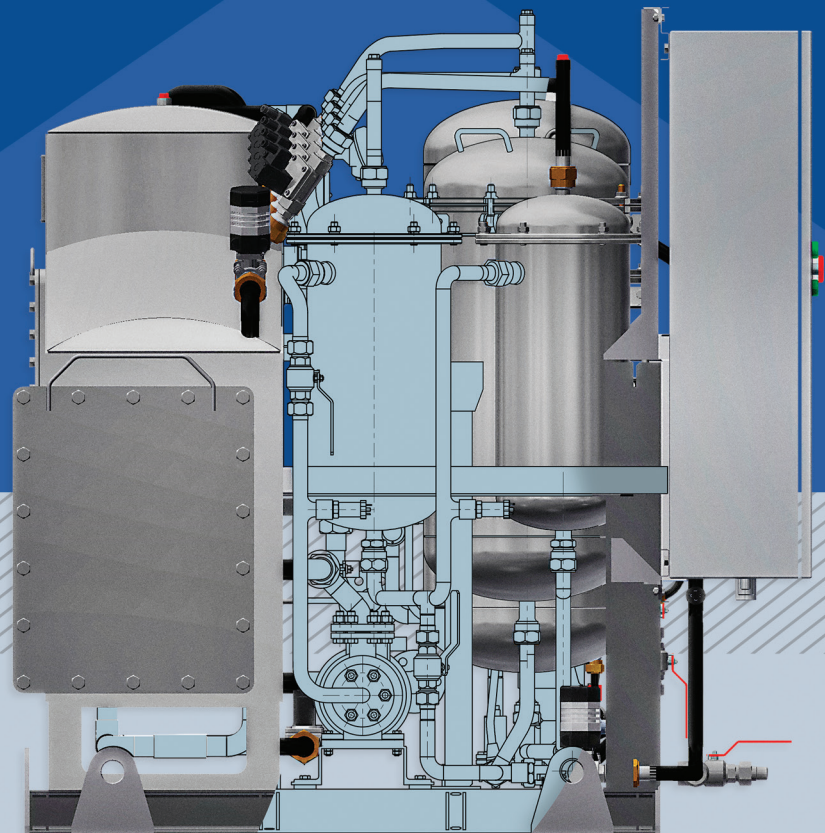


Water treatment and preparation systems

3.0

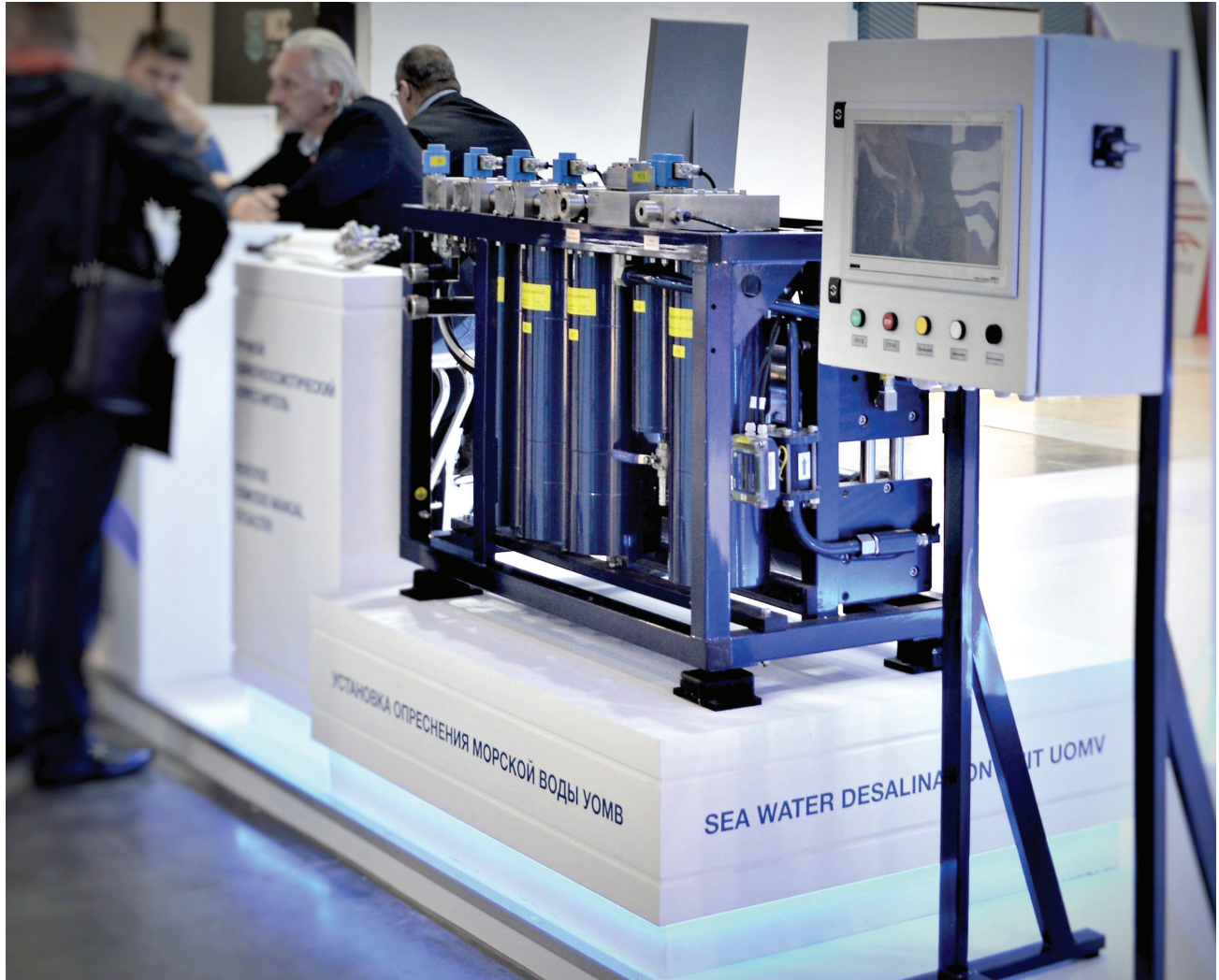
- Fresh water desalination units
- Units to treat fresh water for domestic use
- Oily water treatment units УОНСВ type
- Oily water separators СНЛВ type
- Waste water treatment units УОСВ type
- Ballast water treatment systems УОБВ type
- Sea water desalination unit УОМВ type



Water treatment and preparation systems

3.0

Water treatment and preparation systems



At the time being, waters of the World Ocean have become one of the busiest traffic arteries of the modern civilization. Dozens of thousands ships leave and return to their ports every day, are out at sea to implement different tasks: fishery, cargo carriage, patrolling, etc.

Each of these ships is a temporary accommodation for its crew. Thus, it is crucial to ensure the solid comfort for the crew so it can be fully focused on

the task at hand. Modern ships are equipped with a whole range of support systems, securing the full control of any aspect of its life.

Due to the steadily growing number of ships, the world community increasingly and tightly controls the impact degree on flora and fauna of the World Ocean.

