

JETS™ VACUUM SANITARY SYSTEMS  
- ECOMOTIVE™ SEWAGE TREATMENT PLANT -

ALWAYS  
TO BE TRUSTED



 **JETS™**  
Sanitary Systems  
- made to please

# ECOMOTIVE™ SEWAGE TREATMENT PLANT: MEETING TODAY'S AND FUTURE IMO REQUIREMENTS BY A GOOD MARGIN

**Meets the highest environmental requirements**  
Ecomotive™ by Jets™ uses robust Moving Bed Biofilm Reactor (MBBR) technology, featuring floating biofilm carriers.

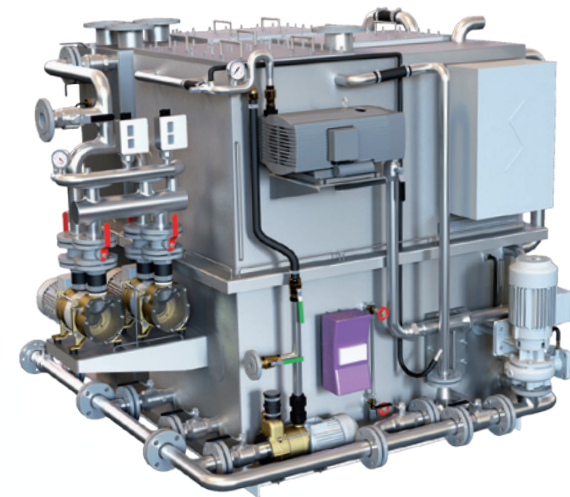
These carriers provide a large growing surface on which bacteria can live and thrive as they decompose the organic matter of sewage.

The unique properties of MBBR have been proven in on-shore applications, where the technology is very popular.

**Developed in cooperation with the best**  
Ecomotive™ by Jets™ was developed by our subsidiary Ecomotive AS, in close cooperation with the Norwegian University of Life Sciences. The plant is designed to treat both sewage and grey water.

**Tested under real-life conditions**  
The Ecomotive™ plant was tested at the Norwegian University of Life Sciences, using a real, concentrated sewage mixture with blackwater and greywater from on-site student dormitories equipped with vacuum toilets.

**Fully approved**  
BG Verkehr in Hamburg (formerly SBG) certified and type approved the plant according to current IMO regulations, which it passed with flying colours.



**Robust, resistant and installation friendly**  
The plant is made from stainless steel. Connections and access points are located on only two of its sides, for maximum freedom of installation.

**Aeration keeps the plant clean**  
The aeration process keeps the biofilm carriers in constant movement inside the reactor tanks. Excess biomass is continuously detached from the biofilm carriers and flushed over into the settling tank.



Biofilm carrier  
shown in 1:1 size

Jets™ has more than 25 years of experience in sewage treatment plants. The result of this experience is a treatment plant which reduces space requirements and is both reliable and affordable; by using biofilm carriers in Moving Bed Biofilm Reactors we can offer advantages that are not available with traditional treatment technologies.

**Why should you choose an MBBR based plant?**

- MBBR was invented several years ago by a group of Norwegian scientists, yet it belongs to the most recent developments in wastewater treatment technology.
- Thanks to its robustness and cost efficiency, the MBBR reactor system has been very popular in both municipal and industrial wastewater applications around the world.
- The need for maintenance and cleaning of the plant is all but eliminated due to the continuous movement of the biofilm carriers. This self-cleaning action inside the reactor also cleans the reactor walls and outlet grids, and is one of the main features of MBBR technology.
- MBBR based plants can be built significantly more compact than traditional sewage treatment plants.

