



Certificate No:
TAA00003AM

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Monitoring System

with type designation(s)
Scrubber Discharge Water Monitor BW-W800

Issued to
Baway Technology (Weifang) Co., Ltd.
Weifang, Shandong, China

is found to comply with
DNV rules for classification – Ships

Application :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV.

Temperature	B
Humidity	B
Vibration	A
EMC	A
Enclosure	B (IP56)

Issued at **Hamburg** on **2023-07-13**

This Certificate is valid until **2028-06-28**.

DNV local unit: **Qingdao NB & CMC**

Approval Engineer: **Jens Dietrich**

for **DNV**

Joannis Papanuskas
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

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.



Form code: TA 251

Revision: 2022-12

www.dnv.com

Page 1 of 3

Product description

Wash water Monitor cabinet BW-W800 including control for sampling valves and pumps and sensors for measurement. HMI panel for system operation, RS485 interface.

SW-Version V202_284

Range of Application:

BW-W800 Washwater Monitor is intended for installation on-board vessels operating an exhaust gas cleaning system (EGCS).

The Water Analyzer is found to be in compliance with the requirements of Resolution MEPC.340(77) – “2021 Guidelines for exhaust gas cleaning systems”, Chapter 10 “Discharge Water”.

The BW-W800 meets the following requirements:

- Definition of Phenanthrene equivalent	(MEPC.340(77), 2.3.1, Table 3)
- Principle of detection for PAH _{PHE Eq}	(MEPC.340(77), 10.1.3.3)
- Measurement range for PAH _{PHE Eq} (0-1000µg/l)*	(MEPC.340(77), 10.1.3.3)
- Permissible deviation for pH	(MEPC.340(77), 10.2.2)
- Permissible deviation for PAH _{PHE Eq}	(MEPC.340(77), 10.2.2)
- Permissible deviation for Turbidity (0-100 NTU)	(MEPC.340(77), 10.2.2)
- Turbidity influences on PAH _{PHE Eq}	(MEPC.340(77), 10.2.4)
- Principle of detection for pH	(MEPC.340(77), 10.2.4)
- Resolution for pH	(MEPC.340(77), 10.2.3)
- Temperature compensation for pH	(MEPC.340(77), 10.2.3)
- Principle of detection for Turbidity	(MEPC.340(77), 10.2.6)
- Sampling frequency	(MEPC.340(77), 10.4.1)

*The discharge concentration limit for PAH_{PHE Eq} is dependent on the discharge water flow rate in accordance with the requirements of MEPC.340(77).

The effectiveness of the countermeasures to prevent incorrect readings due to air bubbles by using the de-bubbler BW-W800-02 have been demonstrated under the surveillance and to the satisfaction of DNV.

Technical data of the sensor equipment

BW-W800			
Component	Type(s)	Sensor type	Range
PAH _{PHE Eq}	Baway PAH/Turbidity Sensor BWPT-1000	UV Fluorescence	0 – 1000 µg/L
Turbidity	Baway PAH/Turbidity Sensor BWPT-1000	Scattered IR light	0 – 1000 NTU
pH	Hamilton Polilyte plus h arc 120	Combination electrode pH and temperature sensor	0 - 14
Temperature	Texas Instruments LM57	Resistor Analog Temperature Sensor	-40°C – 150°C

Approval conditions

The Type Approval covers hardware and software listed under Product description.

As long as the units are covered by the Type Approval, a product certificate according to Pt.4 Ch.9 Sec.1 [1.4] will not be required.

BW-W800 Washwater Monitor shall be installed, operated and calibrated in accordance with the requirements and intervals as specified in the User Manual. Reference is made to SoC 30979933/DNV.

Correct on-board configuration and integration into the exhaust gas cleaning system (EGCS) will still be subject to verification against the requirements of MEPC.340(77) (e.g. point of sampling, minimum sample flow) and is to be tested during commissioning after installation.

In case the ambient temperature is above 55°C BW-W800 may only be operated with the addition of external cooling.

Software control

All changes in software are to be recorded as long as the system is in use on board. Re-test of compliance according to MEPC.340(77) maybe required. Documentation of major changes is to be forwarded to DNV for evaluation and approval before implemented on board. Certification of modified functionality may be required for the particular vessel.

Tests carried out

-Applicable tests according to DNV CG-0339, August 2021

-Requirements in Resolution MEPC.340(77) adopted on 26 November 2021, 2021 Guidelines for exhaust gas cleaning systems", Chapter 10 "Discharge Water".

Marking of product

Nameplate showing: Manufacturer name, type designation BW-W800, power supply, measuring ranges (pH, PAH, Turbidity), serial number, manufacturing date.

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the type are complied with, and that no alterations are made to the product design or choice of systems, software versions, components and/or materials.

The main elements of the assessment are:

- Ensure that type approved documentation is available
- Inspection of factory samples, selected at random from the production line (where practicable)
- Review of production and inspection routines, including test records from product sample tests and control routines
- Ensuring that systems, software versions, components and/or materials used comply with type approved documents and/or referenced system, software, component and material specifications
- Review of possible changes in design of systems, software versions, components, materials and/or performance, and make sure that such changes do not affect the type approval given
- Ensuring traceability between manufacturer's product type marking and the type approval certificate

Periodical assessment is to be performed after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE