victor marine

Sewage Treatment Plants

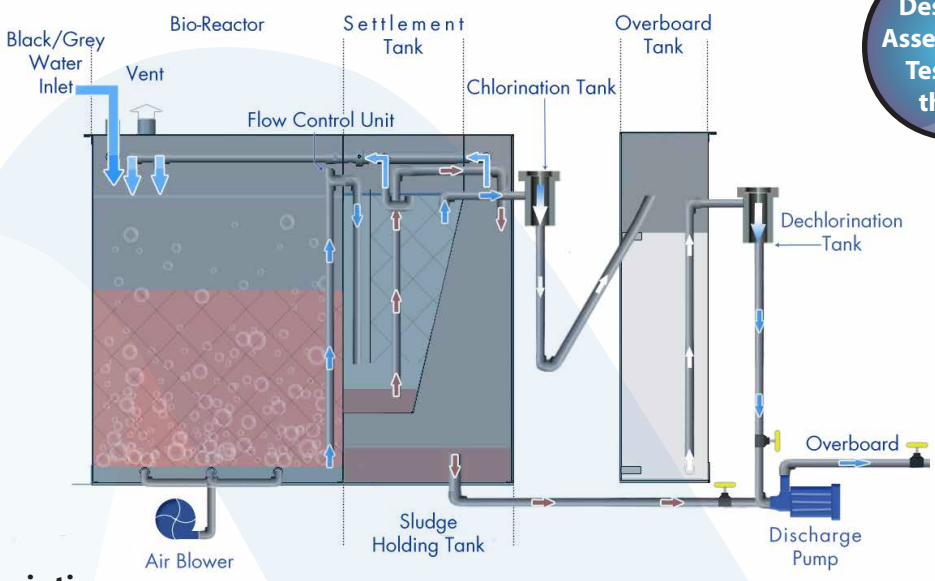
globally focused on cleaner solutions

Sewage Treatment Plants

Victor Marine's FBBR Series (Fixed Bed Biofilm Reactor) Biological Sewage Treatment Plant has been developed using the extremely well proven and compact fixed biofilm technology. The system has been approved to the latest IMO standard MEPC 227(64) (excluding section 4.2) and MEPC 159(55) and also certified by BV to EC MED Mod B+D. It is a three-stage sewage treatment system which can process from a gravity or vacuum feed. Supplied with the latest touch-screen HMI display and PLC, the plant can be easily monitored and controlled making the system very operator friendly.

Designed, Assembled & Tested in the UK

Process Diagram



Process Description

In the first stage, macerated sewage is fed to the Bioreactor, an aerobic biological system, using a fixed structured inorganic media bed with very high specific surface area to allow biofilm growth. This 'fixed bed' system maximises the biomass volume, increasing the efficiency of the bioreactor. It is also designed to direct the inflow sewage through an extended retention pattern to ensure maximum treatment and no bypass. A low pressure aeration system provides the bioreactor with a constant and uniform supply of oxygen to the biomass whilst preventing odours and hazardous gases from forming.

The scoured biomass passes into the second stage via a Flow Control Unit (FCU) into the Settlement Tank. The FCU controls and stabilises the system during peak and low flows. The advanced settlement tank employs tube settlers and skimmers which magnify the settlement effect and also prevents disturbances due to the motion of the ship. Due to the increased efficiency, the settlement tank is smaller than conventional settlers whilst producing a clearer effluent and better results than the required IMO standard.

