manufactured by: **TeamTec AS**
Tvedestrand, Norway

Incinerator type and model: **OG120CW**

Place and date of test: **Test area of TeamTec in Tvedestrand**
1994-04-12 and 2000-12-20

Max. capacity:
Solid waste: **220 kW**
200 l/load
Sludge Oil: **n/a**

COMBUSTION CHAMBER AND FLUE GAS RECORDS

Type of waste / Parameters	*Solid waste*	*Sludge Oil*
O_2 average in combustion chamber/zone	**11 %**	**n/a**
CO average in flue gas	**23 mg/MJ**	**n/a**
Soot number average	**Bacharach 1.5**	**n/a**
Combustion chamber flue gas outlet temperature average	**910 °C**	**n/a**
Amount of unburned components in ashes	**0.5 %**	**n/a**

Place and date: Høvik, 2016-05-13

Job Id:
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Capacity and emission test data

This is to certify that the shipboard incinerators listed below have been examined and tested in accordance with the requirements of the standard for shipboard incinerators MEPC.244(66) for disposing of ship-generated waste appended to the Guidelines for the Implementation of Annex V of MARPOL 73/78.

Incinerator manufactured by: **TeamTec AS**
Tvedestrand, Norway

Incinerator type and model: **OG200C, OG200CS**

Place and date of test: **Test area of TeamTec in Tvedestrand**
1994-04-12 and 2000-12-20

Max. capacity:

Solid waste:	**465**	**kW**
	400	**l/load**
Sludge Oil:	**465**	**kW**
	53	**l/h**

COMBUSTION CHAMBER AND FLUE GAS RECORDS

Type of waste / Parameters	*Solid waste*	*Sludge Oil*
O_2 average in combustion chamber/zone	**10 %**	**8 %**
CO average in flue gas	**4 mg/MJ**	**5 mg/MJ**
Soot number average	**Bacharach 0**	**Bacharach 0**
Combustion chamber flue gas outlet temperature average	**1008 °C**	**1050 °C**
Amount of unburned components in ashes	**1.2 %**	**0 %**

Place and date: Høvik, 2016-05-13

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Capacity and emission test data

This is to certify that the shipboard incinerators listed below have been examined and tested in accordance with the requirements of the standard for shipboard incinerators MEPC.244(66) for disposing of ship-generated waste appended to the Guidelines for the Implementation of Annex V of MARPOL 73/78.

Incinerator manufactured by: **TeamTec AS**
Tvedestrand, Norway

Incinerator type and model: **OG200CW, OG200CSW**

Place and date of test: **Test area of TeamTec in Tvedestrand**
1994-04-12 and 2000-12-20

Max. capacity:

Solid waste:	**465**	**kW**
	400	**l/load**
Sludge Oil:	**n/a**	
	n/a	

COMBUSTION CHAMBER AND FLUE GAS RECORDS

Type of waste / Parameters	*Solid waste*	*Sludge Oil*
O_2 average in combustion chamber/zone	**10 %**	**n/a**
CO average in flue gas	**4 mg/MJ**	**n/a**
Soot number average	**Bacharach 0**	**n/a**
Combustion chamber flue gas outlet temperature average	**1008 °C**	**n/a**
Amount of unburned components in ashes	**1.2 %**	**n/a**

Place and date: Høvik, 2016-05-13

Job Id:
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Capacity and emission test data

This is to certify that the shipboard incinerators listed below have been examined and tested in accordance with the requirements of the standard for shipboard incinerators MEPC.244(66) for disposing of ship-generated waste appended to the Guidelines for the Implementation of Annex V of MARPOL 73/78.

Incinerator manufactured by: **TeamTec AS**
Tvedestrand, Norway

Incinerator type and model: **OG200CI, OG200CIS**

Place and date of test: **Test area of TeamTec in Tvedestrand**
1994-04-12 and 2000-12-20

Max. capacity:

Solid waste:	**465**	**kW**
	400	**l/load**
Sludge Oil:	**465**	**kW**
	53	**l/h (without bilge water injection)**
Sludge Oil with bilge water:	**630**	**kW**
Water	**127**	**l/h**
Sludge Oil:	**70**	**l/h (together with bilge water injection)**

