DNV·GL

Certificate No:
MEDB0000723

EC-TYPE EXAMINATION CERTIFICATE (MODULE B)

Application of: Directive 2014/90/EU of 23 July 2014 on marine equipment (MED). This Certificate is issued by DNV GL SE based on the notification of the Federal Maritime and Hydrographic Agency of Germany.

This is to certify:

That the Oil-filtering equipment (for an oil content of the effluent not exceeding 15 p.p.m.)

with type designation(s)
SDU-0.25, SDU-0.5, SDU-1, SDU-2.5, SDU-5, SDU-7.5, SDU-10

Issued to
Sepflutech GmbH
Hamburg, Germany

is found to comply with the requirements in the following Regulations/Standards:
Regulation **(EU) 2020/1170,**
item No. MED/2.1. Marpol 73/78 as amended, Annex I Regulation 14, IMO Res. MEPC.107(49), IMO MEPC.1/Circ. 643

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

This Certificate is valid until **2026-01-14**.
Issued at **Hamburg** on **2021-01-15**

DNV GL local station:
Magdeburg

Approval Engineer:
Hagen Markus

Notified Body
No.: **0098**

for **DNV GL SE**

Christine Mydlak-Roeder
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 GL SE 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 This certificate remains valid unless suspended, withdrawn, recalled or cancelled.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 GL AS, its parent companies and subsidiaries as well as their officers, directors and employees ("DNV GL") 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 300,000 USD.

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Product description

The bilge water separator series of type SDU consist of a two-stage separation process (gravity in combination with coalescence method) plus a filter unit between the first stage and second separation stage.

1st Separation Stage: Sepflutech Separation Package for Oil type SPO with insert of type SLO.

Filter unit: Sepflutech Filter stage SFU.

2nd Separation Stage: Sepflutech Coalescer for Oil type SCO.

Oil content meter

Each bilge water separator is fitted with an integrated 15ppm Oil Content Monitor complying with MARPOL Annex I Regulation 14 and IMO Res.MEPC.107(49).
Oil Content Monitor types with valid EC - Type Examination Certificate (Module B) to be installed.

Drawings

Type	Max. Flowrate m³/h	Title	Doc. Number Reference
SDU	0.25 – 10	P&ID	FD-SDU-"Size"-"Version"-"Revision"
		Bilge water separator control equipment	Type SCU V01 and SCU V02
	0.25	Main Drawing with component list	SDU-025-000-00-ZB-GL
	0.5		SDU-05-001-00-ZB-GL
	1.0		SDU-1-000-00-ZB-GL
	2.5		SDU-2-5-000-00-ZB-GL
	5		SDU-5-000-00-ZB-GL
	7.5		SDU-7-5-001-00-ZB-GL
	10		SDU-10-000-00-ZB-GL

Applicable to all types (unless specified otherwise)	
Operating Pressure:	Max. 0.35 MPa
Operating Temperature of Bilge Water	15°C - 50°C
Power Supply	380 V / 400V 50 Hz, 440 V / 690V 60 Hz - 3-phase
Inclination Range	0 to 22.5 degrees

Supply pump - Helical rotary pump (eccentric screw pump)

Model	Supply Pump Capacity (m³/h)	Supply Pump Type[2] (Part No.)	Supply Pump Motor Rating[1] (kW)
SDU-0.25	0.25	MD 025-6L	0.37kW
SDU-0.5	0.5	BN 05-12	0.55 kW
SDU-1.0	1.0	BN 1-6L	0.37 kW
SDU-2.5	2.5	BN 2-6L	0.75 kW
SDU-5	5.0	BN 5-6L	1.1 kW
SDU-7.5	7.5	BN 10-6L	2.2 kW
SDU-10	10.0	BN 10-6L	2.2 kW

Notes
[1] The pumping capacity is set to the correct value through the power setting of the motor.
[2] Supply pump types different to the listed with the same pump speed delivery characteristics curve may be used.

Application/Limitation

The bilge water separator series of type SDU are approved for installation onboard ships for oily bilge water separation; max. 15 ppm oil content at discharge overboard.

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

The capacity of the supply pump should not exceed 110% of the rated capacity of the bilge separator

Operation and Installation

For operation and installation, the following documents are to be observed

Title	Document no.
Operating & Maintenance Instructions – SDU-V01	OMI_SDU-V01
Operating & Maintenance Instructions – SDU-V02	OMI_SDU-V02

After installation the following shall be verified:

1. An alarm in the 15ppm Oil Content Monitor (OCM) is always activated whenever clean water is used for cleaning or zeroing purposes.
2. Any alarm in the 15ppm OCM will activate the automatic stopping device preventing overboard discharge and lead to recirculation
3. The overall response time (including the response time of the 15 ppm OCM) between an effluent discharge from the 15 ppm Bilge Separator exceeding 15 ppm, and the operation of the Automatic Stopping Device preventing overboard discharge, shall be not more than 20 seconds.
4. Every access of the alarm (beyond check on instrument drift, repeatability of the instrument reading, and the ability to re-zero the instrument) requires breaking of a seal.

A copy of the Operation, installation and maintenance manual shall always be available on-board the ship/marine unit.

Type Examination documentation

Tests carried out

Test data and results of tests conducted on 15ppm Bilge Separators in accordance with part 1 and part 3 of the annex to the Guidelines and Specifications contained in IMO Resolution MEPC.107(49).

Oily water separator

Tested sizes:	SDU-0.5
Test location:	Sepflutech GmbH, Poppenbütteler Bogen 84, 22399 Hamburg, Germany
Test date:	2015-02-25
	SDU-7.5
Test location:	Pella Sietas GmbH Hamburg, Germany
Test date:	2015-09-22
Method of sample analysis:	IMO Resolution MEPC.107(49), Part 4 (ISO 9377-2:2000)
Samples analyzed by:	GBA Laborgruppe mbH, Flensburger Straße 15, 25421 Pinneberg, Germany

Control cabinet

Environmental tests, Laboratory TREO, Tempowerkring, Hamburg
SCU-V01, Test report No.: 081-15, 2015-06-30
SCU-V02, Test report No.: 082-15, 2015-06-30

Marking of product

Each separator unit is to be provided with a name plate with at least the following data:

Scope	Example
Manufacturer name	sepflutech separation · fluid · technology
Type / SN	SDU – 1/S19097-1
Flow rate m³/h	1.0
MED Mark of conformity[1] Wheel mark / notified body / Year built	0098 / 21
Operating pressure	max. 3.5bar
Operating temperature	max. 55°C
Built in	2021

Note

[1] May only be affixed to the type approved equipment, in case the associated production surveillance module (D, E or F) is valid. See page 1 of this certificate.

APPENDIX

Test Data and Results of Tests conducted on a 15 ppm Bilge Separator in accordance with Part 1 of the Annex to the Guidelines and Specifications contained in IMO Resolution MEPC.107(49)

15 ppm Bilge Separator submitted by	Sepflutech GmbH
Tested type	SDU-0.5 – S/N S14008
Test location	Sepflutech GmbH, Poppenbütteler Bogen 84, 22399 Hamburg, Germany
Date	2015-02-25
Organisation conducting the test	Sepflutech GmbH
Method of sample analysis	ISO 9377-2:2000
Test rig according to drawing	FD-SDU-0.5-01-01 dated 2015-02-02
Samples analysed by	GBA Laborgruppe mbH, Flensburger Straße 15, 25421 Pinneberg, Germany

Environmental testing of the electrical and electronic sections of the 15 ppm Bilge Separator has been carried out in accordance with part 3 of the annex to the guidelines and specifications contained in IMO Resolution MEPC.107(49). The equipment functioned satisfactorily on completion of each test specified on the environmental test protocol.

Environmental test carried out on switchboards SCU-V01 and SCU-V02 at TREO, Tempowerkring, D-21079,
Test reports:
SCU-V01, Test report No.: 081-15, 2015-06-30
SCU-V02, Test report No.: 082-15, 2015-06-30

Manufacturer's recommendations and information concerning the use of cleansing agents:

Use of detergents of quick separating type.