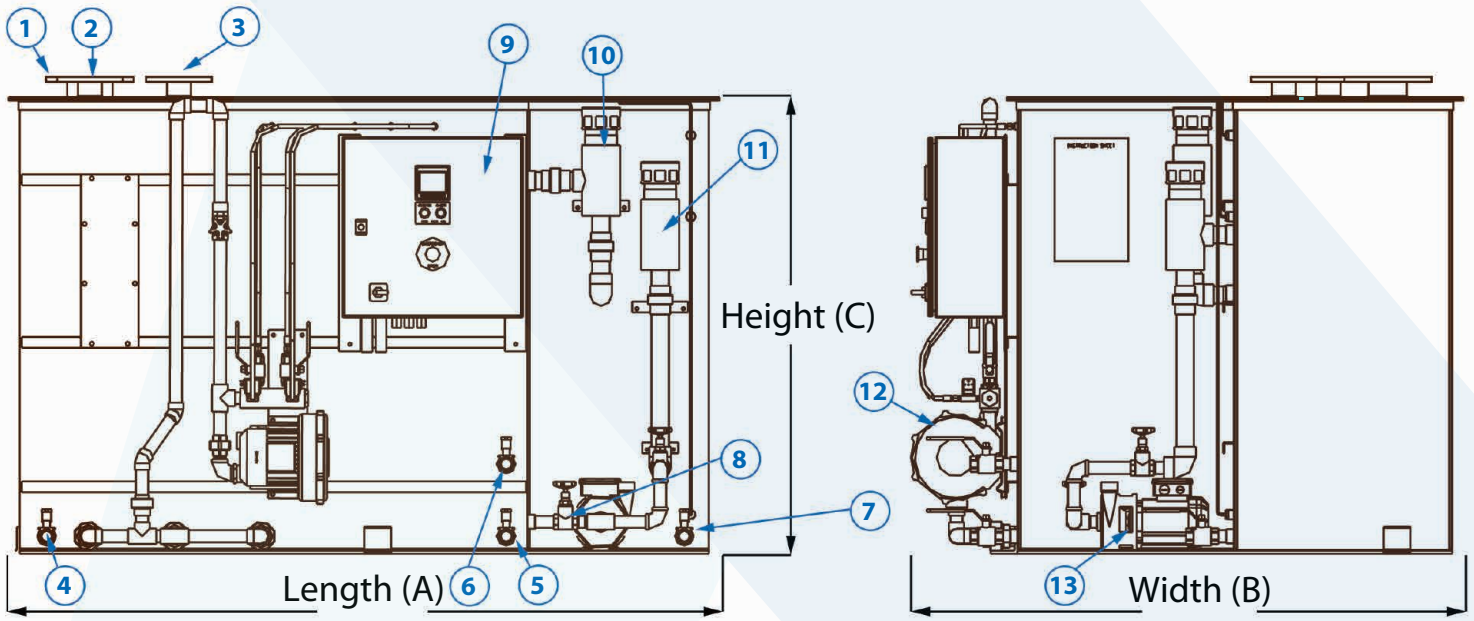
Prior to overboard discharge, the effluent water is treated in the third stage, the Chlorination Unit. This is a tablet dispensing unit which is both simple and easy to use, saving the engineer time when operating. Finally, during discharge overboard, the effluent is pumped into a dechlorination unit which removes any excess chlorine, as per IMO requirements.

	IMO MEPC 227(64) Discharge Limits	FBBR Series Test Results
Thermotolerant Coliform	< 100/100 ml	1.75 coliforms/100ml
Total Suspended Solids (TSS)	< 35 Qi/Qe mg/l	11.46 mg/l
Biological Oxygen Demand (BOD/day)	< 25 Qi/Qe mg/l	2.99 mg/l
Chemical Oxygen Demand (COD)	< 125 Qi/Qe mg/l	36.53 mg/l
pH	between 6 and 8.5	
Free Chlorine	< 0.5 mg/l	0.09 mg/l

FBBR Series

	FBBR 15	FBBR 30	FBBR 50
Biological Load (kg BOD/day)	1.05	2.10	3.50
Hydraulic Load (m^3/Day)	3.00	6.00	10.00
Recommended Number of Persons[1]	15	30	50
Dimensions (mm)			
Length (mm) (A)	1972	2272	2572
Width (mm) (B)	1532	1832	2162
Height (mm) (C)	1264	1514	1844
Weight (kg)			
Dry	800	1000	1500
Wet	2600	4000	6600

1. The system capactity (number of persons) is higher when using a vacuum system. Actual capacities depend on the organic and hydraulic load.



1. Black Waste Water Connection
2. Grey Waste Water Connection
3. Vent Connection
4. Biozone Drain Connection
5. Sludge Tank Drain Connection
6. Settlement Tank Drain Connection
7. Overboard Tank Drain Connection
8. Overboard Tank Discharge Connection
9. Control Panel
10. Chlorination Unit
11. De-Chlorination Unit
12. Air Blower
13. Discharge Pump

Sewage Treatment Plant Ancillaries

Options

Spares

All equipment is manufactured to the highest quality. Sewage Treatment Plant spares are available worldwide and ex. stock. Recommended on-board spares include air filters, chlorine & dechlorine tablets, solenoids, gaskets and tank level switch.

Stand-by Air Blower

The side channel air blower supplies air to the diffuser tubes in the bio zone. It has the added benefits of low noise operation, small size and a virtually maintenance-free design.

Grease Trap

To be fitted in the galley for removal of fats, oils and greases (FOGs). Galley water must first pass through a Grease Trap before entering any wastewater tanks as FOGs can have an adverse effect on the pipework and sewage treatment plant.

Victor Marine's in-house engineering and testing facilities can advise customers on the optimum solution for their vessels. Sewage Treatment Plants can be supplied with a range of certification and process options. Victor Marine maintains a worldwide network of agents who can provide customers with a comprehensive after-sales service, for example, installation, commissioning, technical support, servicing and spares.

VM/STP/OCT19

Victor Marine Ltd
Unit 7, Waterloo Court
Markham Vale
Markham Lane
Chesterfield, UK
S44 5HN

This brochure is made from 100% recycled paper

Tel +44 (0) 1708 899 780
Fax +44 (0) 1708 890 599
Web www.victormarine.com
Email info@victormarine.com
sales@victormarine.com

Agent's Details

ISO 9001:2008
BUREAU VERITAS
Certification