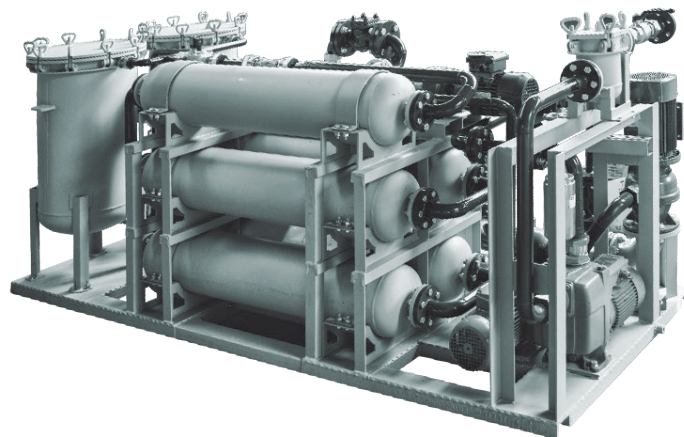
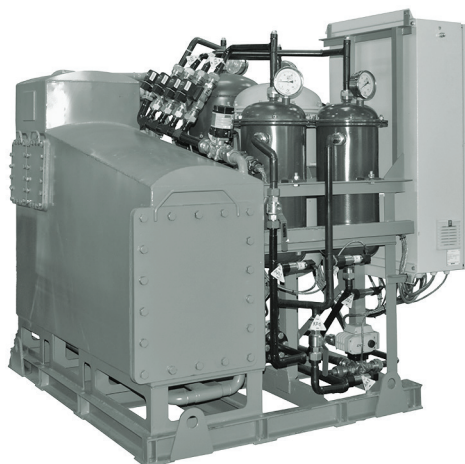
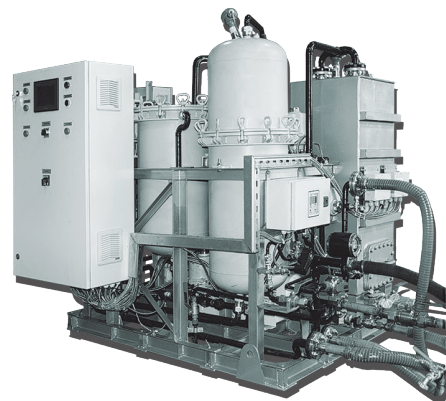
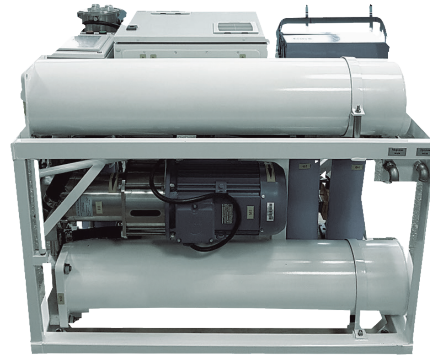
More stringent demands in respect for the environment are placed on new ships.

Since 2015 Vineta Ltd. has been working to create the first components of such package of systems: waste and oily water treatment units. One of the principal goals was to create a product sample, meeting all the modern requirements for environmental friendliness and safety.

The project was created within the framework of the Programme of the Import Substitution in the machine-building of the RF Ministry of Industry and Trade at the expense of Vineta Ltd.

Prototype tests took place in February – March, 2016, under the supervision of the Russian Register of Shipping and the RF Quality Control Agency of the Ministry of Defence. Units got international certificates as per MEPC.107(49) form – oily bilge water; MEPC.227(64) – domestic wastewater. Upon successful tests, units were mounted on Seagoing Tug Sergey Bulk – Project 23470, newly built under drawings of Baltsudoproekt, Central Design Bureau.

At the time being, Vineta Ltd. is the only Russian enterprise able to provide ships and vessels, newly designed or placed under repair, with a full range of the equipment of Russian design, production and IMO approval under MEPC forms to prevent the discharge into the World Ocean (MARPOL 73/78).



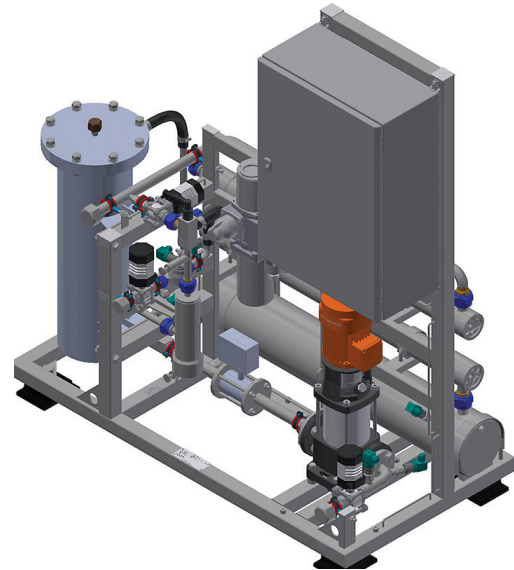
Fresh water desalination units

3.0

Water treatment and preparation systems

Function and technical data

- The unit is intended to desalinate fresh water.



