

EC-TYPE EXAMINATION CERTIFICATE (MODULE B)

Certificate no.:
MEDB00008SW

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

with type designation(s)
HYS-0.25, HYS-0.5, HYS-1, HYS-2, HYS-3, HYS-5

issued to

Headway Technology Group (Qingdao) Co., Ltd.
Qingdao, Shandong Province, China

is found to comply with the requirements in the following Regulations/Standards:

Regulation **(EU) 2023/1667**,
item No. **MED/2.1. Marpol 73/78 as amended, Annex I Regulation 14, IMO Res. MEPC.107(49), IMO MEPC.1/Circ. 643**

Manufacturers authorised representative

Reikon B.V.
Spijkensisse, Zuid-Holland, Netherlands

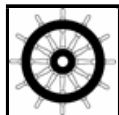
Further details of the equipment and conditions for certification are given overleaf.

This Certificate is valid until **2029-08-07**.

Issued at **Høvik** on **2024-08-08**

DNV local unit:
Qingdao NB & CMC

Approval Engineer:
Anna Piotrowska



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 This certificate remains valid unless suspended, withdrawn, recalled or cancelled.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 300,000 USD.



Product description

The HYS series bilge water separator is an integrated equipment intended for installation on board ships or other marine units to reduce the oil content in bilge water to less than 15 ppm. The equipment is designed and tested to meet the requirements of the IMO Resolution MEPC.107(49).

A complete unit contains the bilge water separator, an integral bilge water feed pump, an automatic stopping device with 15 ppm bilge alarm (Oil Content Meter) and a recirculating facility (optional supply). During normal working condition the system works in automatic mode, where the primary separation is done by the main filter assembly associated with an electric heater. In case, the oil content in the effluent exceeds 15 ppm, the bilge water is transferred through an additional fine filter and the automatic stopping device redirect the flow back to the ship's bilge tank.

The electrical control panel fitted on the bilge separator contains Programmable Logic Controller (PLC), operator panel and related electric control components. The operator panel is equipped with the display touch screen for operating status and parameters.

Application/Limitation

Application

Model	HYS-0.25	HYS-0.5	HYS-1	HYS-2	HYS-3	HYS-5
Design capacity (m ³ /h)	0.25	0.5	1	2	3	5

Limitations

Applicable limitations are listed below:

Design pressure	2.5 bar
Supplied compressed air pressure range	6 - 8 bar
Design temperature	5 - 40°C
Relative humidity	90%
Inclination range	0 - 22.5°
Power supply	AC-3φ 380V/50Hz, 440V /60Hz

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

The 15 ppm bilge water separator is fitted with a heating facility.

Installation:

The following shall be verified during installation:

- The alarm in the 15 ppm Oil Content Meter is always activated whenever clean water is used for cleaning or zeroing purposes.
- The alarm in the 15 ppm Oil Content Meter is always activated whenever no flow of sample through Oil Content Meter is detected.
- Any alarm in the 15 ppm Oil Content Meter will activate the automatic stopping device preventing overboard discharge and divert the effluent back to the bilge or bilge tank.
- The overall response time (including the response time of the 15 ppm Oil Content Meter) between an effluent discharge from the Bilge Water Separator exceeding 15 ppm, and the operation of the Automatic Stopping Device preventing overboard discharge, shall be not more than 20 seconds.
- By-passing the 15 ppm Oil Content Meter during normal operation shall by no means be possible.
- Every access of the Oil Content Meter (beyond check on instrument drift, repeatability of the instrument reading, and the ability to re-zero the instrument) requires breaking of a seal.

Type Examination documentation

Mechanical and Assembly Drawings:

Drawing Title	Drawing Number	Revision (date)
HYS-0.25 Bilge Separator-General layout	HYS1-000	A1.1 (2022-06-27)
HYS-0.5 Bilge Separator-General layout	HYS2-000	A1.1 (2022-06-27)
HYS-1 Bilge Separator-General layout	HYS3-000	A1.1 (2022-06-27)
HYS-2 Bilge Separator-General layout	HYS4-000	A1.1 (2022-06-27)
HYS-3 Bilge Separator-General layout	HYS5-000	A1.1 (2022-06-27)
HYS-5 Bilge Separator-General layout	HYS6-000	A1.1 (2022-06-27)

Piping and Instrumentation Drawings:

Drawing Title	Drawing Number	Revision (date)
System Diagram	HYS-XT-00	A1.2 (2022-03-29)

Electrical and Instrumentation Drawings:

Drawing Title	Drawing Number	Revision (date)
Schematic Diagram of Bilge Separator Control Box	HYS-EC	V1.1 (2022-08-01)
HYS Series Bilge Separator Control	HYS-EC-CP-00	1.0 (2024-04)

Operation and Maintenance Manuals

Drawing Title	Drawing Number	Revision (date)
User Manual- HYS series bilge separator	HYS-SM-00	A1.2 (2024-02)

A copy of the operation and maintenance manual indicated under type examination documentation shall be on board the vessel at all times.

