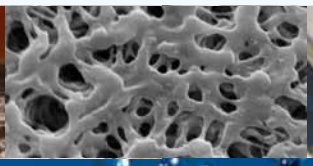
Small size sewage treatment system with microfiltration

BUSSE MF

water of the next generation







Reduction Standard C, N, D, P+H

Turns domestic waste water into *service water*

Plant type MF-HKA 4, installed in a cellar

Water is one of the most precious resources on earth. A resource that is not available in unlimited abundance but requires correct treatment to ensure that it can also be used by coming generations.
In addition to a responsible approach to the use of the resource, only high-class waste water treatment is likely to sustain our quality of life. Facing this exciting challenge, we have developed waste water treatment technology of the next generation.

The BUSSE MF Domestic Sewage Treatment System uses microfiltration, currently the most advanced method of local waste water treatment. Microfiltration eliminates even bacteria and germs. This restores waste water to hygienic condition fit for use as service water, for example, to water the garden or flushing the toilet. In this way the consumption of drinking water in a household can be reduced by about one third.

Fig. 1:
Complete solution for single and shared occupancy houses with a cellar

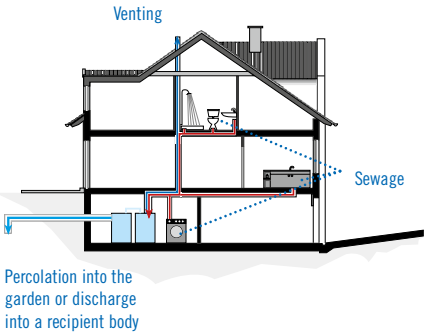
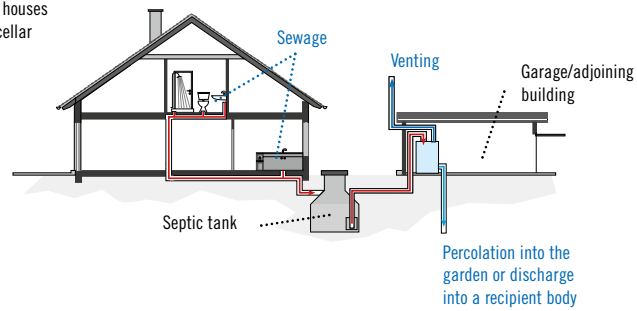


Fig. 2:
Complete solution for single and shared occupancy houses without a cellar



The consistently high level of water treatment in the BUSSE MF system ensures that the discharged water is considerably cleaner than the law requires, it is even better than the limits for bathing water prescribed by EC legislation. Thus, water treated by microfiltration can be discharged in sensitive areas and water protection zones. Even if still stricter legislation should be enacted and more stringent treatment values prescribed, the BUSSE MF system remains a product with a future.

Other advantages of this new compact technology are the small footprint and the fact that it can be installed without expensive earth-moving work. The system, which consists of double-wall safety tanks, is installed in a few hours and is immediately ready for operation. It requires little maintenance because the necessity of constant disposal of sewage sludge is avoided.

In addition to the installation of the system in the basement *(Fig. 1)*, existing systems, e.g., septic tanks, can be adapted *(Fig. 2)*. The design makes the system suitable also for larger developments, such as hotels, camping sites or office buildings up to 100 population equivalent.

The BUSSE MF Small Size Sewage Treatment System has been used successfully in Germany since 1997 and now also with success for waste water treatment and water recovery in numerous countries throughout Europe and the world.

How it works

The BUSSE MF Small Size Sewage Treatment System is designed on the basis of German regulation "DIN 4261" part 2 and comprises two treatment steps, namely pre-treatment (1) and aeration (2). At the pretreatment step, which also serves as waste water store, biologically degradable coarse material, such as, faeces, toilet paper, is dissolved and the non-dissolving components separated from the waste water by an aerated sieve (3). A pump (4) pumps the waste water, from which the coarse material has been separated, to the aeration section. At this step the organic matter in the waste water is degraded biologically by microorganisms and oxygen (5). In addition to this, the waste water is treated physically by microfiltration membranes (6) (ultrafine filter with 0.4 µm pore size). These membrane filters eliminate suspended material, even bacteria and germs, ensuring that only absolutely clear, odourless, hygienically harmless water (permeate) leaves the system.

The BUSSE MF system was tested successfully by the University of Hannover and the Technical University in Berlin and the water from the system in practical service is significantly better than the limits set by DIBt Berlin* (Z-55.3-60) and the applicable law. Due to the immersed microfiltration membranes, in combination with a technologically required high concentration of biomass, the COD level in the discharged water can be reduced to under 30 mg/l* and the BOD_5 value to under 5 mg/l*.