**The Ecomotive™ range of sewage treatment plants suits most vessels**

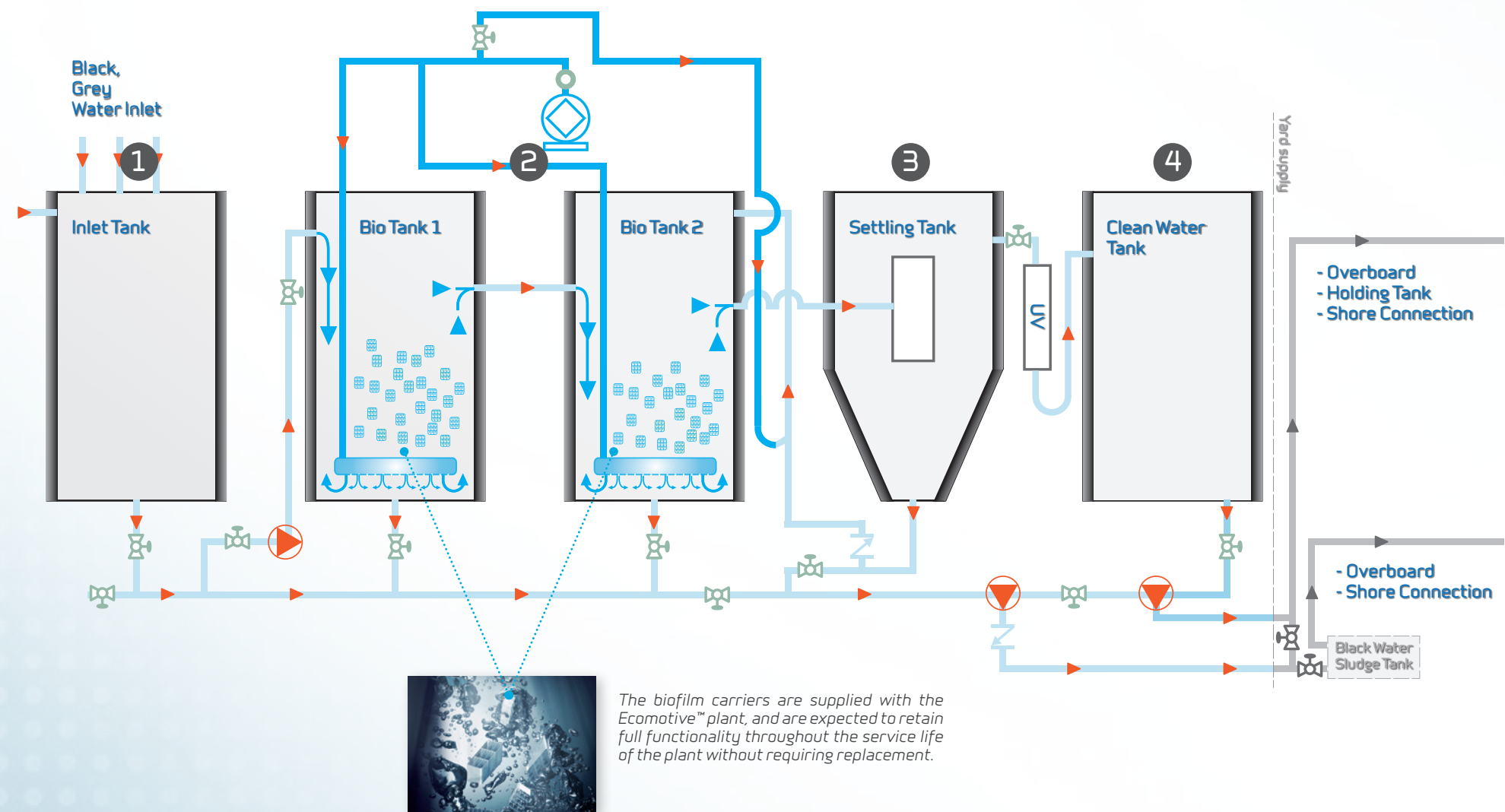
MODEL	PERSONS	VACUUM UNIT	DIMENSIONS WITH INLET TANK & VACUUM UNIT (*)	DIMENSIONS WITHOUT INLET TANK & VACUUM UNIT (*)
1.11	13	30MB-D	2238x2065x1941	1980x1434x1941
2.22	27	30MB-D	2238x2065x1941	1980x1434x1941
3.33	41	30MB-D	2238x2065x1941	1980x1434x1941
4.44	54	30MB-D	2782x2345x1941	2526x1714x1941
5.55	68	30MB-D	2782x2452x1941	2526x1714x1941
6.66	82	30MB-D	2782x2558x1941	2526x1714x1941
7.77	95	50MBA	3043x2675x2259	2761x1914x2259
8.88	109	50MBA	3043x2760x2259	2761x1914x2259
9.99	123	50MBA	3043x2867x2259	2761x1914x2259
13.32	164	50MBA	3660x3227x2259	3376x2249x2259
16.65	205	50MBA	3661x3367x2259	3376x2268x2259

