



Type Approval Certificate

[Ballast Water management System]

Initial Approval 27 September 2022
Manufacturer SAMKUN CENTURY Co., Ltd.
 405, Miyul-ro, Samnangjin-eup, Miryang-si, Gyeongsangnam-do, Korea

Product Description Ballast Water Treatment System(Type : ARA PLUS+ BWMS)

Treatment sequence:

- Ballast water uptake: Filter and UV disinfection
- Ballast water discharge: Filter and UV disinfection

" See Appendix 1 "

Approval Condition " See Appendix 1 "

THIS IS TO CERTIFY that the above-mentioned product has been approved in accordance with the relevant requirement of this Society's Rules and / or of the recognized standards as follows.

Resolution MEPC.300(72) - Code for Approval of Ballast Water Management Systems,
 Part 9 Rules for the Classification of Steel Ships and Guidance of Approval of
 Manufacturing process and Type Approval, Etc.

This Certificate is valid until 26 September 2027

Issued at Busan, Korea on 27 September 2022



This certificate is signed electronically in accordance with IMO FAL.5/Circ.39/Rev.2. Validation and authentication of the certificate can be confirmed from "<http://e-cert.krs.co.kr>" by using the tracking No(ME22027339789) and certificate No.(CWN21608-BT002).



KOREAN REGISTER

*General Manager of
Marine & Ocean Equipment Team*

Note : 1. This certificate will be valid subject to complying with the approval conditions described on the certificate and/or on the Rules of this Society.
 2. This certificate will be invalid from the expiry date aforementioned unless the extension or renewal has been granted to the applicant or the manufacturer.
 3. Any significant modifications or changes in design or construction to the above product without approval from this Society will render this certificate invalid.
 4. Should the specified rules, regulations or standards be amended during the validity of this certificate, the product is to be re-approved by this Society in accordance with the requirements as amended.

Product Description and/or Approval Condition

Date of Issue : 27 September 2022

A. Product Description

1. Product Specification

1) System Description (Type: ARA Plus+ BWMS)

ARA Plus+ BWMS is a ballast water management system. The treatment sequence of ARA Plus+ BWMS under ballast water uptake mode and discharge mode is filtration and UVdisinfection.

2) General Specification

- Capacity : 150 ~ 1300 m³/hr
- Holding Time : > 48 Hours
- Salinity and Temperature : N/A
- Operation Performance : > 270 mJ/cm²
- Operating Water Pressure : < 6.5 Bar

Type	Flow rate (m ³ /hr)	Filter	UV Module	MCP
AP-150	150	APFT-150	APUV-150	APMCP-150
AP-150-Ex	150	APFT-150	APUV-150-Ex	APMCP-150
AP-250	250	APFT-250	APUV-250	APMCP-250
AP-250-Ex	250	APFT-250	APUV-250-Ex	APMCP-250
AP-400	400	APFT-400	APUV-400	APMCP-400
AP-400-Ex	400	APFT-400	APUV-400-Ex	APMCP-400
AP-650	650	APFT-650	APUV-650	APMCP-650
AP-650-Ex	650	APFT-650	APUV-650-Ex	APMCP-650
AP-800	800	APFT-800	APUV-400x2	APMCP-400 (M) & APMCP-400 (S)
AP-800-Ex	800	APFT-800	APUV-400-Ex x2	APMCP-400 (M) & APMCP-400 (S)
AP-1300	1300	APFT-1300	APUV-650x2	APMCP-650 (M) & APMCP-650 (S)
AP-1300-Ex	1300	APFT-1300	APUV-650-Ex x2	APMCP-650 (M) & APMCP-650 (S)

3) Filter

- Mesh Size : 50 μm
- Minimum Filter Inlet Pressure : 1.5 bar
- Maximum Working Pressure : 6.5 bar
- Differential Pressure Triggering Backflushing : ≥ 0.1 bar

4) UV Lamp

	APUV-150	APUV-250	APUV-400	APUV-650
Lamp Power	4 kW			
Lamp Q'ty	6	9	12	18

5) Software

- a) Software Version 1.x.x
- b) Name: HMI (Human Machine Interface)

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* All changes in software are to be recorded as long as the system is in use onboard and Major changes to the software are to be approved before installed in the computer.

