

BioTopp - System

Series with primary sedimentation (M)

BioTopp MB

concrete tank

BioTopp MK

plastic tank

BioTopp MN

advanced treatment set for septic tanks

Series without primary sedimentation (O)

BioTopp OB

concrete tank

BioTopp OK

plastic tank

BioTopp OH

Inhouse- installation (basement)

BioTopp ON

Advanced treatment set for septic tanks

Series without primary sedimentation (O) and with additional sludge degradation step (V)

BioTopp OB VE

In concrete

BioTopp OK VE

in plastic

BioTopp ON VE

Advanced treatment set for septic tanks

BioTopp OB VE R

In concrete, additional with water reclamation

BioTopp OK VE R

in plastic, additional with water reclamation

BioTopp ON VE R

Advanced treatment set for septic tanks, additional with water reclamation

History of ökoservice GmbH

Thank you very much for your interest in our system family **BioTopp**.

Due to our longtime experience in the range of environmental and wastewater technology you have a competent partner at your side.

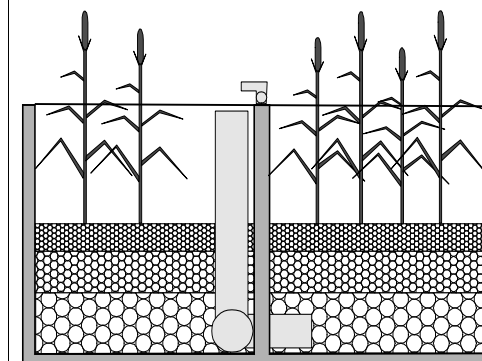
- 1984 foundation of **ökoservice** GmbH environmental and wastewater technology
- 1989 establishment of the department rain-water utilization systems
- 1991 development of the system **B 2000**
- 1993 selected applicant for the innovation competition „Dr. Rubert Eberle-Innovationspreis des Landes Baden Württemberg“ with system **B 2000**
- 1997 assignation of patent for the system **B 2000**
- 1997 development of the system **BioTop**
- 2002 constitution of the department for international processing in abroad
- 2003 foundation of the working committee „Interessengemeinschaft Dezentrale Abwasserentsorgung“ (decentral sewage disposal)
- 2003 development of the system **BioTopp**
- 2004 20 years existence of **ökoservice** GmbH
- 2005 construction of 2 pilot installations of the system **BioTopp** with integrated sludge drying step in China
- 2005 awarded at the innovation competition of the region Esslingen with **BioTopp**-system

More information about the **BioTopp**-System as well as further information about our products and services you can find at our homepage:

ökoservice

Environmental and wastewater technology

BioTopp VE



Sludge Drying Step

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Sludge Drying Step

In modern on-site wastewater treatment plants the same legal requirements as for commercial wastewater treatment plants should be fulfilled. With the development of our novel **BioTopp**-process we succeeded to achieve nutrient removal as well as the degradation of biomass (BOD/COD). The **BioTopp**-system without primary sedimentation enables to get no fecal sludge but dried stabilized sludge (humus-like fertilizer).

BioTopp VE

This process correspond with the principle of „integrated“ environment protection. The **BioTopp VE** system an enclosed system where the sludge remains on the estate and be used as fertilizer for the garden—further transport costs are avoided (circuit system in perfect form !).

The absolutely odorless dried sludge soil is the final product of the sludge drying step and is of higher quality than commercial compost (youngest research results).

The sludge drying step **BioTopp VE** complements as advanced module the treatment system **BioTopp** (type **BioTopp OB / OK / ON**).

The dried sludge allows a completely autarkic operation of the **BioTopp**— treatment plant.

Furthermore the system provides for cost savings of disposal costs. (new laws in the future can lead to - possibly dramatic - cost increase for the disposal of the sewage sludge).

Process Technology

The sludge drying bed consists of a lower grit layer and a directly above sand layer where reed plants can be placed .

The sludge water mixture - taken from the second chamber from the **BioTopp** treatment plant - is distributed equally on the surface of one chamber of the sludge drying beds.

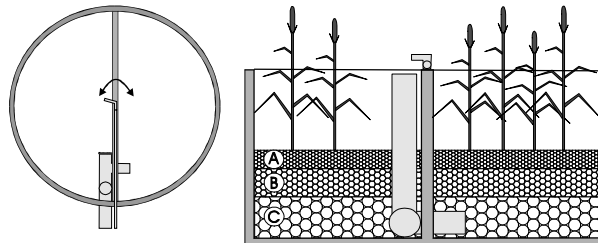
The percolating of sludge into the soil causes the de-watering of the sludge. The percolation water flows back to the further treatment in the treatment plant. By the help of sun light the dewatered sludge is dried. The volume reduction is visible: sludge layers (thickness 3-5 mm) are formed at the surface of the drying bed. Besides the uv-radiation leads to a sterilization of the sludge.

After the following sludge removal of the treatment plant the other chamber of the drying beds will be feeded with the excess sludge.

After ca. 6 months / one year the dried sewage sludge from the first chamber can be removed.

The sludge drying step can be designed very small (ca. 0,5 m² per inhabitant) and takes up just few surface area.

The absolutely odorless, drying step sewage sludge as final product of the sludge degradation is of higher quality than commercial compost.



Dried Sewage Sludge

The absolutely odorless dried sludge soil as final product of the sludge drying step is of higher quality than commercial compost (current research results).

Because of the singular sludge feeding with drying and sterilization of dewatered sludge the recontamination of dried sludge is avoided (no faecal sludge is given onto the already dried sludge).

Experiences of sludge drying step allocates that a household with 4 persons produces just 4-5 kg dried sewage sludge per year - In comparison in an on-site treatment plant with primary sedimentation ca. 2000 kg (2 m³) fecal sludge has to be pumped out and must be treated in a municipal treatment plant.

One possible recovery of dried sludge is to use it as fertilizer for bushes and garden. Dried sewage sludge is a high-quality soil conditioner with fertilization effect. It has a high humus value and in comparison to compost a lower salt content as well as high-quality organic components for the production of soil and substrates.

Furthermore the material is under the hygienic aspect harmless, good to handle and has got a high chemical and mechanical stability.

The dried sewage sludge can be used like compost or mineral fertilizer e.g. for purposes like agriculture, gardening and landscaping. Because of the higher quality of dried sewage sludge in contrast to products like sewage sludge compost and biological waste an assuaged and common recycling can be expected.

**source: Dr.-Ing. Günter Fehr, Dr.-Ing. Udo Pauly: „Entwicklung, Bau und Betrieb von ökotechnischen Anlagen“*

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