*All dimensions and other data are believed to be accurate at the time this information is printed, but may be subject to change. Please contact Jets™ for a current list of full technical data and any recent additions to the product range made after this brochure was printed. (\* LxWxH in mm).*

# ECOMOTIVE™ BY JETS™

– APPROVED BY EXPERIENCED CHIEF ENGINEERS

Biological treatment of waste water using the MBBR approach is a tried and tested method. The technology is competitive, virtually maintenance-free and gives long operational life. Chief Engineers consulted during development are confident about the Ecomotive™ plant's first class qualities.



1 The inlet tank mixes black water (sewage) and grey water, as well as providing ample capacity for peak loads. Using a Vacuumator™ pump to feed the treatment plant ensures a steady and continuous flow of waste water from the inlet tank to the bio tanks. The inlet tank can be supplied with the plant for either integrated or separate installation, or a hull tank can be used in its place.

2 The bio chambers feature a seamless interface which always maintains the important retention time at the correct level. Due to the steady flow created by the feeding pump, effluent moves in an optimal pattern from chamber to chamber. Aeration keeps the suspended biofilm carriers in motion while providing oxygen for the microbes.

3 The settling tank features a centrally installed inlet pipe which reduces the speed of the liquid flowing into the tank, thereby improving the settling process. The funnel-shaped lower section of the tank directs sludge toward the tank's discharge point, preventing deposits inside the tank.

4 The treated water is exposed to UV light sterilisation on its way to the clean water tank. A dedicated pump is then used to discharge the water overboard, effectively eliminating the risk of cross contamination.

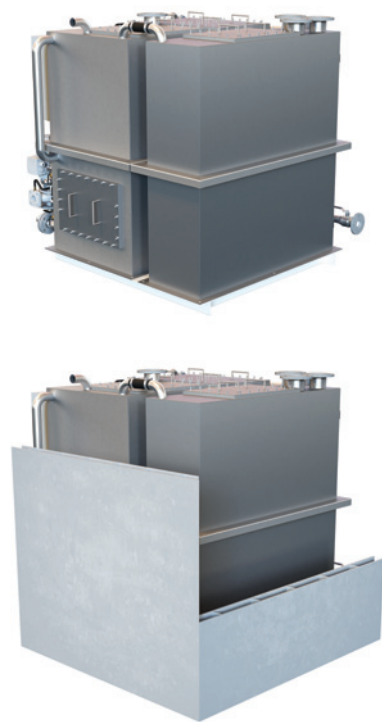
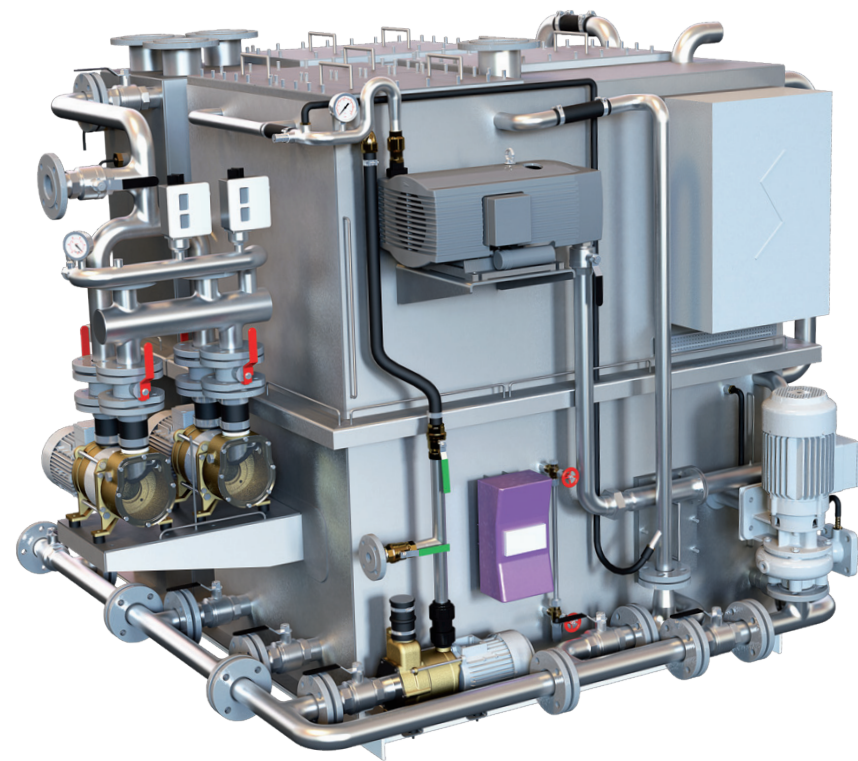
**IMPORTANT:** This diagram is designed to show the working principle of the plant, and does not reflect its very compact dimensions.