2. Approved Drawings and Documents

- 1) Approved Documents
 - System Drawings List AP-DC-STD-DMM000 Rev.2 dated on 2021.07.05
- 2) System Manual
 - Operation, Maintenance and Safety manual Rev.3 dated 2022.05.31

3. Test Reports, etc.

- 1) Land-based Testing
 - Land-based testing of ARA plus+ SYSTEM issued by Busan Techno Park (BTP)
- 2) Shipboard Testing
 - Shipboard Testing of ARA plus+ SYSTEM issued by Busan Techno Park (BTP)
- 3) Component Testing Report issued by SGS Korea
 - SGS-R20-2057-KR00, SGS-R20-2058-KR00, SGS-R20-2059-KR00, SGS-R20-2060-KR00, SGS-R20-2062-KR00, SGS-R20-2063-KR00, SGS-R20-2064-KR00, SGS-R20-2065-KR00, SGS-R20-2066-KR00 dated on 2020-07-02
 - SGS-R20-2047-KR00, SGS-R20-2048-KR00, SGS-R20-2049-KR00, SGS-R20-2050-KR00, SGS-R20-2051-KR00, SGS-R20-2054-KR00, SGS-R20-2055-KR00, SGS-R20-2056-KR00, SGS-R20-2066-KR00 dated on 2020-07-02
 - SGS-R21-3020-KR00, SGS-R21-3021-KR00, SGS-R21-3024-KR00 dated on 2021-12-24
 - F690501-RF-EMH000576, F690501-RF-EMH000581, F690501-RF-EMH000592, F690501-RF-EMH000603, F690501-RF-EMH000605, F690501-RF-EMH000607, F690501-RF-EMH000622, F690501-RF-EMH000624, F690501-RF-EMH000909, F690501-RF-EMH000993 dated on 2022-01-04
- 4) Readiness Evaluation
 - Conformity Test Report dated on 2021-06-24 witnessed by KR surveyors
- 5) Etc.
 - EXPLOSION PROOF EQUIPMENT LIST Rev.0 dated 2022-07-22
 - Electrical Part List Rev.2 dated 2022-06-03
 - 89% transmittance applied UV irradiator UV dose analysis dated 2022-03

B. Approval Condition

1. Application & Limitation

- 1) This certificate is issued on the basis of the test reports and the documentation type-approved by Korea Administration (Date: 22 JULY 2022 / Cert. No. 2022-142-153).
- 2) Degree of protection (IP grade) shall be complied with Rule Pt.6 Ch.1 Sec.2 201.2. (5).
- 3) The manufacturer should inform the Society of all kinds of revisions of the equipment including software. If the changes are recognized to affect functionality of the approved equipment, type test to confirm the reliability of the revised equipment may be performed in the presence of our surveyor.
- 4) This approval is not to be construed as a substitute for the Administration's approval and it shall comply with requirements of Vessel's Flag.
- 5) Any latest conventions or requirements settled by International Maritime Organization or Administrations should be retroactively applied at the earliest possibility, if any.
- 6) The above models may be installed on board in parallel, provided that the ultimate functioning and effectiveness of the system on board a ship of the type and size for which the equipment will be certified will not be adversely affected.
- 7) Equipment subject to component testing has been tested according to the requirements of IACS UR E10 Rev.7.

2. Individual Product Cert. and Drawing Approval Requirement

- 1) Individual product certification is required.

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- 2) In case where the BWMS is installed on board, the documents for individual vessel are to be approved by the Society. The documents to be submitted are including but not limited to the followings:
- Ballast Piping Diagram
 - Electrical Schematic Drawings of BWMS
 - Operation and Maintenance Manual (if required by Administration)
 - Any other documents deemed necessary by the Society and/or Administration

3. Marking

- 1) The product or packing is to be marked with the manufacturer's name and type designation on a suitable position.

4. Others

Nil

< End of Certificate >

