

SCIENCO/FAST®
a subsidiary of BioMicrobics, Inc.



Bio Barrier®
Marine MBR®
MEMBRANE BIOREACTOR

Remove 99.9% of
contaminants from wastewater



Certified to USCG,
IMO MARPOL & EPA Standards



Keep vessel in compliance
through changing regulations

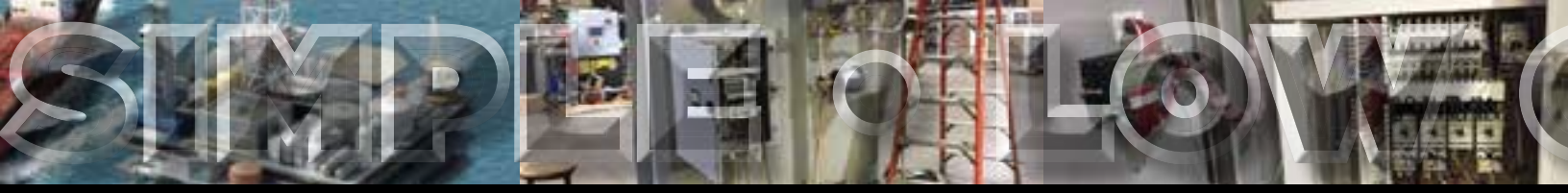


AWARD-WINNING
INTEGRATED WATER
TECHNOLOGY

ADVANCED MARINE WASTEWATER TREATMENT
WORKBOAT • LEISURE • OFFSHORE

BETTER WATER. BETTER WORLD.®

www.SciencoFAST.com



BioBarrier® MarineMBR® MEMBRANE BIOREACTOR

Certified by the USCG 33CFR159 Standards and to International Maritime Organization (IMO) resolution MEPC.227(64), the BioBarrier® MarineMBR® joins the MarineFAST® product line of Scienco/FAST to provide effective wastewater treatment systems for Naval architects & Engineers, maritime owners & operators, chief engineers, and shipyard operation and maintenance crews.

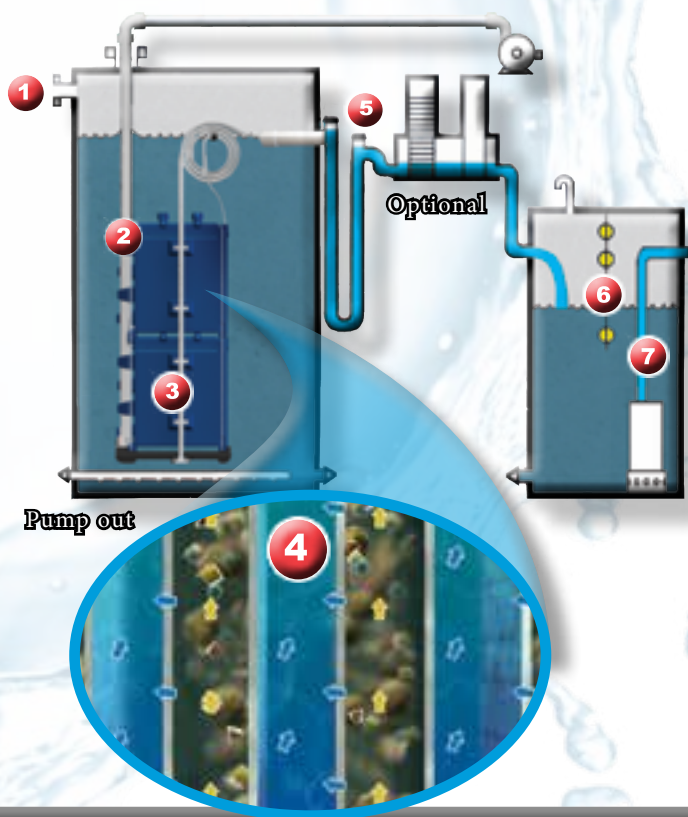
With its long performance history of providing the affordable, adaptable, and proven FAST® Systems, Scienco/FAST offers a higher treatment option with MBR (Membrane BioReactor) technology to remove 99.9% of the pollutants and contaminants found in sewage sources on the vessel. Capable of treating with freshwater or saltwater (input <6.5% salinity) flushing or combination of the two, the BioBarrier MarineMBR uses an advanced process that acts as an impenetrable physical barrier for nearly every common pollutant found in wastewater.



*Ideal for total blackwater/
greywater sources and water reuse
onboard boats, ships, workboats,
yachts, ferries, and more!*

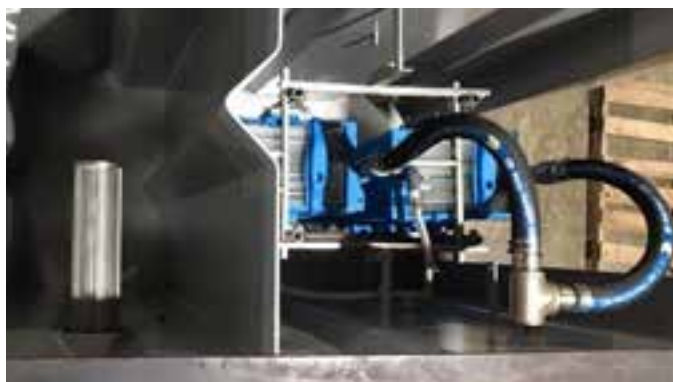
HOW IT WORKS!