# DESIGNERS, YARDS, CREWS AND OWNERS WILL ALL BENEFIT FROM THE UNIQUE FLEXIBILITY OF ECOMOTIVE™ BY JETS™

All connections and access points are located on two sides.  
This way, the Ecomotive™ treatment plant can be installed adjacent to the bulkhead or even in a corner, depending on the space available.

The Ecomotive™ plant's volume and footprint sizes are only 60% to 70% in comparison with conventional biological treatment plants.



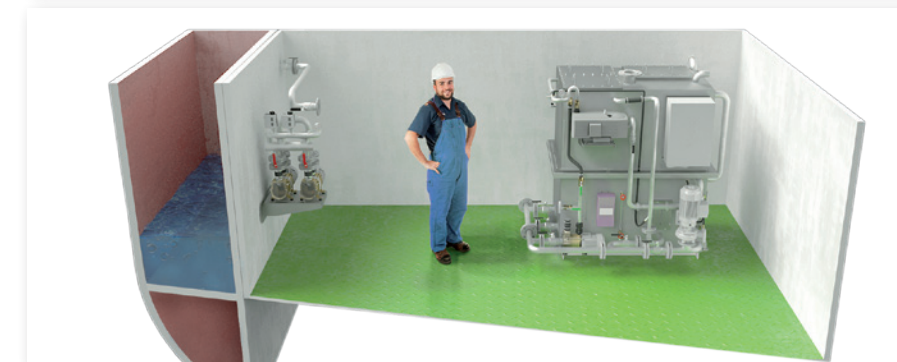
A modern engine room is required to contain so much machinery that space is at a premium. With its compact size and flexible installation options, the Ecomotive™ plant offers the most space saving solution available. Much to the benefit of designers, yards, crews and owners.



A complete treatment plant including the Vacuumarator™ pumps and the inlet tank can be easily installed in a corner.



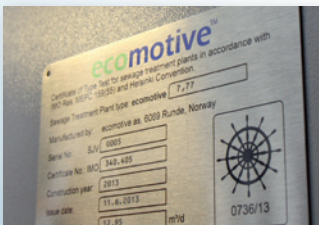
The treatment plant, Vacuumarator™ pumps and inlet tank can also be installed in separate locations. The three main components can thereby be installed where they fit most conveniently.



By using an existing hull tank in place of the inlet tank normally supplied with the plant, even more space can be saved.



Photos: Peter Otto Dabvik // Jets and its respective agents and customers // 3D illustrations: Fantastiske Debuter AS // logo.no  
 JETS and VACUUMABATOR are trademarks of Jets Vacuum AS. ECONOMOTIVE is a trademark of Economotive AS. Parts of the JETS sanitary  
 systems (including, but not limited to, VACUUMABATOR pump technology) are patent protected by Jets Vacuum AS.  
 ©2015 Copyright Jets Vacuum AS. Rev. B-2015



Jets™ customers are never alone. We and our global network of representatives provide support and guidance, and are at your service for the full lifetime of your system. Jets™ products are known for their unique reliability and minimal maintenance requirements.

The first Economotive™ plant was commissioned on board the "Rem Ocean" in December 2013. For further references, please visit:  
[www.jetsgroup.com/economotive](http://www.jetsgroup.com/economotive)



Jets Vacuum AS | Myravegen 1 | NO-6060 HAREID | Norway  
 Tel: (+47) 70 03 91 00 | E-mail: [post@jets.no](mailto:post@jets.no) | [www.jetsgroup.com](http://www.jetsgroup.com)