



Certificate no.:
TAA00003F1

TYPE APPROVAL CERTIFICATE

This is to certify:

that the **Control and Monitoring System**

with type designation(s)

Blue Ocean Shield Ballast Water Management System

issued to

COSCO SHIPPING Heavy Industry Technology (Weihai) Co., Ltd
Weihai,, Shandong, China

is found to comply with

DNV rules for classification – Ships Pt.6 Ch.5 Sec.21 Cyber security

Application:

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

This type approval covers security capabilities for DNV Cyber security profile level 1 (SP1) and IACS UR E27, subject to conditions stated in this certificate.

Temperature

Humidity

Vibration

EMC

Enclosure

Issued at **Høvik** on **2024-10-08**

This Certificate is valid until **2026-10-07**.

for **DNV**

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

Approval Engineer: **Qitao Gan**

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: 2023-09

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Product description

The type approval of cyber security capabilities for COSCO SHIPPING Heavy Industry Technology (Weihai) Co., Ltd's **Blue Ocean Shield (BOS) Ballast Water Management System (BWMS)** model **BOS100, BOS200, BOS300, BOS350, BOS500, BOS600, BOS700, BOS800, BOS900, BOS1000, BOS1200, BOS2400, BOS3200, BOS100(Ex), BOS200(Ex), BOS300(Ex), BOS350(Ex), BOS500(Ex), BOS600(Ex), BOS700(Ex), BOS800(Ex), BOS900(Ex), BOS1000(Ex), BOS1200(Ex), BOS2400(Ex), BOS3200(Ex)** where the following components are covered:

<i>Component Description</i>	<i>Type Designation /HW version</i>	<i>OS/Platform/Firmware SW version</i>	<i>Application SW version</i>
PLC	Rockwell 1769-L18ER-BB1B 1769-L19ER-BB1B	Firmware 35.011 or newer	PLC 2.1.z.p revisions (where z.p is 0.0 or newer)
HMI, Remote control box, System control box	Beijer X2 pro-12-B2	Firmware Build 909 or newer	HMI 2.1.z.p revisions (where z.p is 0.0 or newer)
Switch/Firewall	MOXA EDR-8010	Firmware V3.6 or newer	Moxa cfg V1.y.z revisions (where y.z is 1.1 or newer)
Ethernet-RS485 (GPS)	MOXA GPS Communication UC- 8112-LX (HS)	-	-
Ethernet-CAN	HMS CAN Communication AB 7318	-	-

Refer to another Type Approval Certificate:

TAP00001VF

where this BWMS was certified in accordance with IMO BWMS Code and DNV Rules for classification - Ships and respective class programme DNV-CP-0209.

Approval conditions

The following documentation of the actual application is to be submitted for approval in each case:

- Reference to this Type Approval Certificate
- Inventory list
- System block diagram (topology)
- Report from test at manufacturer ^[1]

^[1] The test report or a declaration shall demonstrate that the required security capabilities have been correctly implemented/configured as per IEC 62443 SR 7.6 rule requirements on network and security configuration (e.g. the firewall) and SG-3 on security hardening guidelines (e.g. (SR1.5) default passwords shall not be used).

Any modifications in the system to be delivered compared with the type approved system covered by this certificate shall be documented and submitted for approval in each case.

Major changes of the type approved system affecting future deliveries shall be informed to DNV. If the changes are considered to affect functionality for which rule requirements apply, a new functional type test may be required, and the certificate may have to be renewed to identify the new version. Minor changes are covered by this type approval.

Application/Limitation

The verified security capabilities may be implemented in the product which provides services to COSCO SHIPPING's customers. Customer data/application is not necessarily subject to the same security functions.

All hardware devices and accessible interfaces in the system shall be installed in areas with means to prevent unauthorized access and/or with physical access restrictions.

The approval is valid when the internal network interface is connected to a trusted security zone.

Type Approval documentation

Tests carried out

All hardware and software versions were tested in Jun. 17th ~ 20th 2024 at COSCO SHIPPING site in Weihai, China, in accordance with requirements for DNV cyber security profile level 1 (SP1) for

- Cyber Secure (Essential), ref. DNV-RU-SHIP Pt.6 Ch.5 Sec.21 (2023-07 Edition)
- Cyber resilience of on-board systems and equipment, ref. IACS UR E27 (Rev.1, 2023-09)

Marking of product

The type designation and the manufacturer name and contact address shall be affixed visibly, legibly and indelibly to the product. In addition, the product shall be marked with:

- model name
- serial number
- power supply rating

Place of manufacture

COSCO SHIPPING Heavy Industry Technology (Weihai) Co., Ltd, Weihai, Shandong Province, China

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

A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE