

EC-TYPE EXAMINATION CERTIFICATE (MODULE B)

Certificate no.:
MEDB0000AU2
Revision no.:
0

Application of: Directive 2014/90/EU of 23 July 2014 on marine equipment (MED), issued as "Forskrift om Skipsutstyr" by the Norwegian Maritime Authority. This Certificate is issued by DNV AS under the authority of the Government of Norway.

This is to certify:

that the **Sewage systems (for use by ships, other than passenger ships, in all areas and by passenger ships outside MARPOL Annex IV special areas)**

with type designation(s)

Models; Marinfloc STS 3, STS 6, STS 12, STS 24, STS 60

issued to

Marinfloc AB
VAREKIL, Sweden

is found to comply with the Implementing Regulation (EU) 2024/1975 for

Item no. **MED/2.6b (Row 1 of 1)**

according to the following requirements:

IMO Res. MEPC.227(64), MARPOL 73/78 Annex IV, Reg. 9.

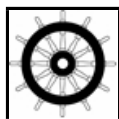
Further details of the equipment and conditions for certification are given overleaf.

Date of issue: **2025-01-14**

Expiry date: **2030-01-13**

DNV local unit:
Sweden CMC

Approval Engineer:
Martin Olofsson



Notified Body
No.: **0575**

for **DNV AS**

Christine Mydlak-Röder
Head of Notified 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-surveillance module (D, E or F) of Annex B of the MED is fully complied with and controlled by a written inspection agreement with a Notified Body. The product liability rests with the manufacturer or his representative in accordance with Directive 2014/90/EU.

This certificate is valid for equipment, which is conform to the approved type. The manufacturer shall inform DNV AS of any changes to the approved equipment. This certificate remains valid unless suspended, withdrawn, recalled or cancelled.

Should the specified regulations or standards be amended during the validity of this certificate, the product is to be re-approved before being placed on board a vessel to which the amended regulations or standards apply.

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 STS manufactured by Marinfloc AB is intended for installation onboard ships and offshore units for sewage treatment. The equipment consists of the following main components:

- Inlet tank
- Coarse filter
- Circulation tank
- Expansion tank
- Flocculation unit
- Filter
- UV unit

There are two different configurations for the Control Cabinet for the STS models, "CD19" and "STS/ASTS".

Marinfloc AB is responsible for the design, construction and performance of the sewage treatment plant in each installation, according to MEPC.227(64).

The design of the bioreactor (expansion tank) is not covered by the type examination.

The inlet tank, expansion tank and sludge tank dimensions are not part of the type examination. Sizing of these tanks should be according to recommendations from Marinfloc AB.

The STS models may be fitted with either a chlorine disinfection unit or a UV disinfection unit.

Application/Limitation

Please see Appendix: Application/Limitation

Type Examination documentation

Tests carried out

Performance Tests:

- Marinfloc – Test Report from the test of Marinfloc STS/ASTS 24 onboard icebreaker "Frej" performed in January and February 2011, dated 2011-02-22.
- Alcontrol Laboratories AB – Reports from all of analyses of samples from testing onboard icebreaker "Frej" during January and February 2011.
- Alcontrol Laboratories AB – Reports from all of analyses of samples from testing onboard icebreaker "IB Oden" from 23 November to 2 December 2015.
- Alcontrol Laboratories AB – Reports from all analyses of samples from testing onboard icebreaker "IB Oden" on modified ASTS 24 model with bypass of the filtration unit, dated 2017-11-23.
- PIA GmbH – Test of a Marine Sanitation Device "ASTS 60" of Marinfloc. Report No. PIA2016-AT1607-1093-02, Version 02, dated 2017-06-12.

Environmental Tests:

- RISE Research Institutes of Sweden AB – Environmental Durability Test on a Marinfloc DD Cabinet, Report 8P03630 dated 2018-04-25 and Report 8P03128 dated 2018-03-28 (For control cabinet type “STS/ASTS”).
- PIA GmbH – Report on environmental testing of the control cabinet "CD19" of Marinfloc, Report AT1908-1051-01 Version 01, dated 2019-12-18 (For control cabinet type “CD19”).

