



Certificate No. 02-003326/025318

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:

CYECO BWMS
(model range CYECO-B200 to CYECO-B6000)
(model range CYECO-B200(Ex) to CYECO-B6000(Ex))
Treatment rated capacity (TRC): 200-6000 m³/h

MANUFACTURER:

**SHANGHAI ELECTRIC CYECO
ENVIRONMENTAL TECHNOLOGY Co. Ltd.**

No.2748, No.2 building, Pudong Avenue
SHANGHAI; PEOPLE'S REPUBLIC OF CHINA

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: **2026-05-20**

Place and date: Split, 2022-05-20

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 (m ³ /h)	Filter unit	UV unit	Rated power (kW)
Cyeco-B200	200	CF200	CU200	16/24
Cyeco-B250	250	CF250	CU250	20/30
Cyeco-B300	300	CF300	CU300	24/36
Cyeco-B400	400	CF400	CU400	32/48
Cyeco-B500	500	CF500	CU500	40/60
Cyeco-B600	600	CF600	CU600	48/72
Cyeco-B750	750	CF750	CU750	54/84
Cyeco-B800	800	CF800	CU800	60/96
Cyeco-B1000	1000	CF1000	CU1000	72/120
Cyeco-B1200	1200	CF1200	CU1200	84/144
Cyeco-B1500	1500	2x CF750	2x CU750	108/168
Cyeco-B2000	2000	2x CF1000	2x CU1000	144/240
Cyeco-B3000	3000	3x CF1000	3x CU1000	216/360
Cyeco-B4000	4000	4x CF1000	4x CU1000	288/480
Cyeco-B5000	5000	5x CF1000	5x CU1000	360/600
Cyeco-B6000	6000	5x CF1200	5x CU1200	420/720

UV reactors can be combined in parallel for higher TRC.

APPLICATION / LIMITATIONS:

Salinity: no limitation

Temperature of ballast water: no limitation

Holding time:

Cyeco BWMS has demonstrated performance to the discharge standard D-2 with a holding time between uptake and discharge of 24 hours in fresh water in land-based testing for the IMO BWMS Code.

UVT: $\geq 50\%$ (100% TRC); UV dose: $\geq 130 \text{ mJ/cm}^2$ (100% TRC)

Cyeco BWMS has demonstrated performance to the discharge standard D-2 with a holding time between uptake and discharge of 0 hours in sea and brackish water in land-based testing for the IMO BWMS Code.

UVT: $\geq 70\%$ (100% TRC); UV intensity: $\geq 570 \text{ W/m}^2$ (100% TRC)

Maximum working pressure: 10 bar

TYPE APPROVAL DOCUMENTATION:

Description	Drawing no.	Rev.
System drawings	TD04-41B01201-A/1-2012	-
Component drawings	TD04-41B02500-A/1 do/to TD04-41B02505-A/1 TD04-41B03500-A/1 do/to TD04-41B03506-A/1	-
Supplementary fresh water land-based test report	SHOU-SHDQ-2020002	2020.05.10
Land based testing report of Cyeco BWMS with 0 hour holding time in marine water and brackish water	SHOU-SHDQ-2021003	2021.12.30
Environmental testing report	A14-028-WT	2014 Aug.29
Operation, maintenance and safety manual	TAS-4020201-2012	-

HAZARDOUS AREA/ EX-PROOF:

Cyeco Ex BWMS installation in a hazardous area is to be approved in each case according to CRS rules and Ex-certification issued by a recognized Certification Body.

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 China Classification Society on behalf of People's Republic of China No. SH21PTB00021_02.

Operation, maintenance and safety manual for Cyeco 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
- UV dosage meter mounted on UV assembly