Certificate No: LR26108537TA
Issue Date: 18/05/2026
Expiry Date: 17/05/2031

# Type Approval Certificate

This is to certify that the undernoted product(s) has/have been tested with satisfactory results in accordance with the relevant requirements of the Lloyd's Register Type Approval System.

| | |
|---|---|
| **Manufacturer** | **COSCO SHIPPING Heavy Industry Technology (Weihai) Co., Ltd.** |
| **Address** | No. 19, Shenyang Nan Road, Huancui District, Weihai City, 264203, China |
| **Place of Production** | COSCO SHIPPING Heavy Industry Technology (Weihai) Co., Ltd.<br>No. 19, Shenyang Nan Road, Huancui District, Weihai City, 264203, China |
| **Type** | Ballast Water Treatment Systems And Water Treatment Plants |
| **Description** | BOS Ballast Water Management System (BWMS) using filtration and ultraviolet (UV) irradiation |
| **Trade Name** | Blue Ocean Shield (BOS) Ballast Water Management System |
| **Application** | For on-board ballast water treatment |
| **Specified Standard** | LR Rules and Regulations for the Classification of Ships, July 2025 |
| **Ratings** | System Design Pressure: 7.7 bar<br>System Working Temperature: 0~55°C |

| Model | Capacity(m3/h) | Filter unit | UV unit |
|---|---|---|---|
| BOS100(Ex) | 100 | FH100(Ex) | UV100(Ex) |
| BOS200(Ex) | 200 | FH200(Ex) | UV200(Ex) |
| BOS300(Ex) | 300 | FH300(Ex) | UV300(Ex) |

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**Jun Hua Rong**

Engineering Piping - Senior Specialist to Lloyd's Register Classification Society (China) Co., Ltd.

Room 02-05, 48F, Raffles City Shanghai Office Tower, No.268 Xi Zang Middle Road, Huangpu District, Shanghai, 200001, China

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| Model | Capacity(m3/h) | Filter unit | UV unit |
|---|---|---|---|
| BOS350(Ex) | 350 | FH350(Ex) | UV350(Ex) |
| BOS500(Ex) | 500 | FH500(Ex) | UV500(Ex) |
| BOS600(Ex) | 600 | FH600(Ex) | UV600(Ex) |
| BOS700(Ex) | 700 | FH700(Ex) | UV700(Ex) |
| BOS800(Ex) | 800 | FH800(Ex) | UV800(Ex) |
| BOS900(Ex) | 900 | FH900(Ex) | UV900(Ex) |
| BOS1000(Ex) | 1000 | FH1000(Ex) | UV1000(Ex) |
| BOS1200(Ex) | 1200 | FH1200(Ex) | UV1200(Ex) |
| BOS1200(Ex) | 1200 | FH1250(Ex) | UV1200(Ex) |
| BOS1600(Ex) | 1600 | FH1600(Ex) | UV1600(Ex) |
| BOS1600(Ex) | 1600 | FH1650(Ex) | UV1600(Ex) |
| BOS2400(Ex) | 2400 | FH2400(Ex) | 2*UV1200(Ex) |
| BOS3200(Ex) | 3200 | FH3200(Ex) | 2*UV1600(Ex) |

UV Power Cupboard (Cabinet housing the electronic ballast and controller units for the Medium pressure UV lamps)
Model: BEB
Power Supply: 3-phase 380V/440VAC 50/60Hz
Degree of protection: IP44

UV control cupboard
Model: BEA
Power Supply: 3-phase 380V/440VAC 50/60Hz
Degree of protection: IP44

Control System Box
Model: CSB5
Power Supply: 2-phase 220VAC 50/60Hz
Degree of protection: IP44

Remote Control System Box (optional)
Model: RCSB1
Power Supply: 2-phase 220VAC 50/60Hz

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Degree of protection: IP44

**Other Conditions**

For application on a LR classed vessel, the following conditions to be complied with: -

1. Details of the location of the Ballast water management system, and its integration into the ships ballast system and electrical power distribution system are to be shown on the relevant plans and those are to be submitted for consideration in accordance with the applicable LR rules prior to installation.
2. Installation survey and commissioning is to be conducted for each installation on-board ship in accordance with Lloyd's Register specific survey requirements and with reference to IMO Res. MEPC.300 (72) on a case by case basis.
3. Filtration unit within BWTS is to comply with a recognised National or International standard.
4. Pressure vessel within BWTS is to meet the requirements of Part 5, Chapter 11 if applicable.
5. Valves, Pipes, Fittings are to be in compliance with LR Rules Part 5, Chapter 1 and Chapter 12 requirements.
6. Valves which are provided with remote control are to be arranged for local manual operation, independent of the remote operating mechanism.
7. Materials of Class III piping systems as defined in Part 5, Chapter 12, Section 1.5 including mechanical joints, valves, flanges, steel pipes are to be manufactured and tested in accordance with the requirements of recognised National or International standards.
8. Materials used in the construction of machinery and its installation are not to contain asbestos, LR Rules Part 5, Chapter 1, Section 2.2.2 refers.
9. The BOS series type of ballast water management system components/ equipment may be installed in hazardous areas, provided that the components/equipment is certified safe and suitable for the intended explosive gas atmospheres, and the conditions of Ex certification are complied with.
10. Components of BOS Series outside the scope of supply from COSCO SHIPPING Heavy Industry Technology (Weihai) Co., Ltd. are to be advised for

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consideration prior to installation.
11. The maximum treated rated capacity of each Components of BOS model is not to be exceeded.
12. Type Approval does not eliminate the need (as required by LR Rules) the requirements for further review or for the product to be further inspected and/ or surveyed to be installed in ships classed or intended to be classed with LR.
13. If the specified standards are amended during the validity of this certificate, the product is to be reapproved prior to it being supplied to vessels to which the amended standards apply.

This certificate is not valid for equipment, the design, ratings or operating parameters of which have been varied from the specimen tested. The manufacturer should notify Lloyd's Register Classification Society (China) Co., Ltd. of any modification or changes to the equipment in order to obtain a valid Certificate.

**Previous Version:** LR21235713TA-02

The Design Appraisal Document with reference O-TSO-26-054028D and its supplementary Type Approval Terms and Conditions form part of this Certificate.

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