*Design qualification approval of DIBT Z-55.3-60
24-h-trial run

COD	≤75 mg/l
BOD_5	≤15 mg/l
NH_4-N	≤10 mg/l

Fig. 3:
Diagram of the microfiltration technology

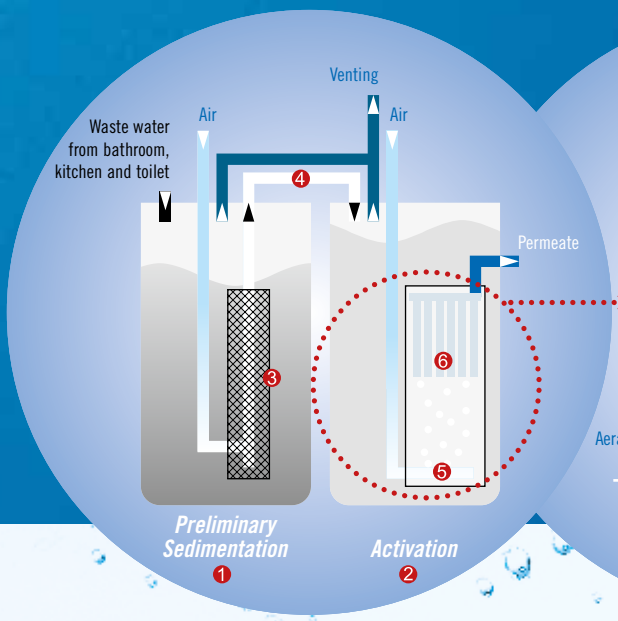


Fig. 4:
Functional diagram of the membrane module

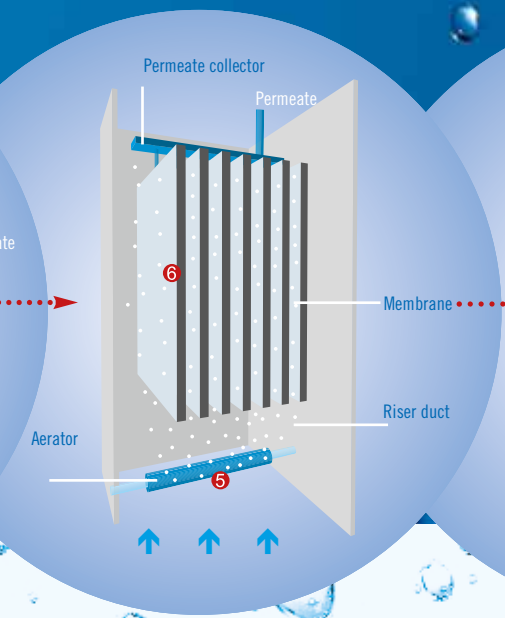
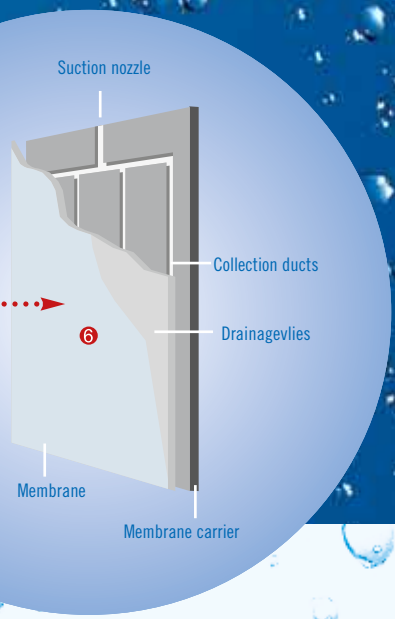


Fig. 5:
Sectional view of a membrane



The BUSSE MF Small Size Sewage Treatment System has been designed for plots exempted from the obligation to connect to the public sewage system.

Advantages at a glance

- Cleaning of domestic waste water without addition of rain water
- Reduction of the consumption of drinking water in the household by up to one third due to the use of the treated waste water as service water (e. g., for watering the garden or flushing the toilet)
- Low operating cost due to intelligent control

- Reliable function and high sustained cleaning effect ensured by qualified maintenance personnel
- The technological process obviates the need for regular sewage sludge disposal
- System needs only a few hours to be installed and ready for service
- No additional building cost for standard installation
- Small footprint due to the novel technological solution
- Low noise level due to quiet running compressors
- Modular construction ensures that the system can be expanded from 4 up to 100 population equivalent
- Automatic unattended mode ensures that the biological capacity of the system remains fully functioning for up to 4 weeks of your vacation
- Secure investment because the actual values of the treated water are very much below the limits currently permitted by law

Design qualification approval of "Deutsches Institut für Bautechnik DIBT"

Z-55.3-60

Approval according to NSF International Standard 40 + 245

NSF

Recommended by Federal Environment Agency

Umweltbundesamt

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BUSSE IS GmbH
Zaucheweg 6 · 04316 Leipzig
Telefon: +49 (0)341-6 59 84-25
Telefax: +49 (0)341-6 59 84-26
Email: info@busse-is.de
www.busse-is.de