



**POTVRDA O TIPNOM ODOBRENJU SUSTAVA ZA OBRADU
BALASTNIH VODA**
*TYPE APPROVAL CERTIFICATE OF BALLAST WATER MANAGEMENT
SYSTEM*

REPUBLIKA HRVATSKA

REPUBLIC OF CROATIA

Izdana u ime Vlade REPUBLIKE HRVATSKE od HRVATSKOG REGISTRA BRODOVA

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Potvrđuje se da je ovaj sustav za obradu balastnih voda pregledan i ispitan u skladu sa zahtjevima specifikacija sadržanih u Kodeksu za odobrenje sustava za obradu balastnih voda (Rezolucija MEPC.300(72)). Ova Potvrda vrijedi samo za ovaj sustav za obradu balastnih voda.

This is to certify that the ballast water management system listed below has been examined and tested in accordance with the requirements of the specifications contained in the Code for Approval of Ballast Water Management Systems (Resolution MEPC.300(72)). This certificate is valid only for the ballast water management system referred to below.

Naziv sustava za obradu balastnih voda: **BalClor BWMS**
Name of ballast water management system:

Sustav za obradu balastnih voda proizveden od: SunRui Marine Environment Engineering Co., Ltd.
Ballast water management system manufactured by: Zhuzhou Road 149-1
QINGDAO
P.R. CHINA

Oznaka tipa i modela, uključujući:
Under type and model designation and incorporating:

BalClor BWMS (veličina BC-150 do BC-8000); BalClor BWMS (veličina BC-150-Ex do BC-8000-Ex)
– sustav za obradu balastnih voda koji koristi filtraciju i ubrizgavanje aktivne tvari proizvedene elektrolizom za vrijeme balastiranja. Kod de-balastiranja: Neutralizacija

BalClor BWMS (model range BC-150 to BC-8000); BalClor BWMS (model range BC-150-Ex to BC-8000-Ex)
– ballast water management system using filtration and injection of active substance generated by electrolysis during ballast water uptake. Ballast water discharge: Neutralization

Vidi Tablicu 1 - Popis odobrenih BWMS
See Table 1 - List of certified BWMS

Prema nacrtu opreme/sklopnom nacrtu br.: <i>To equipment / assembly drawing No.:</i>	Flow diagram of BalClor BWMS, X1JKPIDX01QD, Rev.1.3	datum -
	Flow diagram of BalClor BWMS with Ex arrangement, X1JKPIDX02QD, Rev.1.3	<i>date</i>
	Assembly drawings of BalClor BWMS, X1JKADLX01QD, Rev.1.21
	Bill of materials for BalClor BWMS, XCJKBOMD01WJ, Rev.1.23
	Bill of materials for BalClor BWMS with Ex components, XCJKBOMD02WJ, Rev.1.33
	Electrical wiring diagram of BalClor BWMS, A1JKUSCG01TZ, Rev.2.0
	Electrical wiring diagram of BalClor BWMS with Ex installation, A1JKUSCG02TZ, Rev.2.0

Ostala oprema proizvedena od-:
Other equipment manufactured by-:

Filter

Proizvođač/Manufacturer: Filtersafe
Tip/Type: BS-serija/series
Kapacitet/Capacity: 50 do/to 4900 m³/h
Veličina mrežice/Mesh size: 50 μm
Proračunski tlak/Design pressure: 10 bar
Najveća radna temperatura/Maximum working temperature: 55°C

Filter

Proizvođač/*Manufacturer*: SunRui Luoyang
Tip/Type: SRF-serija/series
Kapacitet/*Capacity*: 100 do/to 3500 m³/h
Veličina mrežice/*Mesh size*: 50 µm
Proračunski tlak/*Design pressure*: 10 bar
Najveća radna temperatura/*Maximum working temperature*: 55°C

Filter

Proizvođač/*Manufacturer*: Boll & Kirch
Tip/Type: 6.18.3-serija/series
Kapacitet/*Capacity*: 320 do/to 4730 m³/h
Veličina mrežice/*Mesh size*: 50 µm
Proračunski tlak/*Design pressure*: 10 bar
Najveća radna temperatura/*Maximum working temperature*: 55°C

Jedinica za elektrolizu/*Electrolysis unit*

Proizvođač/*Manufacturer*: SunRui Marine Environment Engineering Co., Ltd.
Veličina/*Size*: EDU-150; EDU-300; EDU-500; EDU-1000; EDU-1500; EDU-2000; EDU-2500;
EDU-3000; EDU-3500; EDU-4000; EDU-5000; EDU-6000; EDU-7000; EDU-8000
Najveći potvrđeni protok/*Maximum certified flow*: 170 m³/h; do/to 8500 m³/h
Proračunski tlak/*Design pressure*: 10 bar

Prema nacrtu opreme/sklopnom nacrtu br.: —
To equipment / assembly drawing No.:

datum -
date

Nazivni kapacitet obrade: 170 - 8500 m³/h
Treatment rated capacity:

Ova Potvrda o tipnom odobrenju izdana je na osnovu odobrenja od norveških pomorskih vlasti, Potvrda br.: TAP00001BB, Rev.1.
This Type Approval Certificate is issued based on approval by Norwegian Maritime Authority, Certificate No.: TAP00001BB, Rev.1.

