DNV·GL

Certificate No:
MEDB00000S7

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 for 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

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Job Id:
Certificate No: **MEDB00000S7**

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	-/-	Continous loaded	1200° C
GS500CFGSW	808 kW	-/-	97 kg/h	-/-	Continous 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: **MEDB00000S7**

	Sludge Oil Dosage Valve Assy TG5.2		
	Sludge Oil Dosage Valve Assy TG5.2		

Job Id:
Certificate No: **MEDB00000S7**

	Sludge Oil Dosage Valve Assy TG5.2		
	Sludge Oil Dosage Valve Assy TG5.2		

		119528	
	Sludge Oil Dosage Valve Assy TG5.2	119773	
		121122	
		121129	
		121130	
		1011020	
		1011021	
		2009724	
		119528	
	Sludge Oil Dosage Valve Assy TG5.2	119773	
		119388	
		119369	
		1008689	
		1011020	
		1011021	
		2009724	
		119528	
	Sludge Oil Dosage Valve Assy Pump RDCZ411 GS1000	119502	
		119515	
		121146	
		121148	
		117489	
		1011020	
		1011021	
		2009724	
		119528	
	Sludge Oil Dosage Valve Assy Pump RDCZ411 GS1000	119502	
		119515	
		119359	
		1008806	
		1011020	
		1011021	
		2009724	

Job Id:
Certificate No: **MEDB00000S7**

		2009734	
		1010938	
		1010939	
		3010941	
		2009734	
		1010938	
		1010939	
		3010941	

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
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			
GS500CS			
GS500CIC			
GS500CI			
GS500CIS			
GS500CSW			
GS500CGSW			
GS500CFGSW			
GS900CX			
GS900CRSX			
GS1000CX			
GS1000CRSX			
Type			
			0
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T

ests carried out

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	Report No. 2009-3596	Rev.01 dated 2010.01.05
GS500C, GS500CS, GS500CI, GS500CIS, GS500CSW	Det Norske Veritas, IMO Test on Incinerator GS500C w/Water Injection.	Report No. 2009-3596	Rev.01 dated 2010.01.05
GS500CGSW			
GS500CGSW			
GS500CGSW			
GS500CFGSW			
GS500CFGSW			
GS500CFGSW	DNV GL: Survey Report Incinerator GS500CFGSW	Report no. N1403H6D	Dated 08.12.2014
GS900CX, GS900CRSX			
GS900CX, GS900CRSX			
GS900CX, GS900CRSX	Test of Alarm and safety functions, GS900CX, witnessed by DNV GL		2009-10-01
GS1000CX, GS1000CRSX			
GS1000CX, GS1000CRSX			
GS1000CX, GS1000CRSX			

GS1000CX, GS1000CRSX	Test of Alarm and safety functions, GS1000CX, witnessed by DNV GL		2009-10-01

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 and is an update of the versions given in the certificates mentioned before (now TG5.2)

Job Id:
Certificate No: **MEDB00000S7**

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

Job Id:
Certificate No: **MEDB00000S7**

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

Job Id:
Certificate No: **MEDB00000S7**

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

Job Id:
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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

Job Id:
Certificate No: **MEDB00000S7**

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: **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%**	**n/a**
CO average in flue gas	**26 mg/MJ**	**n/a**
Soot number average	**Bacharach 1.5**	**n/a**
Combustion chamber flue gas outlet temperature average	**942 °C**	**n/a**
Amount of unburned components in ashes	**0.3 %**	**n/a**

Place and date: Høvik, 2016-05-13

Job Id:
Certificate No: **MEDB00000S7**

APPENDIX REV.0

Capacity and emission test data

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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

Job Id:
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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

Job Id:
Certificate No: **MEDB00000S7**

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

Job Id:
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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: **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

Job Id:
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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: **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