



U. S. Department of Homeland Security  
**United States Coast Guard**  
**Certificate of Approval**

Coast Guard Approval Number: 162.060/27/0

Expires: 14 December 2023

BALLAST WATER MANAGEMENT SYSTEM  
Filtration/Ultraviolet

Panasia Co., Ltd.  
#55, Mieumsandan 3-ro, Gangseo-gu,  
Busan KOREA, REPUBLIC OF

Name of BWMS: GloEn-Patrol 2.0

Capacities: 50-6,000 m3/h

This is to certify that the above listed BWMS, with the listed treatment capacities, has been satisfactorily examined and tested by Independent Lab DNV GL in accordance with the requirements contained in 46 CFR 162.060. The system shall be installed and operated in accordance with the Panasia GloEn-Patrol 2.0 Operation, Maintenance, and Safety Manual (OMS) PAD-USCG-07, Rev. Q-3, dated March 2, 2020.

Operational Limitations:

Salinity: Not Applicable

Water Temperature: -2 to 40°C

Hold Time: >24 Hours

UV-Intensity: Marine and Brackish Water (>1 PSU): >90 mW/cm2 (at 100% TRC)

>60 mW/cm2 (at 50% TRC)

Fresh Water (<1 PSU): >110 mW/cm2 (at 100% TRC)

>82 mW/cm2 (at 50% TRC)

The BWMS meets the requirements of 46 CFR 111.105 and may be installed in hazardous locations to which it is certified on a U.S. flag vessel. The electrical supply and control systems must remain outside of hazardous locations. The BWMS may be installed in hazardous locations to which it is certified on foreign flag vessels subject to the approval of the foreign administration.

The BWMS must be marked in accordance with 46 CFR 162.060-22. A copy of this Type Approval Certificate shall be carried on board a vessel fitted with the BWMS at all times.

\*\*\* End \*\*\*

THIS IS TO CERTIFY THAT the above named manufacturer has submitted to the undersigned satisfactory evidence that the item specified herein complies with the applicable laws and regulations as outlined on the reverse side of this Certificate, and approval is hereby given. This approval shall be in effect until the expiration date hereon unless sooner canceled or suspended by proper authority.

GIVEN UNDER MY HAND THIS 19<sup>th</sup> DAY OF  
MARCH 2020, AT WASHINGTON D.C.



Chief, Engineering Division  
BY DIRECTION OF THE COMMANDANT