

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 TG5.1 for GS500C, GS500CS, GS500CIC, GS500CI, GS500CIS, GS500CSW, GSCGSW, GS500CFGSW, GS900CX, GS900CRSX, GS1000CX, GS1000CRSX

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

Job Id:
Certificate No: **MEDB00000S9**

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 850 kW up to 1500 kW

Application/Limitation

		Sludge	Solid Waste	Water	Principle of feeding	Max. Temp. in comb. Chamber
GS500C	850 kW	100 l/h or	62 kg/h	-/-	Batch loaded	1200° C
GS500CS	850 kW	100 l/h or	62 kg/h	-/-	Batch loaded	1200° C
GS500CIC	930 kW	105 l/h or	62 kg/h	-/-	Batch loaded	1200° C
GS500CI	901 kW	120 l/h or	62 kg/h	153 l/h	Batch loaded	1200° C
GS500CIS	901 kW	120 l/h or	62 kg/h	153 l/h	Batch loaded	1200° C
GS500CSW	850 kW	-/-	62 kg/h	-/-	Batch loaded	1200° C
GS500CGSW	791 kW	-/-	87 kg/h	-/-	Continuous loaded	1200° C
GS500CFGSW	808 kW	-/-	97 kg/h	-/-	Continuous loaded	1200° C
GS900CX	1369 kW	162 l/h or	600 l/load	-/-	Batch loaded	1200° C
GS900CRSX	1369 kW	162 l/h or	600 l/load	-/-	Batch loaded	1200° C
GS1000CX	1500 kW	171 l/h or	600 l/load	237 l/h	Batch loaded	1200° C
GS1000CRSX	1500 kW	171 l/h or	600 l/load	237 l/h	Batch loaded	1200° C

Type Examination documentation



Job Id:
Certificate No: **MEDB00000S9**

draft



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Job Id:
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draft

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Drawings of warning plates and instruction plate(s) for incinerator						
Type	Name	Drawing	Revision			
GS500C, GS500CS, GS500CI, GS500CIS, GS500CIC, GS500CSW, GS500CGSW, GS500CFGSW, GS900CX, GS900CRSX, GS1000CX, GS1000CRSX	Name Plate "Manufacturer" Fabrication	3006273	I			
GS500C, GS500CS, GS500CI, GS500CIS, GS500CIC, GS500CSW, GS500CGSW, GS500CFGSW, GS900CX, GS900CRSX, GS1000CX, GS1000CRSX	Sludge Capacity Plate Fabrication	3008818	B			
GS500C, GS500CS, GS500CI, GS500CIS, GS500CIC, GS500CSW, GS500CGSW, GS500CFGSW, GS900CX, GS900CRSX, GS1000CX, GS1000CRSX	Instruction Plate "NOTE SLAGGING" Fabrication	4005713	D			
GS500C, GS500CS, GS500CI, GS500CIS, GS500CIC, GS500CSW, GS500CGSW, GS500CFGSW, GS500, GS900CX, GS900CRSX, GS1000CX, GS1000CRSX	Instruction Plate "DO NOT OPEN WHILE BURNING" Fabrication	4006109	C			
GS500C, GS500CS, GS500CI, GS500CIS, GS500CIC, GS500CSW, GS500CGSW, GS500CFGSW, GS500, GS900CX, GS900CRSX, GS1000CX, GS1000CRSX	Instruction Plate "Atomizing Regulator" Fabrication	4006114	G			
GS500C, GS500CS, GS500CI, GS500CIS, GS500CIC, GS500CSW, GS500CGSW, GS500CFGSW, GS900CX, GS900CRSX, GS1000CX, GS1000CRSX	Instruction Plate "GARBAGE DOOR" Fabrication	4006121	G			
GS500C, GS500CS, GS500CI, GS500CIS, GS500CIC, GS500CSW, GS500CGSW, GS500CFGSW, GS500, GS900CX, GS900CRSX, GS1000CX, GS1000CRSX	Name Plate D O Heater Fabrication	4007144	A			
GS500C, GS500CS, GS500CI, GS500CIS, GS500CIC, GS500CSW, GS500CGSW, GS500CFGSW, GS900CX, GS900CRSX, GS1000CX, GS1000CRSX	Instruction Plate "WARNING DO NOT ADJUST" Fabrication	4007764	B			