TEST FLUID "A"

Density	990.0	[g/dm^3] at 15 °C
Viscosity	35	Centistokes at 100 °C
	568	Centistokes at 40 °C
Flashpoint	> 65	°C
Ash content	< 0.1	Weight %
Water content at start of test	0,10	Weight %

TEST FLUID "B"

Density	880	[g/dm^3] at 15 °C
Viscosity	6.5	Centistokes at 40 °C
Viscosity	--	Centistokes at 50 °C
Flashpoint	> 65	°C
Ash content	< 0.1	Weight %
Water content at start of test	0.01	Weight %

TEST FLUID "C"

Surfactant	Sigma Aldrich Chemie GmbH, Product number 289957, Dedecylbenzenesulfonic Acid Sodium Salt
Iron Oxides	Magnite Fe_3O_4 CAS No. 1317-61-9, KSL Staubtechnik

TEST WATER

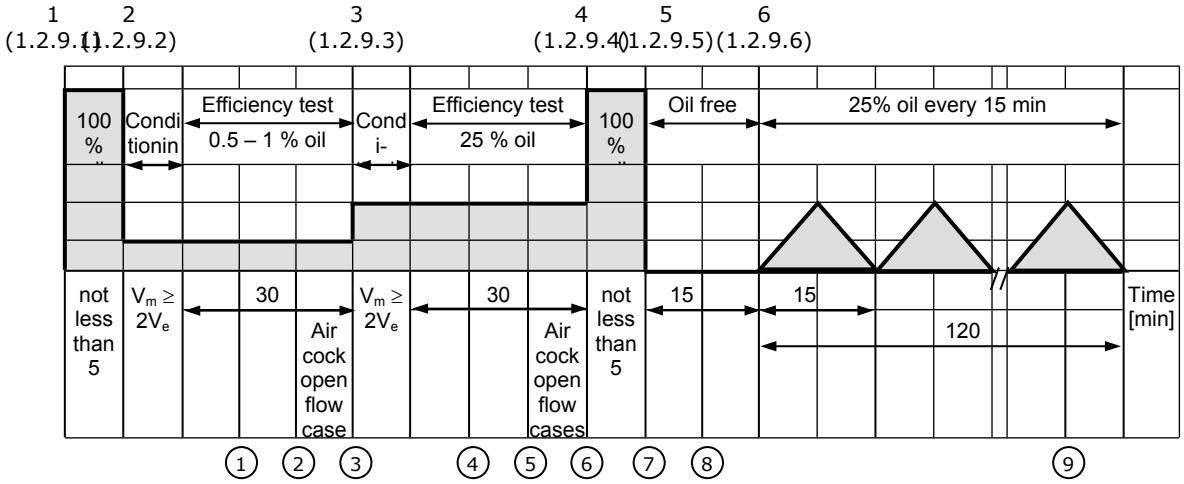
Density	1004	g/l at 20 °C
Solid matter present	6700	mg/l

TEST TEMPERATURE

Ambient	22	°C
Test fluid "A"	34	°C
Test fluid "B"	19	°C
Test fluid "C"	17	°C
Test water	24	°C

Test Results (in ppm (mg/L)) and Test Procedures

TEST FLUID "A"

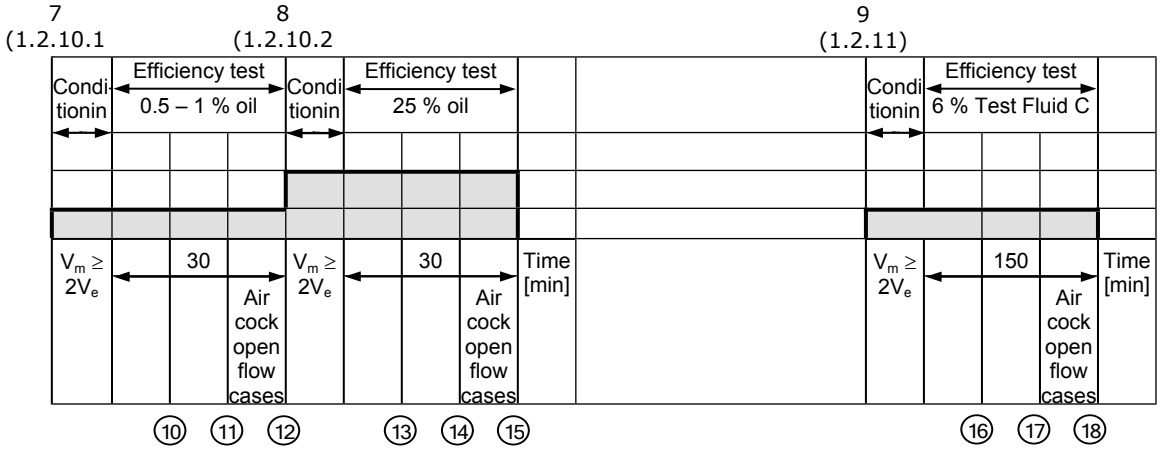


Test sample (9) (taken at the end of auto test, paragraph 1.2.9.6 Annex to resolution MEPC.107(49))

