



Certificate No. 02-003287/025294

TYPE APPROVAL CERTIFICATE

This is to certify that this product complies with the Rules for the classification of ships, Part 1 - General requirements, Chapter 3 - Type approval of products.

TYPE AND DESCRIPTION OF PRODUCT:

BIO-SEA BWMS
(model range B01-0055 to B14-2100)
Treatment rated capacity (TRC): 55-2100 m³/h
(model range L01-0030 to L04-0120)
Treatment rated capacity (TRC): 30-120 m³/h

MANUFACTURER:

BIO-UV GROUP
850 avenue Louis Medard
LUNEL 34400
FRANCE

THE PRODUCT MEETS FOLLOWING RULES/REGULATIONS:

CRS Rules for technical supervision of sea-going ships, Part 22 – Pollution prevention
Resolution MEPC.300(72) – Code for approval of ballast water management systems

FURTHER DETAILS OF THE PRODUCT AND CONDITIONS FOR CERTIFICATION ARE GIVEN OVERLEAF.

APPROVAL IS VALID UNTIL: **2025-06-18**

Place and date: Split, 2021-06-18

Seal

Marinko Popović, dipl.ing.

NOTE: This certificate is not valid for equipment, the design or manufacture of which has been varied or modified from the specimen tested. The manufacturer should notify Croatian Register of Shipping of any modification or changes to the product in order to obtain a valid certificate.

DETAILED PRODUCT DESCRIPTION:

Ballast water management system using filtration and UV disinfection at ballast water uptake and UV disinfection at ballast water discharge.

Model	Max TRC IMO/MPN (m3/ h)	Max TRC USCG/CMFDA (m3/ h)	Min TRC (m3/ h)	Filter Filtrex	Number of UV reactors
B01-0055	55	55	50	ACB-904-080	1
B01-0087	87	87	50	ACB-906-100	1
B01-0135	135	100	50	ACB-910-150	1
B01-0150	150	100	50	ACB-915-150	1
B02-0190	190	190	100	ACB-915-150	2
B02-0255	255	200	100	ACB-935-200	2
B02-0300	300	200	100	ACB-945-200	2
B03-0340	340	300	150	ACB-945-200	3
B03-0450	450	300	150	ACB-955-250	3
B04-0515	515	400	200	ACB-955-250	4
B04-0600	600	400	200	ACB-985-300	4
B05-0515	515	500	250	ACB-955-250	5
B05-0750	750	500	250	ACB-985-300	5
B06-0770	770	600	300	ACB-985-300	6
B06-0900	900	600	300	ACB-999-350	6
B07-0770	770	700	350	ACB-985-300	7
B07-1040	1040	700	350	ACB-999-350	7
B08-1040	1040	800	400	ACB-999-350	8
B08-1200	1200	800	400	ACB-9100-400	8
B09-1350	1350	900	450	ACB-9100-400	9
B10-1040	1040	1000	500	ACB-999-350	10
B10-1500	1500	1000	500	ACB-9100-400	10
B12-1500	1500	1200	600	ACB-9100-400	12
B12-1800	1800	1200	600	ACB-9120-500	12
B14-1500	1500	1400	700	ACB-9100-400	14
B14-2100	2100	1400	700	ACB-9120-500	14

Model	Max TRC IMO/MPN (m ³ / h)	Max TRC USCG/CMFDA (m ³ / h)	Min TRC (m ³ / h)	Filter Filtrex	Number of UV reactors
L01-0030	30	20	13	ACB-903-065	1
L01-0055	30	20	15	ACB-904-080	1
L02-0035	35	35	20	ACB-903-065	2
L02-0055	55	40	20	ACB-904-080	2
L02-0060	60	40	25	ACB-906-100	2
L03-0055	55	55	30	ACB-904-080	3
L03-0087	87	60	30	ACB-906-100	3
L04-0087	87	80	40	ACB-906-100	4
L04-0120	120	80	45	ACB-910-150	4

UV reactors can be combined in parallel for higher TRC.

APPLICATION / LIMITATIONS:

Salinity: no limitation

Temperature of ballast water: no limitation

Minimum holding time between uptake and discharge: no limitation

Minimum UV intensity (IMO Mode):

Bio-Sea B
150 W/m² at reduced flow
750 W/m² at full flow

Bio-Sea L
900 W/m² at reduced flow
2100 W/m² at full flow

Minimum UV intensity (USCG Mode):

Bio-Sea B
725 W/m² at reduced flow
1440 W/m² at full flow

Bio-Sea L
1700 W/m² at reduced flow
2900 W/m² at full flow

Minimum/ maximum working pressure: 2 bar/ 10 bar

TYPE APPROVAL DOCUMENTATION:

Description	Drawing no.	Rev.
System drawings	As per FIC-BET 27	A
Component drawings	As per FIC-BET 27	A
Report for land-based test	11818036 7428-2019	18.07.2016. 06.10.2019.
Report for shipboard test	11824478	04.02.2021.
Environmental testing	265598 FS-1406-265598-001 DELTA-T211580 U180693E1 E170814E1_180606 IP E182248E1 119-31029-1 120-28238-1	31.10.2014. 26.02.2015. 08.05.2017. 21.11.2018. 24.04.2018. 11.01.2019. 26.11.2019. 18.03.2021.
Operation, maintenance and safety manual	BS3-01	A00

MARKING OF PRODUCT:

- Manufacturer's name or trade mark
- Type designation
- Serial number

CONDITIONS FOR CERTIFICATION:

This certificate is issued on the basis of the test reports and the documentation listed in type approval certificate issued by BV Marine & Offshore on behalf of Republic of France No. 65393/A0 MMF.

Operation, maintenance and safety manual for Bio-Sea BWMS is to be carried onboard a vessel fitted with this ballast water management system.

BWMS is type approved with the following control and safety related instruments:

- flow transmitter in flow meter unit
- temperature transmitter mounted on UV assembly
- differential pressure switch on filter unit
- safety valves on filter unit and on reactor inlet manifold
- UV irradiance meter mounted on UV assembly
- conductivity transmitter on reactor outlet manifold