



APPROVAL CERTIFICATE OF BALLAST WATER MANAGEMENT SYSTEM

Approval Doc. No.: 09132022-006

This is to certify that the ballast water management system listed below has been examined and tested following the requirements of the specifications contained in the Guidelines contained in IMO resolution MEPC.300 (72). This certificate is valid only for the Ballast Water Management System referred to below.

Ballast water management system supplied by SAMKUN CENTURY Co.,Ltd.

Under type and model designation ARA Plus+ BWMS (AP-150, AP-400, AP-650, AP-800, AP-1300);
Filtration + UV Disinfection

and incorporating: N/A

Ballast water management system manufactured by SAMKUN CENTURY Co.,Ltd.

To equipment/assembly drawing No/ Date AP-DC-STD-DMM000 Rev.2 22th July 2022

Other equipment manufactured by N/A

To equipment/assembly drawing No. Date N/A N/A

Treatment rated capacity m3/h 150, 250, 400, 650, 800, 1300 m3/hr

Treatment rated capacity of Ballast Water Management System tested: 250 m³/h

A copy of this Type Approval Certificate should be carried onboard a vessel fitted with this ballast water management system at all times. A reference to the test protocol and a copy of the test results should be available for inspection onboard the vessel. If the Type Approval Certificate is issued based on approval by another Administration, reference to that Type Approval Certificate shall be made:

Ministry of Oceans and Fisheries (MOF) on behalf of the Republic of
Korea issued on July 22th 2022

Korean Register (KR)
Certificate No. HDOBW-0006-20
issued on June 30th 2022

1. Cert. No. 2022-142 - ARA Plus+ BWMS AP-150 - 150 m3/h
2. Cert. No. 2022-148 - ARA Plus+ BWMS AP-150-Ex - 150 m3/h
3. Cert. No. 2022-143 - ARA Plus+ BWMS AP-250 - 250 m3/h
4. Cert. No. 2022-149 - ARA Plus+ BWMS AP-250-Ex - 250 m3/h
5. Cert. No. 2022-144 - ARA Plus+ BWMS AP-400 - 400m3/h
6. Cert. No. 2022-150 - ARA Plus+ BWMS AP-400-Ex - 400m3/h
7. Cert. No. 2022-145 - ARA Plus+ BWMS AP-650 - 650m3/h
8. Cert. No. 2022-151 - ARA Plus+ BWMS AP-650-Ex - 650m3/h
9. Cert. No. 2022-146 - ARA Plus+ BWMS AP-800 - 800m3/h
10. Cert. No. 2022-152 - ARA Plus+ BWMS AP-800-Ex - 800m3/h
11. Cert. No. 2022-147 - ARA Plus+ BWMS AP-1300 - 1300m3/h
12. Cert. No. 2022-153 - ARA Plus+ BWMS AP-1300-Ex - 1300m3/h

1. ARA Plus+ BWMS
Normal Type:
AP-150, AP-250, AP-400, AP-650, AP-800,
AP-1300
Explosion Proof Type:
AP-150-Ex, AP-250-Ex, AP-400-Ex,
AP-650-Ex, AP-800-Ex, AP-1300-Ex

Limiting Operating Conditions imposed are described in this document.

This Certificate is valid until July 21, 2027

Issued at Panama, Republic of Panama on September 13, 2022

Enc. Copy of the original test results.



Eng. Luisa Chong
Technical Officer of Segumar Panama

Description

1. This approval is granted on the basis of the readiness evaluation of ARA Plus+ BWMS (AP-250-Ex, TRC 250 m³/h), carried out on 24th June 2021, with the documents submitted by the applicant.
2. The readiness evaluation has been carried out in accordance with Appendix 5 of Regulation for Ballast Water Management.
3. The components of ARA Plus+ BWMS which do not have relevant explosive proof certificate shall not be installed in explosive hazardous area.
4. For installation of components on weather deck of vessel, the component shall be proven to satisfy IP rating required by the Rules for the Classification of Steel Ships or equivalent standards.
5. The applicant should inform the Society of all kinds of revisions of the software. If the change are recognized to affect functionality of the approved system, appropriate test to confirm the reliability of the revised software may be performed in the presence of the surveyor.
6. The ARA Plus+ can be used with all vessel types, services and locations except U.S. flagged vessel. ARA Plus+ shall not be installed on U.S. flagged vessel.

Limitation of ARA Plus Conditions

1. The following limitations are incorporated in ARA Plus+ using and installation;

No	Subject	Limitation Range
1	Operating Water Pressure	<6.5 bar
2	Filter Module Inlet Water Pressure	>1.5 bar
3	Ambient Temperature	-2 °C ~ +55 °C
4	Water Temperature	-2 °C ~ +45 °C
5	Water Flow Rate	As per section 1.7 & 1.8
6	Holding Time	>48 hours
7	UV-Dose	>270 mJ/cm ²
8	Salinity	Not Applicable

2. The UV-Dose limited is 270 mJ/cm², which is abt. 125~129 mW/cm² UV-Intensity Value (it corresponds, 89~91% UV-Transmittance) under 100% TRC. At lower UV-Intensity condition, the flow rate is reduced gradually by outlet valve(FCV) up to 25% TRC automatically, to ensure the performance of BWMS with higher UV-Dose.
3. ARA Plus+ is an eco-friendly product that does not use chemicals and produce by-products.
4. ARA Plus+ is no limitation or adverse effects on the vessel's ballast water, ballast water tanks, and ballast water piping and pumping system except the ballast water that is income or discharge is removed more than 50-micron particles and disinfected smaller organisms passing the water.
5. If the allowable operating range (Limitation) is exceeded during ballasting, to prevent untreated ballast water from entering the ballast tank, automatically, the stop signal is released with the ballast pump to shut down, at the same time, the inlet and outlet valve of ARA Plus+ are closed.
6. Also, if the allowable operating range (Limitation) is exceeded during de-ballasting, to prevent untreated ballast water from being discharged, automatically, the stop signal is released with the ballast pump to shut down, at the same time, the inlet and outlet valve of ARA Plus+ are closed.