	1	2	3	4	5	6	7	8	9
Influent [%]	0,5-1	0,5-1	0,5-1	25	25	25	0	0	25
Effluent [ppm]	0,14	0,28	0,17	<0,10	<0,10	<0,10	0,16	0,10	<0,10

TEST FLUID "B"

TEST FLUID "C"



	10	11	12	13	14	15
Influent [%]	0,5-1	0,5-1	0,5-1	25	25	25
Effluent [ppm]	<0,10	<0,10	<0,10	<0,10	0,36	0,10

16	17	18
6	6	6
0,53	0,45	0,63

V_e - volume of oily water separator (OWS) V_m - oil/water mixture passed through OWS

Test Data and Results of Tests conducted on a 15 ppm Bilge Separator in accordance with Part 1 of the Annex to the Guidelines and Specifications contained in IMO Resolution MEPC.107(49)

15 ppm Bilge Separator submitted by	Sepflutech GmbH
Tested type	SDU-7.5 – S/N S15023
Test location	Pella Sietas GmbH, 21129 Hamburg, Germany
Date	2015-09-22
Organisation conducting the test	Sepflutech GmbH
Method of sample analysis	ISO 9377-2:2000
Test rig according to drawings	IMO Test dated 2015-09-03
	FDU-SDU-7.5-01-00 dated 2015-09-14
Samples analysed by	GBA Laborgruppe mbH, Flensburger Straße 15, 25421 Pinneberg, Germany

Environmental testing of the electrical and electronic sections of the 15 ppm Bilge Separator has been carried out in accordance with part 3 of the annex to the guidelines and specifications contained in IMO Resolution MEPC.107 (49). The equipment functioned satisfactorily on completion of each test specified on the environmental test protocol.

Environmental test carried out on switchboards SCU-V01 and SCU-V02 at TREO, Tempowerkring, D-21079,
Test reports:
SCU-V01, Test report No.: 081-15, 2015-06-30
SCU-V02, Test report No.: 082-15, 2015-06-30

Manufacturer's recommendations and information concerning the use of cleansing agents:

Use of detergents of quick separating type.

TEST FLUID "A"

Density	990.0	[g/dm^3] at 15 °C
Viscosity	35	Centistokes at 100 °C
	568	Centistokes at 40 °C
Flashpoint	> 80	°C
Ash content	< 0.1	Weight %
Water content at start of test	0.10	Weight %

TEST FLUID "B"

Density	880	[g/dm^3] at 15 °C
Viscosity	6.5	Centistokes at 40 °C
Viscosity	--	Centistokes at 50 °C
Flashpoint	> 65	°C
Ash content	< 0.1	Weight %
Water content at start of test	0.01	Weight %

TEST FLUID "C"

Surfactant	Sigma Aldrich Chemie GmbH, Product number 289957, Dedecylbenzenesulfonic Acid Sodium Salt
Iron Oxides	Magnite Fe_3O_4 CAS No. 1317-61-9, KSL Staubtechnik, CAS No. 1317-61-9

