

# EC-TYPE EXAMINATION CERTIFICATE

Application of: Council Directive 96/98/EC of 20 December 1996 on Marine Equipment as amended by directive 2014/93/EU, 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 Oil discharge monitoring and control system for an oil tanker**

with type designation(s)

**ODME S-3000 Version 1 & ODME S-3000 Version 2**

Issued to

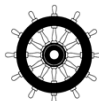
**KSB Seil Co., Ltd.**  
**Busan, Republic of Korea**

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

**Annex A.1, item No. A.1/2.5 and Annex B, Module B in the Directive. Marpol 73/78 as amended, Annex I Regulation 31, IMO Res. MEPC.108(49) and IMO Res. MEPC.240(65)**

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

**Høvik, 2015-09-10**  
for **DNV GL AS**



This Certificate is valid until  
**2020-04-13**

Notified Body No.: **0575**

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**Vidar Dolonen**  
**Head of Department**

DNV GL local office:  
**Pusan**

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**Pål Evang Nundal**  
**Surveyor**

## Product description

*Intended for installation onboard oil tankers for ballast water monitoring control and alarm of contents of oil at discharge overboard.*

### Controller:

ODME S-3000 Version 1: Cpu: 80c196 , tasking196 C program  
ODME S-3000 Version 2: Cpu: s3c6410, embedded Linux C program

### Analyzer:

ODME S-3000 Version 1: Cpu: 80c196 , Tasking196 C program  
ODME S-3000 Version 2: Cpu: Atmega 128, Codevision C program

## Application/Limitation

### ODME S-3000 Version 1:

The oil content meter is tested and approved for crude oils, "black" and "white" products as per IMO Resolution MEPC.108(49).

### ODME S-3000 Version 2:

The oil content meter is tested and approved for crude oils, "black" and "white" products as per IMO Resolution MEPC.108(49), and the blends of petroleum oil and bio-fuels as given in IMO MEPC.240(65) and MEPC.1/Circ.761, to meet the requirements for testing bio-fuel blends containing 99% and 75% or more of petroleum oil.

Enclosure protection of electrical components in engine room and pump room to be minimum IP44.

Transmitters and other electrical components/ systems in pump room to be arranged 'intrinsically safe'.

## Type Examination documentation

DWG No.:                      Rev.:                      Name:

### Common drawings for both versions:

|            |     |                                                |
|------------|-----|------------------------------------------------|
| MK-SV-3040 | 0-1 | Principle Diagram                              |
| MK-SV-3030 | 0-7 | Oil Content Meter Dimension Drawing            |
| MK-SV-3030 | 1-1 | Oil Content Meter Dimension Drawing            |
| MK-SV-3130 | 0-7 | Oil Content Meter Cabinet on Penetration Plate |
| MK-SV-3130 | 1-6 | Oil Content Meter Cabinet on Penetration Plate |
| MK-SV-3130 | 2-6 | Oil Content Meter Cabinet on Penetration Plate |
| MK-SV-3130 | 3-3 | Oil Content Meter Cabinet on Penetration Plate |
| MK-SV-3120 | 1-3 | Motor Starter Dimension Drawing                |
| MK-SV-3120 | 2-2 | Motor Starter Dimension Drawing                |
| MK-SV-3120 | 3   | Motor Starter Dimension Drawing                |
| MK-SV-3110 | 0-6 | Motor & Pump Assembly                          |
| MK-SV-3110 | 1-7 | Motor & Pump Assembly                          |
| MK-SV-3101 | 0-2 | Bulkhead Penetration for Motor/ Pump           |
| MK-SV-3101 | 1-4 | Bulkhead Penetration for Motor/ Pump           |

