



**Task – WO0319525
Product Design Assessment (PDA)
“Ballast Water Treatment”
PDA No. 25-0319525-PDA**

Attention: Mr. Suho Cho, PANASIA CO., LTD. (WCN : 983199)

The documents shown in the attached list are reviewed in accordance with the applicable requirements indicated in the PDA along with the service restrictions and comments.

We recommend that you monitor the ABS Rules, Guides and other standards used in the Assessment. These Rules, Guides and standards often change on an annual basis, and you must comply with the new Rules, Guides and standards in order for the product to be used on an ABS classed vessel or facility contracted under the new Rules, Guides or specifications.

Additionally, we acknowledge the PDA request form warranting that the materials used in the product are free from asbestos.

For any clarifications, contact Mr. Hyun-Dae Lee at +82-51-460-4131, (hdlee@eagle.org).

Very truly yours,

Yun-Hak(Ford) Baek
Director, Engineering

Electronically Signed by: Cheol-Jin Kim

Documents List

Drawing No.	Rev. No.	Title	Status
-	-	Ballast Water Treatment	Approved

Electronic copies of the documents, appropriately stamped, are available in the ABS Client Portal.

Include: PDA Certificate



CERTIFICATE NUMBER
EFFECTIVE DATE
EXPIRY DATE
ABS TECHNICAL OFFICE

25-0319525-PDA
27-Aug-2025
26-Aug-2030
Busan Engineering Services

CERTIFICATE OF Product Design Assessment

This is to certify that a representative of this Bureau did, at the request of

PANASIA CO., LTD.

located at

**55, MIEUMSANDAN-3RO, GANGSEO-GU, , BUSAN, Korea,
Republic of**

assess design plans and data for the below listed product. This assessment is a representation by the Bureau as to the degree of compliance the design exhibits with applicable sections of the Rules. This assessment does not waive unit certification or classification procedures required by ABS Rules for products to be installed in ABS classed vessels or facilities. This certificate, by itself, does not reflect that the product is Type Approved. The scope and limitations of this assessment are detailed on the pages attached to this certificate.

Product: **Ballast Water Treatment**

Model: **Type : GloEn-Patrol 2.0/2.01**

Model : GloEn-P50/150(-Ex)/250(-Ex)/300(-Ex)/350(-Ex)/500(-Ex)/700(-Ex)/750(-Ex)/750-1(-Ex)/800(-Ex)/800-1(-Ex)/900(-Ex)/900-1(-Ex)/1000(-Ex)/1000-1(-E...

Endorsements:

Tier: **3 - Type Approved, unit certification not required**

This Product Design Assessment (PDA) Certificate remains valid until 26/Aug/2030 or until the Rules and/or Standards used in the assessment are revised or until there is a design modification warranting design reassessment (whichever occurs first).

Acceptance of product is limited to the "Intended Service" details prescribed in the certificate and as per applicable Rules and Standards.

This Certificate is valid for installation of the listed product on ABS units which exist or are under contract for construction on or previous to the effective date of the ABS Rules and standards applied at the time of PDA issuance. Use of the Product for non-ABS units is subject to agreement between the manufacturer and intended client.

American Bureau Of Shipping


Seong-Ju Kang, Engineer/Consultant

NOTE: This certificate evidences compliance with one or more of the Rules, Guides, standards or other criteria of ABS or a statutory, industrial or manufacturer's standards. It is issued solely for the use of ABS, its committees, its clients or other authorized entities. Any significant changes to the aforementioned product without approval from ABS will result in this certificate becoming null and void. This certificate is governed by ABS Rules 1-1-A3/5.9 Terms and Conditions of the Request for Product Type Approval and Agreement (2010)

PANASIA CO., LTD.

55, MIEUMSANDAN-3RO

GANGSEO-GU

BUSAN

Korea, Republic of

Telephone: +82-51-831-1010

Fax: +82-70-4369-3706

Email: quality@worldpanasia.com

Web: www.worldpanasia.com

Tier: 3 - Type Approved, unit certification not required

Product: Ballast Water Treatment**Model:** Type : GloEn-Patrol 2.0/2.01**Model :** GloEn-P50/150(-Ex)/250(-Ex)/300(-Ex)/350(-Ex)/500(-Ex)/700(-Ex)/750(-Ex)/750-1(-Ex)/800(-Ex)/800-1(-Ex)/900(-Ex)/900-1(-Ex)/1000(-Ex)/1000-1(-Ex)/1200(-Ex)/1200-1(-Ex)/1500(-Ex)/1500-1(-Ex)/2000(-Ex)/2000-1(-Ex)/2500(-Ex)/2500-1(-Ex)/3000(-Ex)/3000-1(-Ex)/3500(-Ex)/4000(-Ex)/4500(-Ex)/5000(-Ex)/6000(-Ex)**Endorsements:****Intended Service:**