Job Id:
Certificate No: **MEDB00000S9**

Drawings of warning plates and instruction plate(s) for incinerator						
Type	Name	Drawing	Revision			
GS500C, GS500CS, GS500CI, GS500CIS, GS500CIC, GS500CSW, GS500CGSW, GS500CFGSW, GS900CX, GS900CRSX, GS1000CX, GS1000CRSX	Sign Marine Equipment Directive Fabrication	4006876	D			
GS500C	Running Instruction Plate	3009990				
GS500CS, GS500CIC	Running Instruction Plate	3009981				
GS500CI	Running Instruction Plate	3009921				
GS500CIS	Running Instruction Plate	3009991				
GS500CSW, GS500CGSW	Running Instruction Plate	3010018				
GS500CFGSW	Running Instruction Plate	3011056				
GS900CX	Running Instruction Plate	3009452				
GS900CRSX	Running Instruction Plate	3010030				
GS1000CX	Running Instruction Plate	3009148				
GS1000CRSX	Running Instruction Plate	3010029				

Type	Name	Drawing	Revision			
GS500C						
GS500CS						
GS500CIC						
GS500CI						
GS500CIS						
GS500CSW						
GS500CGSW						
GS500CFGSW						
GS900CX						
GS900CRSX						
GS1000CX						
GS1000CRSX						
Type	Name	Drawing	Revision			

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Type	Name	Drawing	Revision
			A
			A
			A
			A
			C
			C
			C
			C
			15
			13

Tests carried out

GS500C, GS500CS, GS500CI, GS500CIC, GS500CIS, GS500CSW	Det Norske Veritas Industry AS, Shipboard Incinerator GS 500. Capacity tests and emission measurements			
GS500C, GS500CS, GS500CI, GS500CIC, GS500CIS, GS500CSW	Det Norske Veritas, Shipboard Incinerator GS 500C. Capacity tests and emission measurements.			
GS500CIC	Certificate of Compliance for Shipboard Incinerator			
GS500CIC	Test Report/records from type approval tests of Marine Incinerator GS500CIC (S.N.08510) including -Capacity tests/ emission measurements, -Test of function and safety devices, Signed and stamped by DNV surveyor			
GS500C, GS500CS, GS500CI, GS500CIS, GS500CSW	Det Norske Veritas AS, EMC testing of control system for incinerator type OG 200 and OG 400.			
GS500C, GS500CS, GS500CI, GS500CIS, GS500CSW	Norwegian Maritime Directorate; Certificate of Compliance for Shipboard Incinerators; Golar Type GS 500C & GS 500C S.W.			dated 01 December 1999
GS500C, GS500CS, GS500CI, GS500CIS, GS500CSW	Det Norske Veritas, , IMO Test on Incinerator GS500C w/Water Injection			Rev.01 dated 2010.01.05
GS500C, GS500CS, GS500CI, GS500CIS, GS500CSW	Det Norske Veritas, IMO Test on Incinerator GS500C w/Water Injection.			Rev.01 dated 2010.01.05
GS500CGSW				

Job Id:
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GS500CGSW			
GS500CGSW			
GS500CFGSW			
GS500CFGSW			
GS500CFGSW			
GS900CX, GS900CRSX			
GS900CX, GS900CRSX			
GS900CX, GS900CRSX			
GS1000CX, GS1000CRSX			
GS1000CX, GS1000CRSX			
GS1000CX, GS1000CRSX			
GS1000CX, GS1000CRSX			

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-8210, MED-B-8588, MED-B-9703, MED-B-9697, MEDB00000C8 and MEDB00000C7.

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: **GS500CS**

Place and date of test: **Test area of TeamTec in Sundebro
2000-10-24 and 2001-01-16**

Max. capacity:

Solid waste:	850	kW
	62	kg/h
Sludge Oil:	850	kW
	100	l/h

COMBUSTION CHAMBER AND FLUE GAS RECORDS

Type of waste / Parameters	Solid waste	Sludge Oil
O ₂ average in combustion chamber/zone	10%	9%
CO average in flue gas	15 mg/MJ	14 mg/MJ
Soot number average	Bacharach 1	Bacharach 1
Combustion chamber flue gas outlet temperature average	1050 °C	1058 °C
Amount of unburned components in ashes	1.6 %	0

Place and date: Høvik, 2016-05-13

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: **GS500CSW (not for sludge)**

Place and date of test: **Test area of TeamTec in Sundebro
2000-10-24 and 2001-01-16**

Max. capacity:

Solid waste:	850	kW
	62	kg/h
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	10%	n/a
CO average in flue gas	15 mg/MJ	n/a
Soot number average	Bacharach 1	n/a
Combustion chamber flue gas outlet temperature average	1050 °C	n/a
Amount of unburned components in ashes	1.6 %	n/a

Place and date: Høvik, 2016-05-13

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: **GS500CIC**

Place and date of test: **Test area of TeamTec in Sundebro
2000-10-24 and 2001-01-16**

Max. capacity:

Solid waste:	850	kW
	62	kg/h
Sludge Oil:	930	kW
	105	l/h

COMBUSTION CHAMBER AND FLUE GAS RECORDS

Type of waste / Parameters	Solid waste	Sludge Oil
O ₂ average in combustion chamber/zone	10.3%	9.8%
CO average in flue gas	57.7 mg/MJ	21.2 mg/MJ
Soot number average	Ringelmann 1	Ringelmann 1
Combustion chamber flue gas outlet temperature average	1003 °C	1065 °C
Amount of unburned components in ashes	4.36 %	0

Place and date: Høvik, 2016-05-13

APPENDIX REV.0

Capacity and emission test data

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

Incinerator type and model: **GS500CIS**

Place and date of test: **Test area of TeamTec in Sundebro
2000-10-24 and 2001-01-16**

Max. capacity:

Solid waste:	850	kW
	62	kg/h
Sludge Oil:	850	kW
	100	l/h (without bilge water injection)
Sludge Oil with bilge water:	901	kW
Water	153	l/h
Sludge Oil:	120	l/h (together with bilge water injection)

COMBUSTION CHAMBER AND FLUE GAS RECORDS

Type of waste / Parameters	Solid waste	Sludge Oil	Sludge Oil w/ bilge water
O ₂ average in combustion chamber/zone	10%	9%	8.1 %
CO average in flue gas	15 mg/MJ	14 mg/MJ	10 mg/MJ
Soot number average	Bacharach 1	Bacharach 1	Bacharach 1.9
Combustion chamber flue gas outlet temperature average	1050 °C	1058 °C	1018° C
Amount of unburned components in ashes	1.6 %	0	0

Place and date: Høvik, 2016-05-13

APPENDIX REV.0

Capacity and emission test data

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

Incinerator type and model: **GS500CGSW**

Place and date of test: **Test area of TeamTec in Sundebro
03.06.2014**

Max. capacity:

Solid waste:	791	kW
	87	kg/h
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	12%	
CO average in flue gas	26 mg/MJ	
Soot number average	Bacharach 1.5	
Combustion chamber flue gas outlet temperature average	942 °C	
Amount of unburned components in ashes	0.3 %	

Place and date: Høvik, 2016-05-13

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

Incinerator type and model: **GS500CFGSW**

Place and date of test: **Test area of TeamTec in Sundebro
02.12.2014**

Max. capacity:

Solid waste:	808	kW
	97	kg/h
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	9.5%	
CO average in flue gas	51 mg/MJ	
Soot number average	Bacharach 0.9	
Combustion chamber flue gas outlet temperature average	980 °C	
Amount of unburned components in ashes	0.1 %	

Place and date: Høvik, 2016-05-13

APPENDIX REV.0

Capacity and emission test data

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

Incinerator type and model: **GS900CX**

Place and date of test: **Test area of TeamTec at Tel-Tek AS
2007-05-24/25, 2007-10-10, 2008-10-24 and 2009-05-27**

Max. capacity:

Solid waste:	509	kW
	600	l/load
Sludge Oil:	1369	kW
	162	l/h

COMBUSTION CHAMBER AND FLUE GAS RECORDS

Type of waste / Parameters	Solid waste	Sludge Oil
O ₂ average in combustion chamber/zone	11.1%	10.3 %
CO average in flue gas	22 mg/MJ	4 mg/MJ
Soot number average	Bacharach 0.5	Bacharach 0.04
Combustion chamber flue gas outlet temperature average	936 °C	1095 °C
Amount of unburned components in ashes	9.2 %	0

Place and date: Høvik, 2016-05-13

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: **GS900CSRX**

Place and date of test: **Test area of TeamTec at Tel-Tek AS
2007-05-24/25, 2007-10-10, 2008-10-24 and 2009-05-27**

Max. capacity:

Solid waste:	509	kW
	600	l/load
Sludge Oil:	1369	kW
	162	l/h

COMBUSTION CHAMBER AND FLUE GAS RECORDS

Type of waste / Parameters	Solid waste	Sludge Oil
O ₂ average in combustion chamber/zone	11.1%	10.3 %
CO average in flue gas	22 mg/MJ	4 mg/MJ
Soot number average	Bacharach 0.5	Bacharach 0.04
Combustion chamber flue gas outlet temperature average	936 °C	1095 °C
Amount of unburned components in ashes	9.2 %	0

Place and date: Høvik, 2016-05-13

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: **GS1000CX**

Place and date of test: **Test area of TeamTec at Tel-Tek AS
2007-05-24/25, 2007-10-10, 2008-10-24 and 2009-05-27**

Max. capacity:

Solid waste:	509	kW
	600	l/load
Sludge Oil:	1369	kW
	162	l/h (without bilge water injection)
Sludge Oil with bilge water:	1500	kW
Water	237	l/h
Sludge Oil:	171	l/h (together with bilge water injection)

COMBUSTION CHAMBER AND FLUE GAS RECORDS

Type of waste / Parameters	Solid waste	Sludge Oil	Sludge Oil w/ bilge water
O ₂ average in combustion chamber/zone	11.1%	10.3 %	7.8 %
CO average in flue gas	22 mg/MJ	4 mg/MJ	18 mg/MJ
Soot number average	Bacharach 0.5	Bacharach 0.04	Bacharach 2.1
Combustion chamber flue gas outlet temperature average	936 °C	1095 °C	1091° C
Amount of unburned components in ashes	9.2 %	0	0

Place and date: Høvik, 2016-05-13

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: **GS1000CRSX**

Place and date of test: **Test area of TeamTec at Tel-Tek AS
2007-05-24/25, 2007-10-10, 2008-10-24 and 2009-05-27**

Max. capacity:

Solid waste:	509	kW
	600	l/load
Sludge Oil:	1369	kW
	162	l/h (without bilge water injection)
Sludge Oil with bilge water:	1500	kW
Water	237	l/h
Sludge Oil:	171	l/h (together with bilge water injection)

COMBUSTION CHAMBER AND FLUE GAS RECORDS

Type of waste / Parameters	Solid waste	Sludge Oil	Sludge Oil w/ bilge water
O ₂ average in combustion chamber/zone	11.1%	10.3 %	7.8 %
CO average in flue gas	22 mg/MJ	4 mg/MJ	18 mg/MJ
Soot number average	Bacharach 0.5	Bacharach 0.04	Bacharach 2.1
Combustion chamber flue gas outlet temperature average	936 °C	1095 °C	1091° C
Amount of unburned components in ashes	9.2 %	0	0

Place and date: Høvik, 2016-05-13