Tests carried out

The Bilge Water Separator models HYS-0.25 and HYS-5 have been subjected to performance and environmental testing according to IMO Resolution MEPC.107(49), as further outlined in Appendix A and Appendix B.

Performance Tests:

- Location: Headway Technology Group (Qingdao) Co., Ltd, dated 2024-06-19 - 2024-06-20
Test Report: "HYS Series Bilge Separator Type Test Report", Test report No: HYS-2024-001

Environmental Tests:

- Location: Qingdao Product Quality Testing Research Institute, dated 2023-04-08 - 2023-04-30
Test Report: "HYS Series Bilge Separator - HYS-EC", Test report No: 20231800027

Marking of product

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

- Identification of manufacturer
- Equipment type designation or model identification
- Maximum throughput and maximum influent pressure at which the separator is designed to operate
- Serial number
- Mark of Conformity

A copy of this Certificate should be carried on board the vessel fitted with this 15ppm Bilge Water Separator at all times.

Revision history

Revision	Date of issuance	Description
0	2024-08-08	Initial certificate

APPENDIX A – Summary of test results for HYS-0.25

Test data and results of tests conducted on the 15 ppm Bilge Water Separator in accordance with Part 1 of the Annex to the Guidelines and Specifications contained in IMO Resolution MEPC.107(49).

15 ppm Bilge Water Separator submitted by:	Headway Technology Group (Qingdao) Co., Ltd.
Tested type:	HYS-0.25
Test location:	Headway Technology Group (Qingdao) Co., Ltd.
Date:	2024-06-19 - 2024-06-20
Organisation conducting the test:	Headway Technology Group (Qingdao) Co., Ltd. (witnessed by DNV Surveyor)
Method of sample analysis:	ISO 9377-2:2000 "Water quality - Determination of hydrocarbon oil index - Part 2: method using solvent extraction and gas chromatography"
Test rig according to drawing:	According to IMO Resolution MEPC.107(49)
Samples analysed by:	Technology Center of Qingdao Customs District 53, Beijing Road, Free Trade Port Area

Environmental testing of the electrical and electronic sections of the 15 ppm Bilge Water 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 at Qingdao Product Quality Testing Research Institute.
Test date 2023-04-08 - 2023-04-30 Test report No: 20231800027 " HYS Series Bilge Separator - HYS-EC"

Test fluid "A"

Density at 15°C:	983.0 kg/m ³
Viscosity at 100°C:	12.49 mm ² /s
Flashpoint:	68.0
Ash content:	0.035%
Water content at start of test:	0.21%

Test fluid "B"

Density at 15°C:	839.0 kg/m ³
Viscosity at 40°C:	3.012 mm ² /s
Flashpoint:	72
Ash content:	<0.001
Water content at start of test:	-

Test fluid "C"

Surfactant:	Sodium dodecylbenzenesulfonate, C ₁₈ H ₂₉ NaO ₃ S Lot No 20240411
Iron Oxides:	Iron (II, III) oxide, Fe ₃ O ₄ , Lot No 20240514

Test water

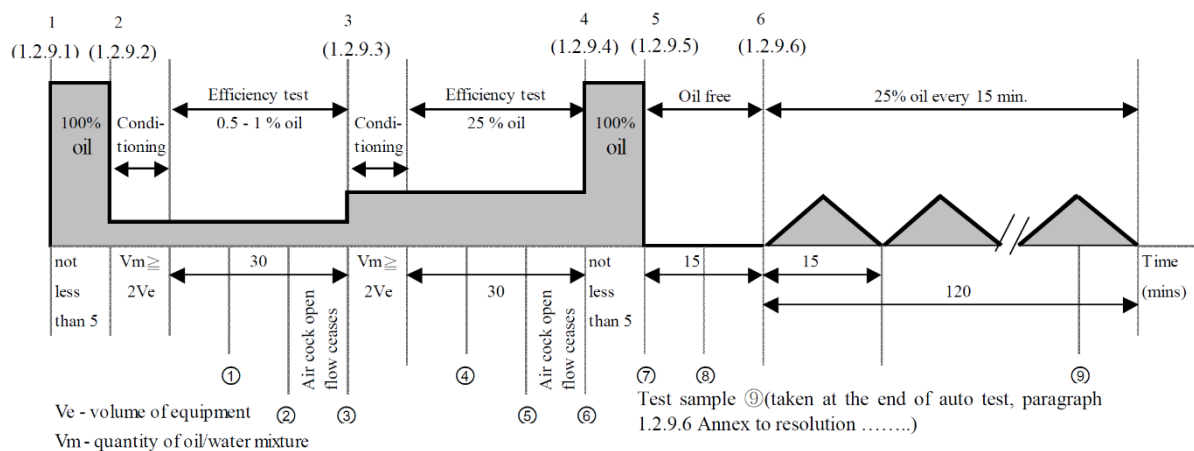
Density at 20°C:	998.6 kg/m ³
Solid matter present:	5 mg/L