Marine Vessels - Treatment of Ship's Ballast Water

Description:

The filter is installed on the discharge side of the ballast water pumps and is fully automatic in terms of its operation and cleaning without affecting the filtration process, and flushing water is returned into the seawater. The UV unit employs high-intensity, medium-pressure ultra violet (MPUV) lamps to destroy living micro-organisms present in the liquid being treated. During de-ballasting, the filter unit is by-passed. The ballast water is treated again by the UV unit only to destroy any organisms which might have regrown in the tanks during the voyage.

Rating:

[1] Ballast Water Flow Rate :

50/150/250/300/350/500/700/750/800/900/1000/1200/1500/2000/2500/3000/3500/4000/4500/5000/6000 m3/h

[2] Filtration Degree : 50 micron

[3] Design Pressure : 10 kg/cm2

[4] Filter Pressure Drop : above 0.1 bar

[5] Operating UV Dose : Above 60mW/cm2

[6] Material :

(a) A516-70 & SUS 316L (Filter Housing & Filter Screen)

(b) SUS 316L (UV Chamber)

[7] Control Monitoring Panel

(a) Power Supply : AC 110/220/380/440 volts, 50/60Hz

(b) Controller : Siemens PLC

(i) CPU : CPU 315-2 DP or CPU1513-1 PN & CPU1214C

(ii) Power Supply : PS 307 5A

(iii) DI : 16 X DC24V

(iv) DO : 16 X Rel. AC 120V/230V

(v) AI : 8 X 12bit 16inch, 18inch, 20inch, 24inch

Service Restriction:

Detail contents are shown on the Attachment.

Comments:

1. Detail contents are shown on the Attachment.

2. Application and use are to be in accordance with the manufacturer's instructions.

3. The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.

4. IACS UR E27(Cyber Resilience) is not within the scope of certification.

Notes/Drawing/Documentation:

[1] Documentation and Reports used for verifying compliance :

(a) Land-based Test Report by GBF dated 19 December 2017

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- (b) Land-based Test Report by DHI dated 04 March 2019
- (c) Shipboard Test Report by DHI dated 28 March 2018
- (d) CFD Validation in land-based test facility by DHI dated 13 February 2018
- (e) Summary for Environmental Testing_1 by SGS Korea (Document No.: STA-R16-001) dated 21 December 2017
- (f) Summary for Environmental Testing_2 by SGS Korea (Document No.: STA-R18-001) dated 12 March 2018
- (g) Type tests with the attendance of ABS Surveyor at vendor's factory
 - Model (GloEn-P150) dated 18 Mar. 2020
 - Model (GloEn-P750) dated 26 Mar. 2020
 - Model (GloEn-P1000) dated 18 Mar. 2020
 - Model (GloEn-P2000-Ex) dated 27 Mar. 2020
 - Model (GloEn-P150) dated 17 Jan. 2025
 - Model (GloEn-P250) dated 26 Jul. 2024
 - Model (GloEn-P3000) dated 19 Dec. 2024

[2] GloEn-Patrol 2.0 Documents :

- (a) Bill of Material (DWG No. PAD-GPC-D01 Rev. A-1)
- (b) Detailed drawings of all main components (DWG No. PAD-GPC-D02 Rev. A-1)
- (c) BWMS all model drawings (GA) (DWG No. PAD-GPC-D03 Rev.A)
- (d) P&ID (DWG No. PAD-GPC-D04 Rev.A)
- (e) Electrical Wiring Diagram (DWG No. PAD-GPC-D05 Rev.A)
- (f) OMSM (DWG No. PAD-GPC-D00 Rev.A-1)

Terms of Validity:

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STANDARDS**ABS Rules:**

2025 Marine Vessel Rules 1-1-4/7.7, 1-1-A3, 1-1-A4, 4-4-1/1.1, 4-6-2/3, 4-6-4/7.7, 4-8-3/5.3.1, 4-8-3/Table 2, 4-8-3/15, 4-9-3/Table 2, 4-9-3/A1, 4-9-3/11.9 and 6-6-2/7.7

National:

NA

International:

IMO Res. MEPC.279(70) Adopted on 28 October 2016

IMO Res. MEPC.300(72) Adopted on 13 April 2018

Government:

NA

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EUMED:

NA

OTHERS:

NA