Technical data, main parameters and characteristics

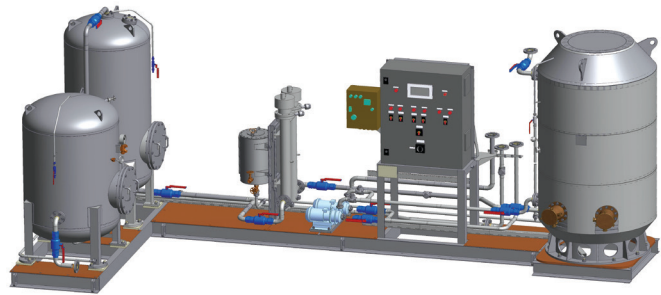
Name	Value
Medium	fresh water under Sanitary Rules and Regulations 2.1.3684 and 1.2.3685 with initial salt content max 500 mg/l
Temperature, °C	from +5 up to +32
Fresh water flow rate, m ³ /day	max 13,0
WP, MPa	0.6 in fresh water unit
Capacity, m ³ /h	1,0
Desalinated water quality:	salt content - max 5 mg/l; water hardness (under GOST 31865-2012) - max 4 dH
Required extreme inlet pressure, MPa	from 0,2 up to 0,8
Control board/location	yes/in-frame
Power, kW	5,0
Dry weight, kg	300
LxWxH	1380x706x1600
Maintenance area (availability)	yes

Other technical requirement under the specification

Units to treat fresh water for domestic use

Function and technical data

- The unit is intended to onboard treat domestic fresh water and to supply it to the consumers according to the applicable sanitary rules
- The unit secures the storage, distribution, chlorination, decontamination and heating of fresh water.
- The unit incorporates MB-50 mineralizer for the water enrichment
- The control and monitoring of parameters are carried out using the control board, located on the unit foundation



3.0

Technical data, main parameters and characteristics

Name	Parameter
Medium	Fresh water for domestic use
Temperature, °C	up to +30
WP, MPa	0,4
Capacity, m ³ /h	cold water – 8,5; hot water – 1,0
Control board/location	yes/in-frame
Power, kW	42,0
Dry weight, kg	2110
LxWxH	5790x2500x2400
Maintenance area (availability)	yes

Oily water treatment units YOHCB type

3.0

Water treatment and preparation systems

Function and technical data

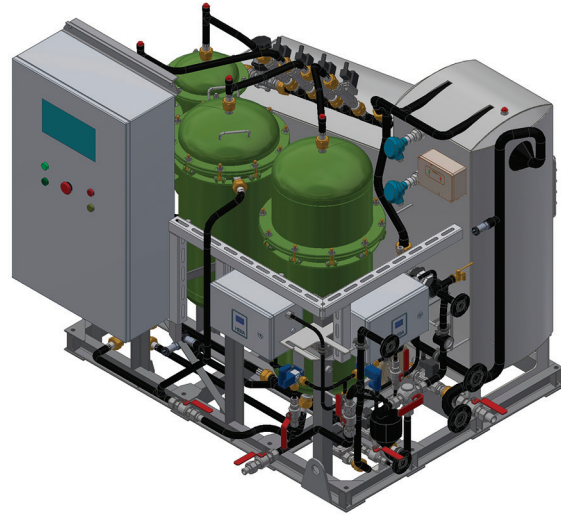
- The unit is designed to treat oily (bilge) water.

The unit meets the requirements of:

- Resolution IMO MEPC.107(49)
- Rules to prevent the pollution from Ships operated in Sea Areas and Inner Waterways of the Russian Federation (reference document No. 2-020101-074)
- Certified by the Russian Maritime Register of Shipping

Advantages

- Continuous automatic operation;
- No flocculants and other additives needed to remove oil products;
- Remote control;
- The project was implemented within the framework of import substitution program;
- Approval of the Military Representative Office of Ministry of Defense of the RF



Technical data, main parameters and characteristics

Name	Parameter
Index	YOHCB 1,0
Medium	oily (bilge) water (the composition of the inlet medium to be purified is under the specification)
Temperature, °C	upon the content of heavy oil products (black product), with its density max 980 kg/m ³ - min +38; upon the content of light oil products (diesel fuel), with its density being max 830 kg/m ³ - min +5
WP, MPa	max 0,4
Capacity, m ³ /h	1
Control board/location	yes/in-frame
Dry weight, kg	1000
LxWxH	1730x1505x1560
Maintenance area (availability)	yes
Power, kW	1,5