Please see Appendix: Tests carried out

Marking of product

For traceability to this EC-Type Examination, each unit is to be marked with:

- Manufacturer's name or trademark
- Equipment type designation or model identification
- Serial number
- Designed hydraulic loading
- Date of production
- Operational limitations, if any
- Mark of conformity

APPENDIX

Tests carried out

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Test results and details of tests conducted on samples from the sewage treatment plant in accordance with resolution MEPC.227(64):

General information

Sewage treatment plant, Type	STS 24	ASTS 24	
Manufactured by	Marinfloc AB	Marinfloc AB	
Organization conducting the test	ALcontrol AB	ALcontrol AB	
Designed hydraulic loading	24.0	24.0	m ³ /day
Designed organic loading	12.4	12.4	kg/day BOD ₅

Samples

Number of effluent samples tested	45	65	
Number of influent samples tested	45	65	

Influent

Total suspended solids influent quality	1474	1743	mg/l
Total nitrogen influent quality	-	56.3	mg/l as nitrogen
Total phosphorus influent quality	-	16.3	mg/l as phosphorus
BOD ₅ without nitrification influent quality	242	247	mg/l

Flow

Maximum hydraulic loading	24	24	m ³ /day
Minimum hydraulic loading	1	1	m ³ /day
Average hydraulic loading (Qi)	4	4	m ³ /day
Effluent flow (Qe)	4	4	m ³ /day
Dilution compensation factor (Qi/Qe)	1	1	

Effluent

Geometric mean of total suspended solids	13.4	7.7	mg/l
Geometric mean of thermotolerant coliform count	23	51	coliforms/100 ml
Geometric mean of BOD ₅ without nitrification	6.5	7	mg/l
Geometric mean of COD	98	88	mg/l
Geometric mean of total nitrogen	-	16.2	mg/l
Geometric mean of total phosphorus	-	0.81	mg/l
Maximum pH	8.02	8.08	
Minimum pH	7.20	7.09	
Type of disinfectant used	chlorine	UV lamps	

STS/ASTS 24

Was the sewage treatment plant tested with:

Fresh water flushing?	Yes
Salt water flushing?	No
Fresh and salt water flushing?	No
Grey water added?	No

Was the sewage treatment plant tested against the environmental conditions specified in section 5.9 of resolution MEPC.227(64):

Temperature	Yes
Humidity	Yes
Inclination	Yes
Vibration	Yes
Reliability of electrical and electronic equipment	Yes

Limitations and the conditions of operation are imposed:

Salinity	-
Temperature	+1°C - +55°C
Humidity	+55°C / 90%RH
Inclination	22.5°
Vibration	Freq: 4-80 Hz Ampl: 4-13.2 Hz, +/-1 mm 13.2-80 Hz, 0.7 g

Theoretical Effluent		STS 3	STS 6	STS12	STS 24	STS 60
BOD	mg/l	10	10	10	6,5	10
COD	mg/l	100	100	100	98	100
TSS	mg/l	15	15	15	13,4	15
Nitrogen	mg/l	-	-	-	-	-
Phosphorus	mg/l	-	-	-	-	-

APPENDIX

Application/Limitation

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Application:

Model	Designed Hydraulic Loading (m ³ /day)	Designed Organic Loading (kg/day BOD ₅)
STS 3	3.0	1.5
STS 6	6.0	3.1
STS 12	12.0	6.2
STS 24	24.0	12.4
STS 60	60.0	30.9

Limitations:

The type examination is limited to cover for the “treatment part” of the combined grey and black water system and does not cover for other systems upstream and downstream.

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

Revision history of this certificate

Revision No.	Date of Issuance	Description
-	2025-01-14	New issuance of certificate with STS models only, minor updates to documentation, ASTS models remain in certificate MEDB00000MB

The certificate MEDB00000MB previously (Rev.7 and earlier) included both the STS models and the ASTS models. With the introduction of MED/2.6a and MED/2.6b in 2023, this new certificate MEDB0000AU2 addresses MED/2.6b and the STS models. The revision history of the STS models certification can still be found in the MEDB00000MB certificate.

The ASTS models in compliance with MED/2.6a can be found in the revised certificate MEDB00000MB, Rev.8 issued 2025-01-14.