|            |     |                                                             |
|------------|-----|-------------------------------------------------------------|
| MK-SV-3141 | 0-1 | Bulkhead Penetration for ppm Measurer                       |
| MK-SV-3141 | 1-1 | Bulkhead Penetration for ppm Measurer                       |
| MK-SV-3141 | 2-1 | Bulkhead Penetration for ppm Measurer                       |
| MK-SV-3090 | 0-3 | Installation Drwg. for Oil Content Meter & Motor/Pump Ass'y |
| MK-SV-3090 | 1-2 | Installation Drwg. for Oil Content Meter & Motor/Pump Ass'y |
| MK-SV-3090 | 2-2 | Installation Drwg. for Oil Content Meter & Motor/Pump Ass'y |
| MK-SV-3081 | 2   | Hydraulic Package                                           |
| MK-SV-3160 | 0-1 | Sampling Probe Installation                                 |
| MK-SV-3160 | 1-1 | Sampling Probe Installation                                 |
| MK-SV-3160 | 2-1 | Sampling Probe Installation                                 |
| MK-SV-3160 | 3   | Sampling Probe Installation                                 |
| MK-SV-3160 | 4   | Sampling Probe Installation                                 |
| MK-SM-3090 | 1-1 | Pressure Switch                                             |
| MK-SM-3071 | 2-3 | Transmitter for Flowmeter                                   |
| MK-SM-3071 | 3-3 | Transmitter for Flowmeter                                   |
| MK-SM-3080 | 3   | Dimension for Installation Pitot Tube                       |
| MK-SM-3080 | 4   | Dimension for Installation Pitot Tube                       |
| MK-SM-3080 | 5   | Dimension for Installation Pitot Tube                       |
| MK-SM-3081 | 1-2 | Installation/ Precaution for Pitot Tube                     |
| MK-SM-3040 | 0   | Globe Check Valve                                           |
| MK-SM-3040 | 1   | Globe Check Valve                                           |
| MK-SM-3010 | 0-2 | Ball Valve                                                  |
| MK-SM-3010 | 1   | Ball Valve                                                  |
| MK-SM-3010 | 2   | Ball Valve                                                  |
| MK-SM-3060 | 0-3 | Non-Return Valve                                            |
| MK-SE-3020 | 0-2 | Electric Drawing for Motor Starter                          |
| MK-SE-3020 | 1-2 | Electric Drawing for Motor Starter                          |
| MK-SE-3020 | 2-2 | Electric Drawing for Motor Starter                          |
| MK-SE-3020 | 3-2 | Electric Drawing for Motor Starter                          |
| MK-SE-3020 | 4-1 | Electric Drawing for Motor Starter                          |
| MK-SC-3130 | 0   | Schematic Drawing for Oil Content Meter (2)                 |
| MK-SC-3140 | 0   | Schematic Drawing for Oil Content Meter (3)                 |
| MK-SC-3150 | 0   | Schematic Drawing for Oil Content Meter (4)                 |
| MK-SC-3160 | 0   | Schematic Drawing for Oil Content Meter (5)                 |
| MK-SC-3170 | 1   | Schematic Drawing for Oil Content Meter (6)                 |

**Version 1:**

|            |     |                       |
|------------|-----|-----------------------|
| MK-SV-3151 | 0   | Entire System Drawing |
| MK-SV-3151 | 1-4 | Entire System Drawing |
| MK-SV-3151 | 2-1 | Entire System Drawing |
| MK-SV-3151 | 3-4 | Entire System Drawing |
| MK-SV-3151 | 4-3 | Entire System Drawing |
| MK-SV-3151 | 5-3 | Entire System Drawing |
| MK-SV-3151 | 6-2 | Entire System Drawing |

|            |      |                                          |
|------------|------|------------------------------------------|
| MK-SV-3151 | 7-3  | Entire System Drawing                    |
| MK-SV-3151 | 8-2  | Entire System Drawing                    |
| MK-SV-3151 | 9-2  | Entire System Drawing                    |
| MK-SV-3151 | 10-2 | Entire System Drawing                    |
| MK-SV-3151 | 11-4 | Entire System Drawing                    |
| MK-SV-3151 | 12-4 | Entire System Drawing                    |
| MK-SV-3151 | 13-2 | Entire System Drawing                    |
| MK-SV-3151 | 14-3 | Entire System Drawing                    |
| MK-SV-3010 | 0-8  | Controller Dimension Drawing             |
| MK-SV-3010 | 1-7  | Controller Dimension Drawing             |
| MK-SV-3020 | 0-1  | Controller Installation                  |
| MK-SE-3040 | 0-13 | Electric Connections Single-Line Diagram |
| MK-SE-3040 | 1-10 | Electric Connections Single-Line Diagram |
| MK-SE-3040 | 1-11 | Electric Connections Single-Line Diagram |
| MK-SE-3040 | 2-11 | Electric Connections Single-Line Diagram |
| MK-SE-3040 | 3-10 | Electric Connections Single-Line Diagram |
| MK-SE-3040 | 4-5  | Electric Connections Single-Line Diagram |
| MK-SE-3040 | 5-5  | Electric Connections Single-Line Diagram |
| MK-SE-3040 | 6-5  | Electric Connections Single-Line Diagram |
| MK-SE-3040 | 7-5  | Electric Connections Single-Line Diagram |
| MK-SE-3040 | 8-6  | Electric Connections Single-Line Diagram |
| MK-SE-3040 | 9-3  | Electric Connections Single-Line Diagram |
| MK-SE-3040 | 10-2 | Electric Connections Single-Line Diagram |
| MK-SX-3050 | 0-1  | Dimension for Name Plate                 |

**Version 2:**

|            |      |                                          |
|------------|------|------------------------------------------|
| MK-SV-3151 | 1-5  | Entire System Drawing                    |
| MK-SV-3151 | 2-2  | Entire System Drawing                    |
| MK-SV-3151 | 3-5  | Entire System Drawing                    |
| MK-SV-3151 | 4-4  | Entire System Drawing                    |
| MK-SV-3151 | 5-4  | Entire System Drawing                    |
| MK-SV-3151 | 6-3  | Entire System Drawing                    |
| MK-SV-3151 | 7-4  | Entire System Drawing                    |
| MK-SV-3151 | 8-3  | Entire System Drawing                    |
| MK-SV-3151 | 9-3  | Entire System Drawing                    |
| MK-SV-3151 | 10-3 | Entire System Drawing                    |
| MK-SV-3151 | 11-5 | Entire System Drawing                    |
| MK-SV-3151 | 12-5 | Entire System Drawing                    |
| MK-SV-3151 | 13-3 | Entire System Drawing                    |
| MK-SV-3151 | 14-4 | Entire System Drawing                    |
| MK-SV-3010 | 0-9  | Controller Dimension Drawing             |
| MK-SV-3020 | 0-2  | Controller Installation                  |
| MK-SE-3040 | 0-14 | Electric Connections Single-Line Diagram |
| MK-SE-3040 | 2-12 | Electric Connections Single-Line Diagram |

|            |      |                                               |
|------------|------|-----------------------------------------------|
| MK-SE-3040 | 3-11 | Electric Connections Single-Line Diagram      |
| MK-SE-3040 | 4-6  | Electric Connections Single-Line Diagram      |
| MK-SE-3040 | 5-6  | Electric Connections Single-Line Diagram      |
| MK-SE-3040 | 6-6  | Electric Connections Single-Line Diagram      |
| MK-SE-3040 | 7-6  | Electric Connections Single-Line Diagram      |
| MK-SE-3040 | 8-7  | Electric Connections Single-Line Diagram      |
| MK-SE-3040 | 9-4  | Electric Connections Single-Line Diagram      |
| MK-SE-3040 | 10-3 | Electric Connections Single-Line Diagram      |
| MK-SC-3010 | 2    | Layout for Controller Electronic Parts        |
| MK-SC-3020 | 1    | Schematic Drawing for Controller (1)          |
| MK-SC-3030 | 2    | Schematic Drawing for Controller (2)          |
| MK-SC-3040 | 2    | Schematic Drawing for Controller (3)          |
| MK-SC-3050 | 1    | Schematic Drawing for Controller (4)          |
| MK-SC-3060 | 2    | Schematic Drawing for Controller (5)          |
| MK-SC-3070 | 2    | Schematic Drawing for Controller (6)          |
| MK-SC-3110 | 2    | Layout for Oil Content Meter Electronic Parts |
| MK-SC-3120 | 1    | Schematic Drawing for Oil Content Meter (1)   |

*Operational Manual:*

*S-3000 MEPC 108(49) & MEPC 240(65), Oil Discharge Monitoring Equipment, Operation Manual*

## Tests carried out

### Test Reports:

*ODME S-3000 Version 1:*

- Tested in accordance with the requirements of the specification contained in Part 1 of the Annex to the Guidelines and Specification contained in IMO Resolution MEPC.108(49), for oil content meter, witnessed and signed by Det Norske Veritas, Pusan, July 2004.
- Tested in accordance with the requirements of the specification contained in Part 2 of the Annex to the Guidelines and Specification contained in IMO Resolution MEPC.108(49), for environmental testing oil content meter and control section, witnessed and signed by Det Norske Veritas, Pusan, July 2004.

*ODME S-3000 Version 2:*

- Korea Marine Equipment Research Institute, *Environmental test for controller: Vibration test report with evidence*, dated 26.02.2015.
- Korea Marine Equipment Research Institute, *Environmental test for controller: Low temperature, high temperature, humidity report with evidence*, dated 15.09.2014.
- KSB Seil Co., Ltd., *Environmental test for controller: Fluctuation in power supply test, inclination test, report and evidence*, dated 10.11.2014, witnessed by DNV GL.
- KSB Seil Co., Ltd., *Type approval test report for bio-fuel blends*, dated 10.11.2014, witnessed by DNV GL.

Job Id: **344.1-001318-12**  
Certificate No: **MEDB0000086**

## Marking of product

For traceability to this type approval, each unit is to be marked with:

- Manufacturers name or trade mark
- Type designation
- Serial No.

## Mark of Conformity

The manufacturer is allowed to affix the Mark of Conformity according to Article 11 in the Council Directive 96/98/EC on Marine Equipment and shall issue a Declaration of Conformity, only when the module D or E or F of Annex B in the same directive is fully complied with.

Module D: The quality system for production and testing shall be approved by the Notified Body.

Module E: The quality system for inspection and testing shall be approved by the Notified Body.

Module F: Compliance of the products to type as described in this EC Type-Examination Certificate must be verified by the Notified Body who also shall issue a Certificate of Conformity.

*This certificate is replacing previous EC Type-Examination Certificate No. MED-B-9860.*