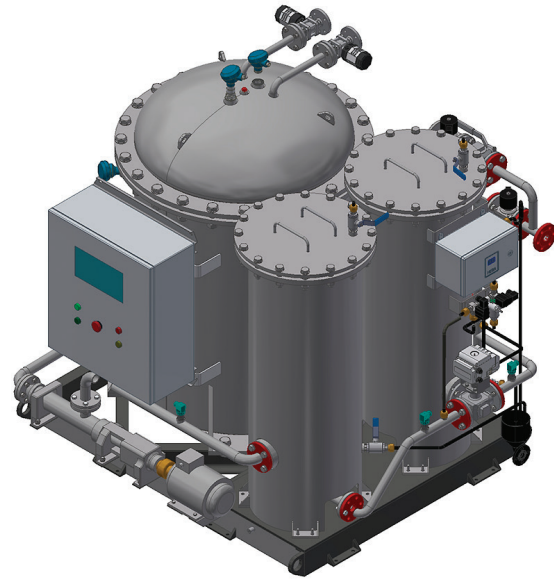
Oily water separators СНЛВ type

Function and technical data

- Oily water separator is intended to purify ship bilge water from oil products under requirements of MEPC.107 (49).

It is a four-stage purification system, consisting of the following equipment installed and mounted in series on a single frame:

- preliminary treatment block,
 - intermediate filter,
 - pump,
 - oil products content signaling device NEVA-412,
 - control board mounted on a single frame.
- Approval of the Military Representative Office of Ministry of Defense of the RF



3.0

Technical data, main parameters and characteristics

Name	Parameter	
Index	СНЛВ 2,5	СНЛВ 5,0
Medium	oily (bilge) water (the composition of the inlet medium to be purified is under the specification)	
Temperature, °C	upon the content of heavy oil products (black product), with its density max 980 kg/m ³ - min +38; upon the content of light oil products (diesel fuel), with its density being max 830 kg/m ³ - min +5	
WP, MPa	max 0,5	max 0,4
Capacity, m ³ /h	2,5	5,0
Control board/location	yes/in-frame	
Dry weight, kg	1200	1900
LxWxH	1300/1200/1500	1500/ 1815/ 1720
Maintenance area (availability)	yes	
Power, kW	10,0	

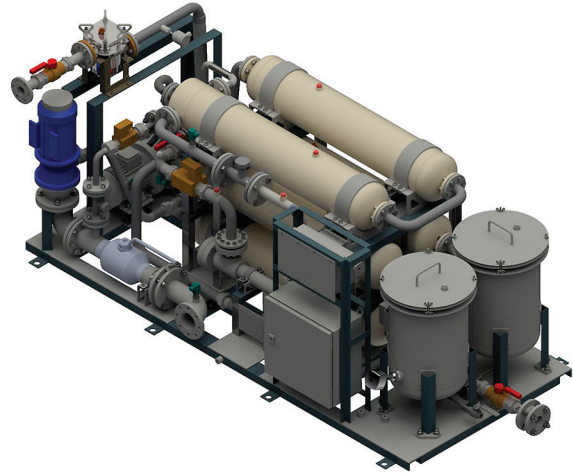
Waste water treatment units YOCB type

3.0

Water treatment and preparation systems

Function and technical data

- The unit is designed to disinfect bilge wastewater, galley room water and sea water in compliance with IMO requirements.
 - The unit secures continuous automatic operation.
 - No chemical agents needed.
 - Complies with the requirements of MEPC 227 (64).



Technical data, main parameters and characteristics

Name	Value	
Index	YOCB-14	YOCB-50
Medium	Black- and greywater, sea water	
Capacity, m³/day, min	14.6	50
Power, kW, max	7.5	8.5
Sea water flow rate, m³/h, max	10±0.5	
Min seawater salinity necessary for operation, g/l	10	

Ballast water treatment systems УОБВ type

Function and technical data

- The system is intended to purify the ballast water from disease-causing organisms, conveyed by ballast water.
 - Purification method is oxidation of ballast with active substances
 - It complies with the rules D2, D3 of International Convention for the Control and Management of Ships' Ballast Water and Sediments (2004).
 - It is equipped with the control board to monitor and record operating conditions of last 2 years



3.0

Technical data, main parameters and characteristics

Name	Value				
Capacity, m ³ /h	160	250	500	1000	3000
Hydraulic resistance, MPa (kgf/cm ²), max	0,05 (0,5)				
Filtration degree, mcm	50				
Max WP, MPa (kgf/cm ²)	0,6 (6,0)				
Power: - Frequency, Hz - Voltage, V	50 380				