- 1** Sewage enters the system from head(s) &/or galley(s).
- 2** A quiet, compact blower provides air to promote aerobic microorganisms that digest organic material.
- 3** Immersed in the treatment tank, the BioBarrier® module(s) and air grid(s) create an upward flow between membrane plates providing vigorous scouring action.
- 4** Water passes through the membranes for microfiltration and ultrafiltration processes.
- 5** From the center line spillover pipe, treated effluent passes through to OPTIONAL disinfection system: Chlorine tablet, liquid chlor/dechlor, HOCl, or PAA.
- 6** Sized for peak flow periods, the Float Switches (shown in yellow) gauge water levels for on/off operation.
- 7** A submerged effluent pump in the wet well transfers the treated effluent to discharge out of the tank.



COST • ROBUST

Please refer to Sewage Service Factors table for determining proper crew size of treatment and e-mail solutions@sciencofast.com for further assistance.



The BioBarrier® MarineMBR™ Type II Marine Sanitation Device (SEWAGE POLLUTION PREVENTION EQUIPMENT) - certified for the next 5 years and with IMO resolution MEPC.227(64) to meet the operational requirements referred to in regulation 9 of Annex IV of the International Convention for the Prevention of Pollution from Ships (MARPOL).

- **Inspected Vessels:** In addition to the MSD requirements in 33 CFR Part 159, inspected vessels must also comply with the marine engineering regulations in 46 CFR Subchapter F and the marine electrical regulations in 46 CFR Subchapter J.
- **International Voyages:** U.S. vessels on international voyages may obtain a U.S. Coast Guard Statement of Voluntary Compliance to demonstrate compliance with international sewage regulations contained in Annex IV to MARPOL 73/78.

CERTIFICATIONS

Other certifications received for the BioBarrier® MBR technology is the NSF/ANSI (National Sanitation Foundation International) Standards 40, class 1; 245 for Nitrogen Reduction; 350 for Water Reuse; and EN12566-3 (European standard for onsite sewage Treatment plants for up to 50 people).

* SEWAGE SERVICE FACTORS

Type of waste	Person
blackwater (bw)	1
laundry - greywater (gw)	0.36
Personal washwater (gw)	0.32
dishwashing (gw)	0.8
total bw & gw above	2.48
(+) ground food waste	1.06
total of all domestic waste	3.54

Conventional or Vacuum Toilets Guide @3GPCD

MODEL SIZES	HYDRAULIC	TANK
MMBR 1.0	233-700 GPD (882-2650 LPD)	1
MMBR 2.0	467-1400 GPD (1768-5299 LPD)	1
MMBR 3.0	933-2800 GPD (3.5-10.6 m³/D)	1
MMBR 4.0	1400-4200 GPD (5.3-15.9 m³/D)	1
MMBR 5.0	2800-8400 GPD (10.6-31.8 m³/D)	2
MMBR 6.0	4200-12600 GPD (15.9-47.7 m³/D)	3
MMBR 7.0	5600-16800 GPD (21.2-63.6 m³/D)	4

CONVENTIONAL BLACKWATER ONLY @ 21 GPCD

MODEL SIZES	HYDRAULIC	TANK
MMBR 1.0	33 GPD (125 LPD)	1
MMBR 2.0	67 GPD (254 LPD)	1
MMBR 3.0	133 GPD (503 LPD)	1
MMBR 4.0	200 GPD (757 LPD)	1
MMBR 5.0	400 GPD (1,514 LPD)	2
MMBR 6.0	600 GPD (2,271 LPD)	3
MMBR 7.0	800 GPD (3,028 LPD)	4

VACUUM TOILETS ALL SEWAGE @ 3 - 44 GPCD

MODEL SIZES	HYDRAULIC	TANK
MMBR 1.0	16-19 GPD (61-72 LPD)	1
MMBR 2.0	32-39 GPD (121-295 LPD)	1
MMBR 3.0	64-78 GPD (242-72 LPD)	1
MMBR 4.0	95-117 GPD (360-443 LPD)	1
MMBR 5.0	191-233 GPD (723-882 LPD)	2
MMBR 6.0	286-350 GPD (1,083-1,325 LPD)	3
MMBR 7.0	382-467 GPD (1,446-17,68 LPD)	4

Notes:

1. Data shown as guidance for standalone unit(s) with no pretreatment.
2. With suitable primary separator:
 - a) Increase organic limits by 1/3.
 - b) No change in hydraulic limits.
 - c) Consult factory for details.
3. Multiple units to be connected in parallel.
4. Capacities shown for blackwater only for live onboard people.
5. For people working, but not living onboard, double capacities.



With over 65 years of history unlike any other, the origins of SCIENCO® & FAST® can be traced back to the 1940's in St. Louis, MO for water and salt management systems. In 1985, Scienco/FAST combined to produce internationally recognizable top-quality water, wastewater,

and maintenance products focused on marine, commercial food and beverage, and agricultural market treatments with top-notch field services. SCIENCO®'s current commercial product lines combine proven performance with long-term reliability and many low-cost options.

MarineFAST
SEWAGE TREATMENT SYSTEM

Bio Barrier.
MarineMBR
MEMBRANE BIOREACTOR

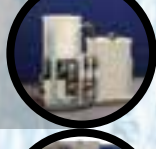
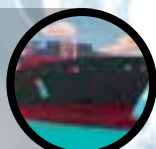
PORTA/FAST
COMPLETE PORTABLE/PERMANENT RESTROOM

SCIENCO InTank BWTS
Ballast Water Treatment System

SCIENCO SCICHLOR
WITH SCICELL® TECHNOLOGY

SCIENCO SCIBRINE
WITH LEVEYROL® CONTROLLER

SCIENCO ANOLYTE



BIO MICROBICS

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