COMBUSTION CHAMBER AND FLUE GAS RECORDS

Type of waste / Parameters	*Solid waste*	*Sludge Oil*	*Sludge Oil w/water*
O_2 average in combustion chamber/zone	**10 %**	**8 %**	**8.5 %**
CO average in flue gas	**4 mg/MJ**	**5 mg/MJ**	**2 mg/MJ**
Soot number average	**Bacharach 0**	**Bacharach 0**	**Bacharach 0.6**
Combustion chamber flue gas outlet temperature average	**1008 °C**	**1050 °C**	**1098 °C**
Amount of unburned components in ashes	**1.2 %**	**0 %**	**0 %**

Place and date: Høvik, 2016-05-13

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This is to certify that the shipboard incinerators listed below have been examined and tested in accordance with the requirements of the standard for shipboard incinerators MEPC.244(66) for disposing of ship-generated waste appended to the Guidelines for the Implementation of Annex V of MARPOL 73/78.

Incinerator manufactured by: **TeamTec AS**
Tvedestrand, Norway

Incinerator type and model: **OG400C, OG400CS**

Place and date of test: **Test area of TeamTec in Tvedestrand**
1994-04-12 and 2000-12-20

Max. capacity:

Solid waste:	**596**	**kW**
	400	**l/load**
Sludge Oil:	**596**	**kW**
	74	**l/h**

COMBUSTION CHAMBER AND FLUE GAS RECORDS

Type of waste / Parameters	*Solid waste*	*Sludge Oil*
O_2 average in combustion chamber/zone	**6 %**	**9 %**
CO average in flue gas	**4 mg/MJ**	**1 mg/MJ**
Soot number average	**Bacharach 0**	**Bacharach 0**
Combustion chamber flue gas outlet temperature average	**1035 °C**	**1110 °C**
Amount of unburned components in ashes	**0.2 %**	**0 %**

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Incinerator manufactured by: **TeamTec AS**
Tvedestrand, Norway

Incinerator type and model: **OG400CW, OG400CSW**

Place and date of test: **Test area of TeamTec in Tvedestrand**
1994-04-12 and 2000-12-20

Max. capacity:

Solid waste:	**596**	**kW**
	400	**l/load**
Sludge Oil:	**n/a**	
	n/a	

COMBUSTION CHAMBER AND FLUE GAS RECORDS

Type of waste / Parameters	*Solid waste*	*Sludge Oil*
O_2 average in combustion chamber/zone	**6 %**	**n/a**
CO average in flue gas	**4 mg/MJ**	**n/a**
Soot number average	**Bacharach 0**	**n/a**
Combustion chamber flue gas outlet temperature average	**1035 °C**	**n/a**
Amount of unburned components in ashes	**0.2 %**	**n/a**

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This is to certify that the shipboard incinerators listed below have been examined and tested in accordance with the requirements of the standard for shipboard incinerators MEPC.244(66) for disposing of ship-generated waste appended to the Guidelines for the Implementation of Annex V of MARPOL 73/78.

Incinerator manufactured by: **TeamTec AS**
Tvedestrand, Norway

Incinerator type and model: **OG400CI, OG400CIS**

Place and date of test: **Test area of TeamTec in Tvedestrand**
1994-04-12 and 2000-12-20

Max. capacity:

Solid waste:	**596**	**kW**
	400	**l/load**
Sludge Oil:	**596**	**kW**
	74	**l/h (without bilge water injection)**
Sludge Oil with bilge water:	**727**	**kW**
Water	**140**	**l/h**
Sludge Oil:	**81**	**l/h (together with bilge water injection)**

COMBUSTION CHAMBER AND FLUE GAS RECORDS

Type of waste / Parameters	*Solid waste*	*Sludge Oil*	*Sludge Oil w/water*
O_2 average in combustion chamber/zone	**6 %**	**9 %**	**8.5 %**
CO average in flue gas	**4 mg/MJ**	**1 mg/MJ**	**6 mg/MJ**
Soot number average	**Bacharach 0**	**Bacharach 0**	**Bacharach 1.1**
Combustion chamber flue gas outlet temperature average	**1035 °C**	**1110 °C**	**1091 °C**
Amount of unburned components in ashes	**0.2 %**	**0 %**	**0 %**

Place and date: Høvik, 2016-05-13