Sea water desalination unit YOMB type

3.0

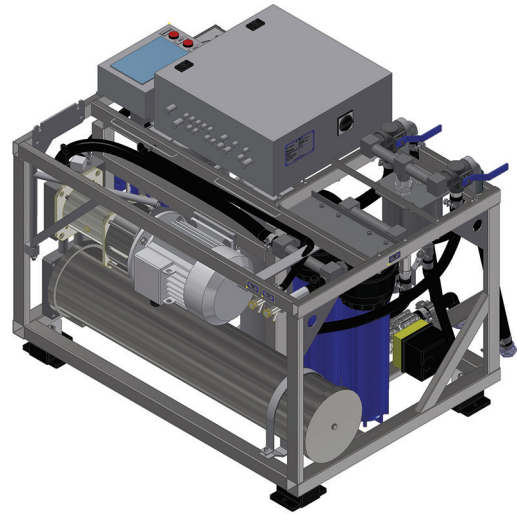
Water treatment and preparation systems

Function and technical data

- The unit is intended to prepare portable quality water out of sea water.

Advantages:

- Continuous automatic operation.
- Remote control.
- The climatic version is OM4 as per ГОСТ 15150 to operate under ambient temperature up to + 50°C and relative humidity of 98%.
- Desalinated water complies with the requirements Sanitary Rules and Norms 2.1.3684-21.



Technical data, main parameters and characteristics

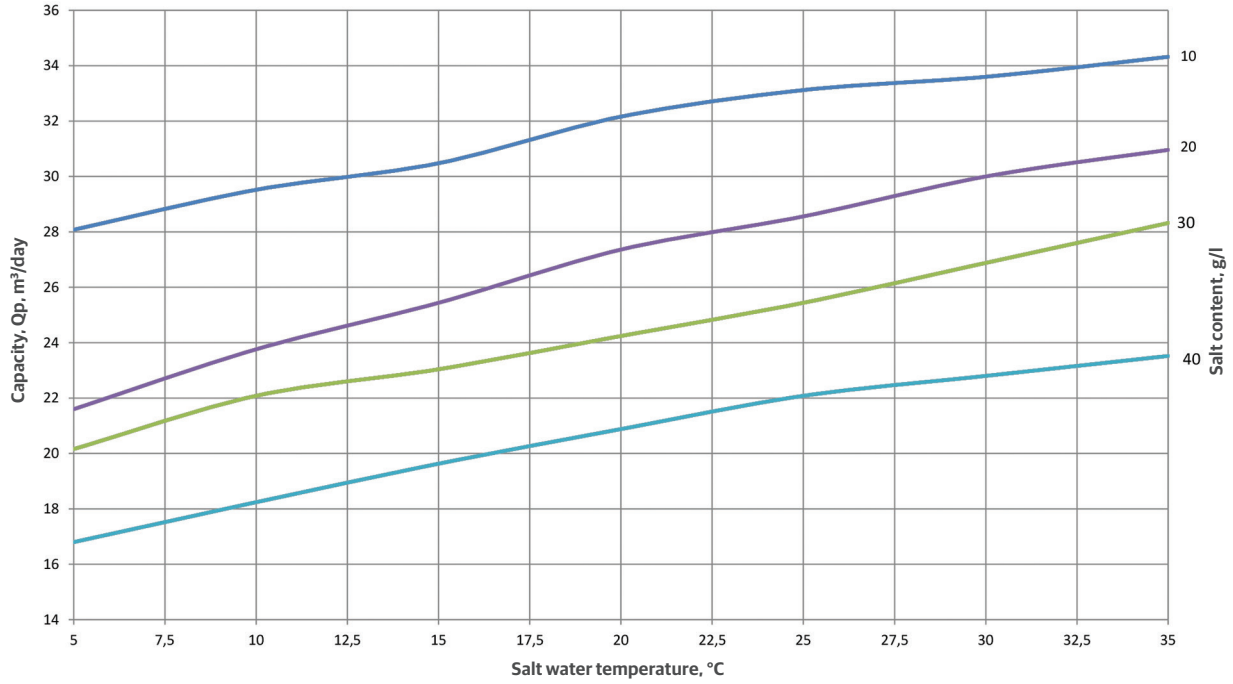
Наименование	YOMB-005.10.01	YOMB-015.10.01	YOMB-030.10.01
Fresh water capacity, m ³ /day	5 ¹⁾	15 ¹⁾	30 ²⁾
Medium	sea water		
Temperature, °C	-2 ...+ 32		
Flow rate, m ³ /h	2,7	3,5	10,0
WP in the desalination unit, MPa	6,5		
Max sea water salt content, g/l	42		
Required inlet excessive pressure, MPa	from 0,25 up to 0,6		from 0,25 up to 0,5
Control board/location	yes/separately	yes/in-frame	yes/separately
Power, kW	4,0	4,3	12,3
Dry weight, kg	300	460	734
LxWxH	1128/ 676/ 774	1200/ 864/ 1021	1300/ 888/ 800
Maintenance area (availability)	yes		

