



Certificate No. 02-004673/026426

## 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:

**ECOmar SX**  
**sewage treatment plant**  
**(model range 20 SX to 545 SX)**  
Hydraulic loading: 3931-84748 l/day

MANUFACTURER:

**TECNICOMAR S.p.A.**  
Contrada Berbaro 145/D  
**91025 MARSALA (TP); ITALY**

THE PRODUCT MEETS FOLLOWING RULES/REGULATIONS:

CRS Rules for technical supervision of sea-going ships, Part 22 – Pollution prevention  
Resolution MEPC.227(64) – Guidelines on implementation of effluent standards and performance tests  
for sewage treatment plants

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

APPROVAL IS VALID UNTIL: **2028-12-09**

Place and date: Split, 2024-12-09

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:**

Sewage treatment plant ECOMar SX treats the sewage using the following processes:

- transfer of a fixed amount of sewage from a holding tank to a treatment tank,
- chemical treatment and addition of a flocculant,
- maceration and return to treatment tank,
- filtration and UV treatment prior to overboard discharge,
- washing of the tank and discharge of the waste (sewage sludge).

Periodically, a special washing cycle is performed using water to backflush the filter and fill the treatment tank.

The special washing cycle begins with an empty treatment tank and uses the following processes:

- backflush the filter with water and fill the treatment tank,
- chemical treatment and addition of a flocculant,
- maceration and return to treatment tank,
- filtration and UV treatment prior to overboard discharge,
- washing of the tank and discharge of the waste (sewage sludge).

The filter may also be backwashed manually using water (e.g. during commissioning, after changing the filter, or for maintenance) and the waste water may be discharged overboard.

The chemical treatment and flocculation processes uses hydrogen peroxide and ECOFLOC (Tecnicomar brand product).

<b>Model</b>	<b>Hydraulic loading (l/ day)</b>	<b>Organic loading, BOD<sub>5</sub> without nitrification (kg/ day)</b>
ECOMar 20 SX	3931	1,49
ECOMar 32 SX	5847	2,21
ECOMar 45 SX	7453	2,82
ECOMar 70 SX	10985	4,15
ECOMar 145 SX	19196	7,26
ECOMar 230 SX	36172	14,84
ECOMar 340 SX	53989	22,14
ECOMar 545 SX	84748	34,75

**APPLICATION / LIMITATIONS:**

Sewage treatment plant ECOMar SX may be installed on ships which are required to comply with the provisions of MARPOL Annex IV.

Sewage treatment plant ECOMar SX complies with the provisions of MARPOL Annex IV, Regulation 9.1.1 and Resolution MEPC.227(64) with the exception of Section 4.2.

Sewage treatment plant ECOMar SX shall not be used on passenger ships in Special areas.

Environmental temperature: 0 to 55°C

Environmental humidity: max. 95%

Sewage treatment plant ECOMar SX shall not be installed in a hazardous area.

**TYPE APPROVAL DOCUMENTATION:**

Description	Drawing no.	Rev.
System drawings (P&ID, flow diagram)	110221-F02R2 120221-F02R2 110221-F01R2 120221-F01R2	2 (28.04.2021.) 2 (28.04.2021.) 2 (28.04.2021.) 2 (28.04.2021.)
Arrangement drawings/ part list	101220-D01R2 141220-D01R2 141220-D02R2 141220-D03R2 141220-D04R2 141220-D05R2 161220-D01R2 161220-D02R2 161220-D03R2 161220-D04R2 171220-D01R2 EQ.Lis-20.145-ECOSX-R0 EQ.Lis-230.545-ECOSX-R0	31.03.2021. 31.03.2021. 31.03.2021. 31.03.2021. 31.03.2021. 31.03.2021. 31.03.2021. 31.03.2021. 31.03.2021. 31.03.2021. 31.03.2021. 00 (18.02.2021.) 00 (18.02.2021.)
Electrical/ wiring drawings	231120-E01R1 231120-E02R1 231120-E03R1 231120-E04R1 231120-E11R1 231120-E12R1 231120-E13R1	23.11.2020. 23.11.2020. 23.11.2020. 23.11.2020. 23.11.2020. 23.11.2020. 23.11.2020.
Performance test report Environmental testing report	OTR-ECO-45-SX-R0 OCTR-ECO-230-SX-R0 18B292A	0 (22.02.2021.) 0 (22.02.2021.) 30.11.2018.
Operation, maintenance and safety manual	MAN-ECOSX-20-145-R0 MAN-ECOSX-230-545-R0	00 (30.03.2021.) 00 (30.03.2021.)

**ELECTRICAL / CONTROL COMPONENTS:**

The units are controlled through a main control box containing a Printed Circuit Board (PCB). The PCB is approved with the following control firmware: Tecnicomar\_TMM\_ECOMar V7.6-24.11.20

**MARKING OF PRODUCT:**

- Manufacturer's name or trade mark
- Type and model designation
- Serial number and date of manufacture

**CONDITIONS FOR CERTIFICATION:**

This certificate is issued on the basis of appraisal of the documentation listed in EC-type examination certificate (Module B) No. MEDB0000720 issued by DNV Notified Body 0575.

Operation and maintenance manual for ECOMar SX sewage treatment plant is to be carried onboard a vessel fitted with this sewage water treatment system.