Test temperatures

Ambient:	21.0 – 24.0°C
Test fluid "A":	52.4°C
Test fluid "B":	34.6°C
Test fluid "C":	26.0°C
Test water:	44.5°C

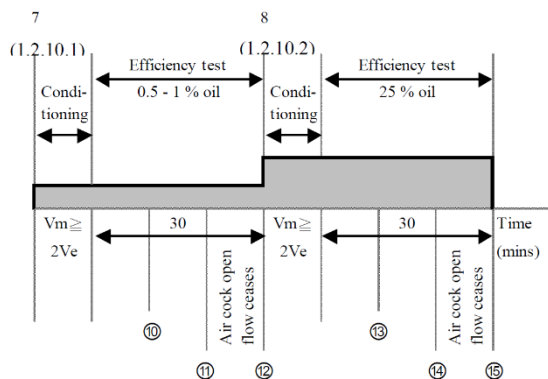
TEST RESULTS AND TEST PROCEDURES – Model HYS-0.25

TEST FLUID “A”

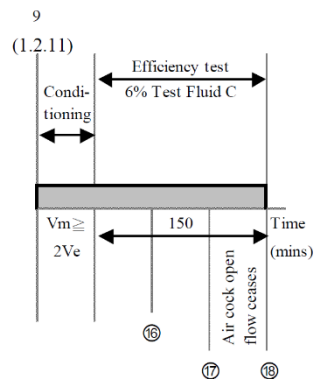


	1	2	3	4	5	6	7	8	9
Influent (%)	1.0	1.0	1.0	25.0	25.0	25.0	100.0	0.0	25.0
Effluent (ppm)	1.0	1.5	1.7	3.0	1.1	1.1	1.1	1.1	0.67

Test Fluid B



Test fluid C



	10	11	12	13	14	15	16	17	18
Influent (%)	1.0	1.0	1.0	25.0	25.0	25.0	6.0	6.0	6.0
Effluent (ppm)	1.1	0.26	0.49	0.91	0.41	0.81	0.64	0.86	0.43

Ve - volume of bilge water separator

Vm - oil/water mixture passed through bilge water separator

APPENDIX B – Summary of test results for HYS-5

Test data and results of tests conducted on the 15 ppm Oily Water Separator in accordance with Part 1 of the Annex to the Guidelines and Specifications contained in IMO Resolution MEPC.107(49).

15 ppm Bilge Water Separator submitted by:	Headway Technology Group (Qingdao) Co., Ltd.
Tested type:	HYS-5
Test location:	Headway Technology Group (Qingdao) Co., Ltd.
Date:	2024-06-19 - 2024-06-20
Organisation conducting the test:	Headway Technology Group (Qingdao) Co., Ltd. (witnessed by DNV Surveyor)
Method of sample analysis:	ISO 9377-2:2000 "Water quality - Determination of hydrocarbon oil index - Part 2: method using solvent extraction and gas chromatography"
Test rig according to drawing:	According to IMO Resolution MEPC.107(49)
Samples analysed by:	Technology Center of Qingdao Customs District 53, Beijing Road, Free Trade Port Area

Environmental testing of the electrical and electronic sections of the 15 ppm Bilge Water 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 at Qingdao Product Quality Testing Research Institute.
Test date 2023-04-08 - 2023-04-30 Test report No: 20231800027 " HYS Series Bilge Separator - HYS-EC"

Test fluid "A"

Density at 15°C:	983.0 kg/m ³
Viscosity at 100°C:	12.49 mm ² /s
Flashpoint:	68.0
Ash content:	0.035%
Water content at start of test:	0.21%