¹⁾ Standard terms for the capacity calculation:

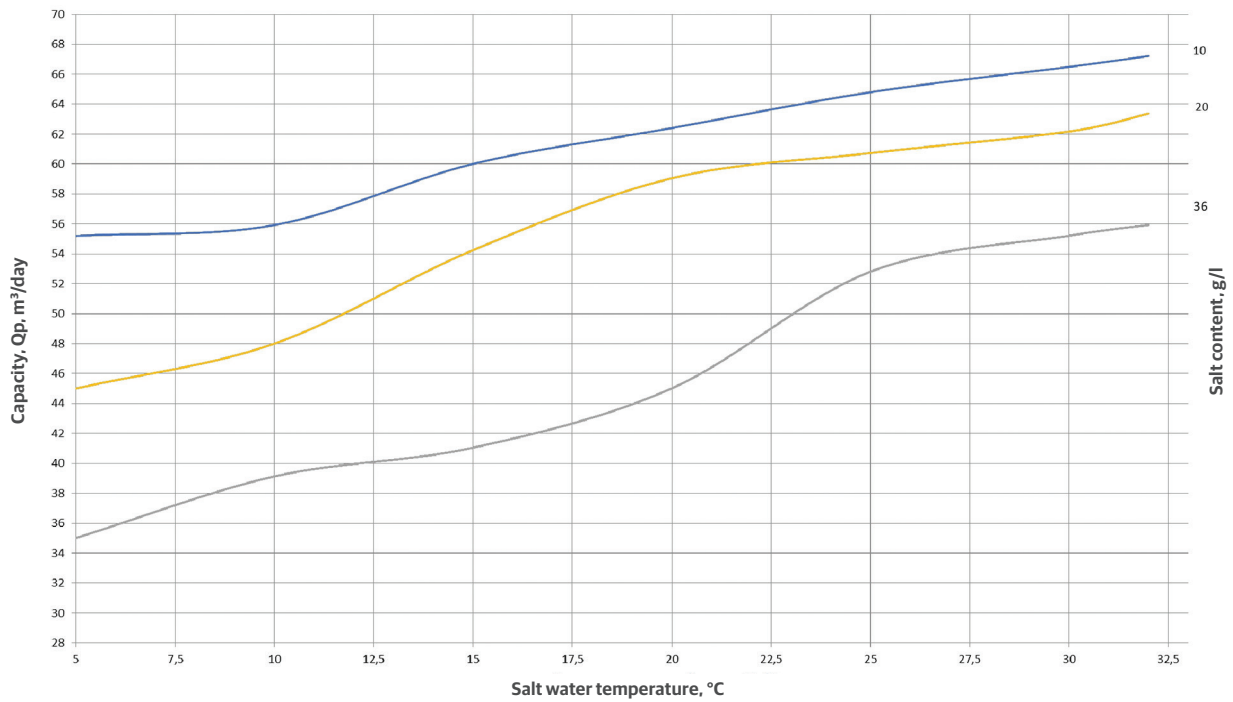
- sea water salt content - 36 g/l;
- sea water temperature - +5 °C;

The capacity of units under conditions other than standard ones is shown in diagrams (see Pic. 1 and 2).

Other technical requirement under the specification.



Pic 1. Dependence of YOMB-015.10.01 capacity on the sea water temperature and salt content



Pic 2. Dependence of YOMB-030.10.01 capacity on the sea water temperature and salt content

3.0



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