Kopija ove Potvrde o tipnom odobrenju mora se nalaziti na brodu opremljenom ovim sustavom za obradu balastnih voda, za pregled na brodu. Ako je Potvrda o tipnom odobrenju izdana na osnovu odobrenja od druge Uprave, potrebno je navesti tu Potvrdu o tipnom odobrenju.
A copy of this Type Approval Certificate shall be carried onboard a ship fitted with this ballast water management system, for inspection onboard the ship. If the Type Approval Certificate is issued based on approval by another Administration, reference to that Type Approval Certificate shall be made.

Tablica 1/ Table 1

Model	Nazivni kapacitet obrade <i>Treatment rated capacity (m³/h)</i>	Filter model <i>Filtersafe BS</i>	Filter model <i>SunRui Luoyang SRF</i>	Filter model <i>Boll & Kirch type 6.18.3</i>	Model jedinice za elektrolizu/ <i>Electrolysis unit model (ćelija x broj/ cell x number)</i>
BC-150	170	BS-025 BS-031 BS-050 BS-061 BS-061-T BS-070	SRF-100 SRF-200	Size 200	EDU-150 (E1 x 4)
BC-300	350	BS-061-ST BS-100/101 BS-100/101-T BS-101-ST	SRF-200 SRF-400	Size 200 Size 250	EDU-300 (E1 x 8)
BC-500	600	BS-150/151 BS-150/151-T BS-200/201 BS-151-ST BS-200/201-T	SRF-400 SRF-600	Size 250 Size 300	EDU-500 (E2 x 12)
BC-1000	1200	BS-201-ST BS-300 BS-300-T BS-300-ST BS-400 BS-400-T BS-400-ST	SRF-800 SRF-1200	Size 300 Size 400	EDU-1000 (E3 x 12)
BC-1500	1700	BS-603 BS-603-T	SRF-1600 SRF-2000	Size 500	EDU-1500 (E3 x 12)
BC-2000	2200	BS-603-T BS-804 BS-603-ST BS-804-T	SRF-2000 SRF-2500	Size 500 Size 600	EDU-2000 (E4 x 12)
BC-2500	2800	BS-804-T BS-1004 BS-804-ST	SRF-2500 SRF-3500	Size 700	EDU-2500 (E4 x 18)
BC-3000	3200	BS-1004-T BS-1204/1206 BS-1406	SRF-3500	Size 700	EDU-3000 (E4 x 18)
BC-3500	3800	BS-1406 BS-1204/1206-T BS-1406-T	SRF-3500 2 x SRF-2000	Size 700 Size 800	EDU-3500 (E5 x 24)
BC-4000	4300	BS-1204/1206-ST BS-1406-ST	2 x SRF-2000 2 x SRF-2500	Size 800 Size 900	EDU-4000 (E5 x 24)
BC-5000	5500	BS-1406-ST 2 x BS-1204/1206	2 x SRF-2500 3 x SRF-2000	Size 900 2 x Size 700	EDU-5000 (E5 x 32)
BC-6000	6300	2 x BS-1204/1206 2 x BS-1406	3 x SRF-2000 2 x SRF-3500	2 x Size 700	EDU-6000 (E5 x 40)
BC-7000	7300	2 x BS-1406 2 x BS-1204/1206-ST 2 x BS-1406-T	2 x SRF-3500 3 x SRF-2500	2 x Size 700 2 x Size 800	EDU-7000 (E5 x 40)
BC-8000	8500	2 x BS-1204/1206-T 2 x BS-1206-ST 2 x BS-1406-ST	3 x SRF-2500 3 x SRF-3500	2 x Size 800 2 x Size 900	EDU-8000 (E5 x 48)

Granični radni uvjeti su opisani u ovom dokumentu (temperatura/salinitet):
Limiting operating conditions imposed are described in this document (temperature/salinity):

Temperatura napojne vode za jedinicu za elektrolizu mora biti $\geq 5^{\circ}\text{C}$.
Temperature of the feed water to the electrolyser unit shall be $\geq 5^{\circ}\text{C}$.

Salinitet napojne vode za jedinicu za elektrolizu mora biti ≥ 15 PSU.
Salinity of the feed water to the electrolyser unit shall be ≥ 15 PSU.

TRO nivo za vrijeme balastiranja mora biti 7,5 mg/L.
TRO nivo za vrijeme balastiranja ne smije prelaziti 9 mg/L prosječno.
TRO nivo za vrijeme de-balastiranja mora biti $\leq 0,1$ mg/L.

TRO level during ballast water uptake shall be 7,5 mg/L.
TRO level during ballast water uptake shall not exceed an average of 9 mg/L.
TRO level at discharge shall be $\leq 0,1$ mg/L.

Ostala ograničenja uključuju sljedeće:
Other restrictions imposed include the following:

Temperatura i salinitet balastne vode nisu ograničenje za rad sustava za obradu balastnih voda.
Temperature and salinity of the ballast water are not a limiting condition for the ballast water management system.

Vrijeme zadržavanja/*Hold time*: najmanje/*minimum* 24 sata/*hours*

Ova oprema je projektirana za rad u sljedećim uvjetima:*
*This equipment has been designed for operation in the following conditions:**

Najveći radni tlak/*Maximum working pressure*: 10 bar
Temperatura okoline/*Ambient temperature*: 0°C do/to 55°C

Mjesto pečata
Official stamp

Potpis
Signed

Uprava
Administration of

Izdana
Issued this

Valjana do
Valid until this

.....			
Marinko Popović, dipl.ing.			
.....			
Republika Hrvatska			
.....			
Republic of Croatia			
4.	dana	4.	lipnja 2020.
4 th	day of	June	2020
4.	dana	4.	lipnja 2024.
4 th	day of	June	2024

* Unesi projektna ograničenja sustava
Insert system design limitations