Test fluid "B"

Density at 15°C:	839.0 kg/m ³
Viscosity at 40°C:	3.012 mm ² /s
Flashpoint:	72
Ash content:	<0.001
Water content at start of test:	-

Test fluid "C"

Surfactant:	Sodium dodecylbenzenesulfonate, C ₁₈ H ₂₉ NaO ₃ S Lot No 20240411
Iron Oxides:	Iron (II, III) oxide, Fe ₃ O ₄ , Lot No 20240514

Test water

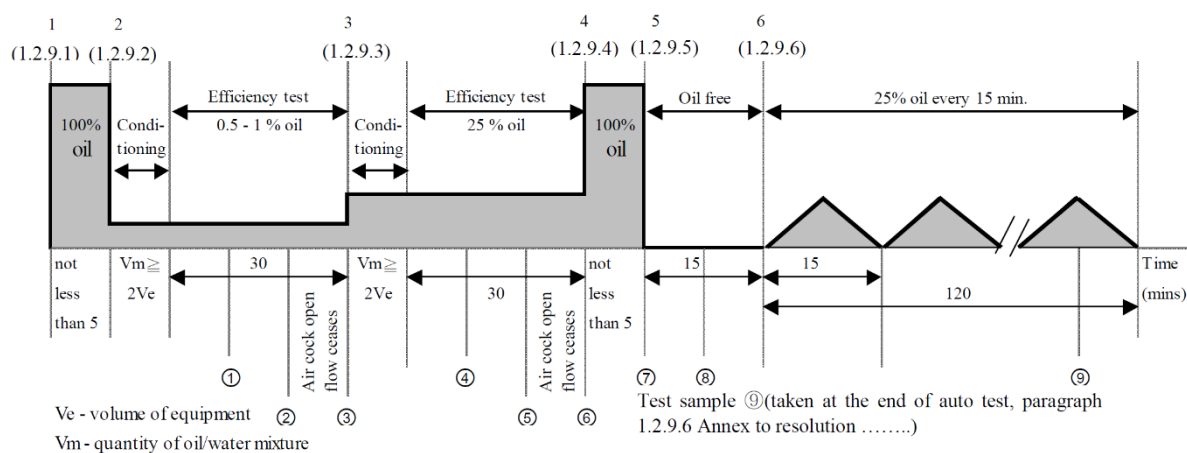
Density at 20°C:	998.6 kg/m ³
Solid matter present:	5 mg/L

Test temperatures

Ambient:	21.0 – 26.0°C
Test fluid "A":	53.3°C
Test fluid "B":	23.5°C
Test fluid "C":	24.1°C
Test water:	35.8°C

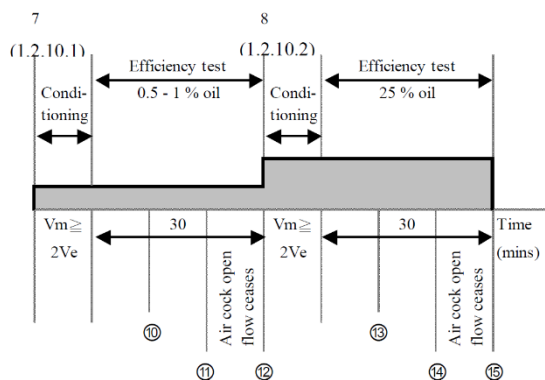
TEST RESULTS AND TEST PROCEDURES – Model HYS-5

TEST FLUID “A”

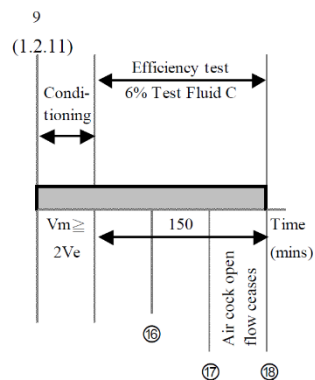


	1	2	3	4	5	6	7	8	9
Influent (%)	1.0	1.0	1.0	25.0	25.0	25.0	100.0	0.0	25.0
Effluent (ppm)	0.61	0.83	0.61	0.79	1.2	1.1	0.86	2.1	2.7

Test Fluid B



Test fluid C



	10	11	12	13	14	15	16	17	18
Influent (%)	1.0	1.0	1.0	25.0	25.0	25.0	6.0	6.0	6.0
Effluent (ppm)	1.3	0.82	1.4	1.5	3.4	2.7	2.6	2.7	1.6

V_e - volume of bilge water separator

V_m - oil/water mixture passed through bilge water separator