TEST WATER

Density	1000	g/l at 16 °C
Solid matter present	6700	mg/l

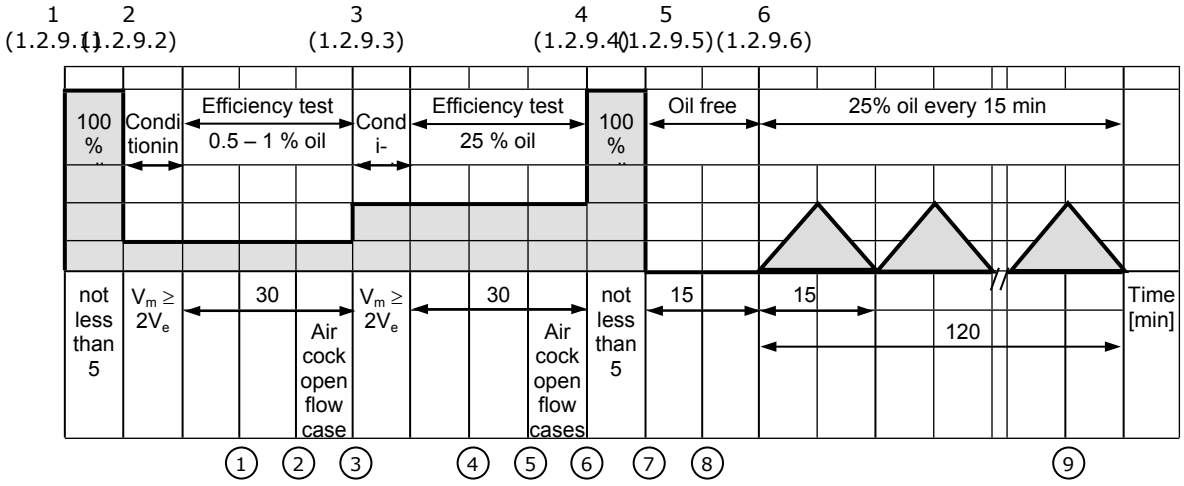
TEST TEMPERATURE

Ambient	14.2	°C
Test fluid "A"	27.2	°C
Test fluid "B"	14.2	°C
Test fluid "C"	18.4	°C
Test water	16.0	°C

Job Id: **344.1-011020-1**
Certificate No: **MEDB0000723**

Test Results (in ppm (mg/L)) and Test Procedures

TEST FLUID "A"

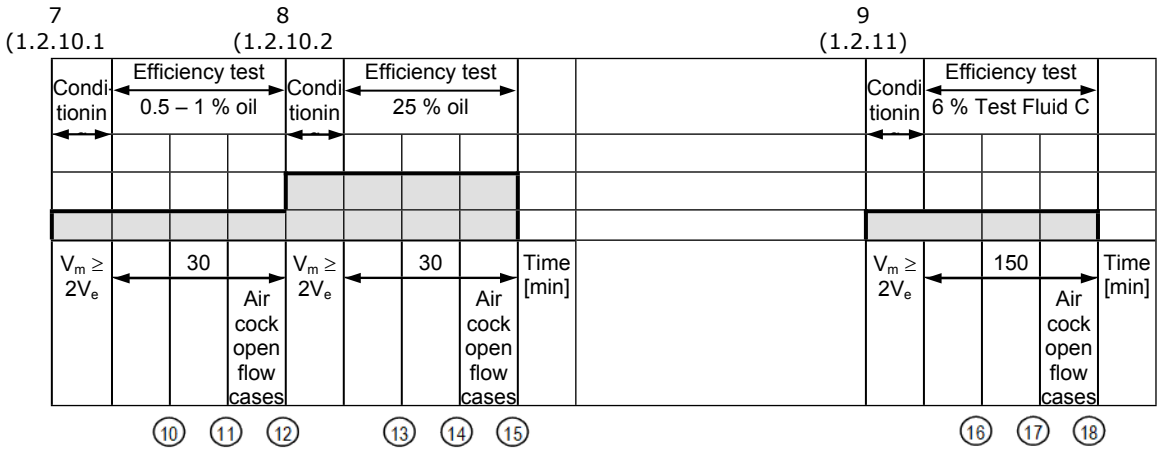


Test sampl(9) (taken at the end of auto test, paragraph 1.2.9.6 Annex to resolution MEPC.107(49))

	1	2	3	4	5	6	7	8	9
Influent [%]	0,5-1	0,5-1	0,5-1	25	25	25	0	0	25
Effluent [ppm]	<0.10	<0.10	<0.10	<0.10	<0.10	0.12	<0.10	0.18	0.17

TEST FLUID "B"

TEST FLUID "C"



	10	11	12	13	14	15
Influent [%]	0,5-1	0,5-1	0,5-1	25	25	25
Effluent [ppm]	<0.10	0.19	<0.10	0.31	0.34	0.40

16	17	18
6	6	6
2.9	4.2	4.2

V_e - volume of oily water separator (OWS) V_m - oil/water mixture passed through OWS