

CleanSewage-BIO Biological Sewage Treatment

RWO

Sewage Treatment With Minimal Efforts

CleanSewage-BIO is a compact, type approved marine Sewage Treatment Plant (STP) for cargo vessels. With an incorporated Moving Bed Bio-reactor (MBBR), the CS-BIO requires minimal process volume, still meeting the IMO MEPC.227(64) discharge criteria.

CS-BIO is designed for easy maintenance and operation. With the intuitive status control, operators can check at a glance, whether the system is running smoothly or intervention is necessary. The hygienic no-touch-cleaning system for sludge discharge makes maintenance nearly effortless.

The accessibility from one side allows ship designers to plan space in the engine room on a whole new level.

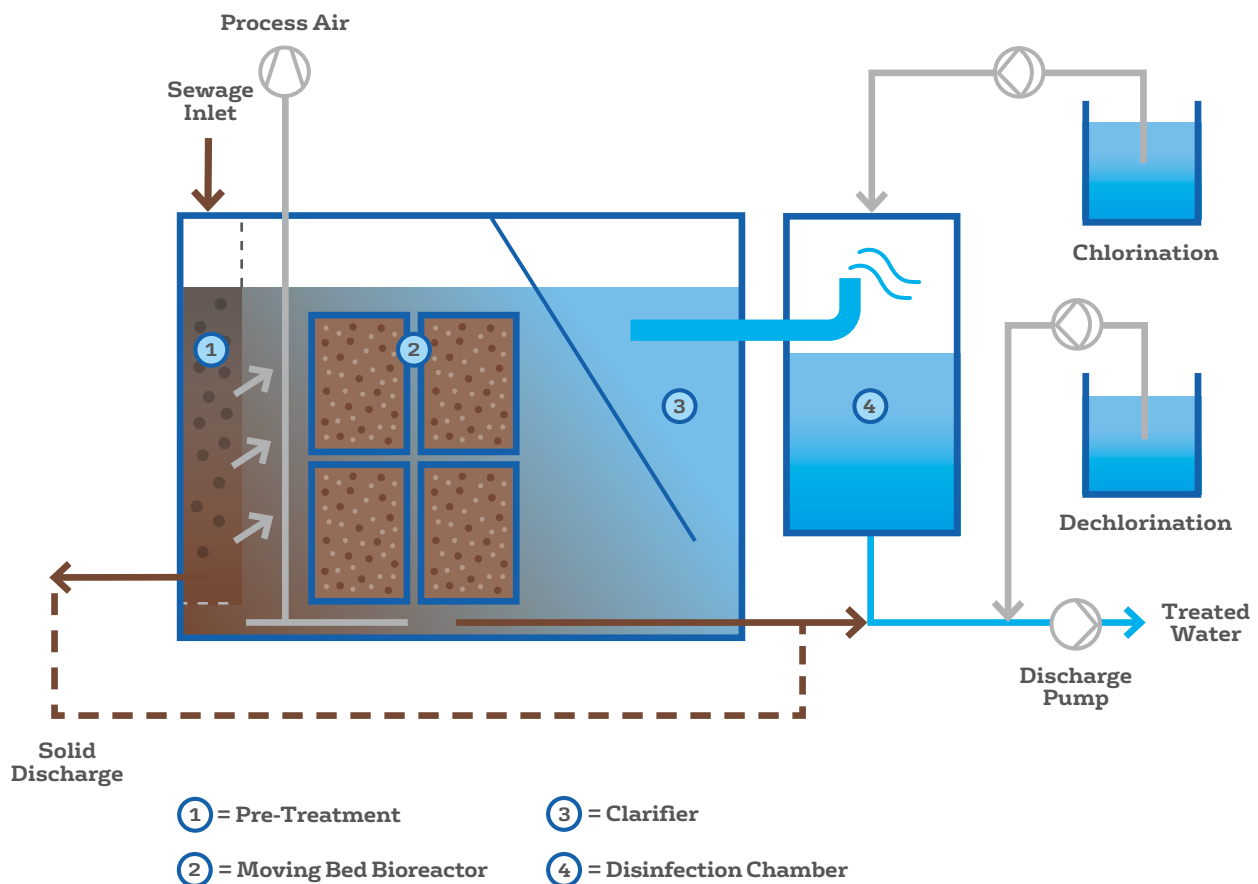


CS-BIO compact biological sewage treatment

How it Works

CleanSewage-BIO combines mechanical pre-treatment (screening), biological treatment by activated sludge (AS) with moving bed biofilm technology (MBBR) and solid separation via clarifier in the same tank. Compared to an activated sludge system, CS-BIO is a high efficiency solution for the removal of organic matter with very low sludge production due to the biofilm technology.

1. As a first step the sewage is separated from heavier solids and particles by a screen, thus preventing clogging or damages in further process steps.
2. In the biological stage, bacteria degrade organic matter into carbon dioxide and water. These bacteria grow as a biofilm on the carriers in the so-called moving bed. Aeration is applied both for the suspension of the biofilm carriers and the oxygen supply of the bacteria. As a natural process, bacteria accumulate in the system and form sludge flocs (also called excess sludge) which can be collected and disposed according to national and international laws.
3. In the clarifier residual solids and suspended activated sludge are separated by sedimentation and turned back into the biological chamber. The clean sewage flows into the disinfection chamber.
4. In the disinfection chamber a chlorine-based chemical is added to reduce bacteria to a minimum level. The clean water is then pumped overboard. To meet the limit values set for the chlorine content, a neutralising agent is dosed prior to the discharge pump.



Key Features & Benefits

Safe

- > Integrated mechanical pre-treatment
- > No harmful or flammable chemicals
- > Certificate of Type Approval for Sewage Treatment Plants according IMO MEPC.227(64) issued under the authority of the Federal Republic of Germany by BG Verkehr

Small

- > No holding tank necessary
- > Up to 25% less space demand through unique one-side access

Easy to operate

- > No-touch-system for hygienic sludge discharge
- > 100% control through individual switches for every component
- > Fast restart after maintenance due to biomass carrier in cages
- > **Suitable for black & grey water**
- > **Compatible with all vacuum systems**

CS-BIO	Organic Load	Hydraulic Load	Dimensions L x W x H	Weight	
				Net kg	Wet kg
Size	kg/d BOD ₅	m ³ /d	mm		
02	1.38	2.16	2095 x 1250 x 1480	859	2923
03	2.07	3.24	2608 x 1346 x 1612	1149	4134
04	2.76	4.32	2559 x 1646 x 1618	1335	5293
05	4.15	6.48	2781 x 1656 x 2058	1627	7407
06	5.53	8.64	3365 x 1656 x 2058	1885	9278
07	6.91	10.80	3365 x 1986 x 2058	2121	11719