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DABSUS
DAB Sludge Utilization System

The product – organic fertilizer

DABSUS turns septic sludge which is a hazardous waste into a valuable product – organic fertilizer. The process and the product can look different depending on what composting additives are used, scale of the process, climate etc. The photos below show some products and the following description explains the main principles of the technology.

Process description

DABSUS is a technology that solves sanitation problems in places without sewage net by turning septic sludge from a serious waste into a useful fertilizer. This means that DABSUS prevents environment pollution and allows returning of natural nutrients back to the soil.

DABSUS was developed on the basis of DAB technology, a well-known and worldwide spread technology for sludge thickening and dewatering. The dewatered sludge is then composted with other organic compounds and turned into a useful fertilizer. The entire process is characterized by low energy consumption.

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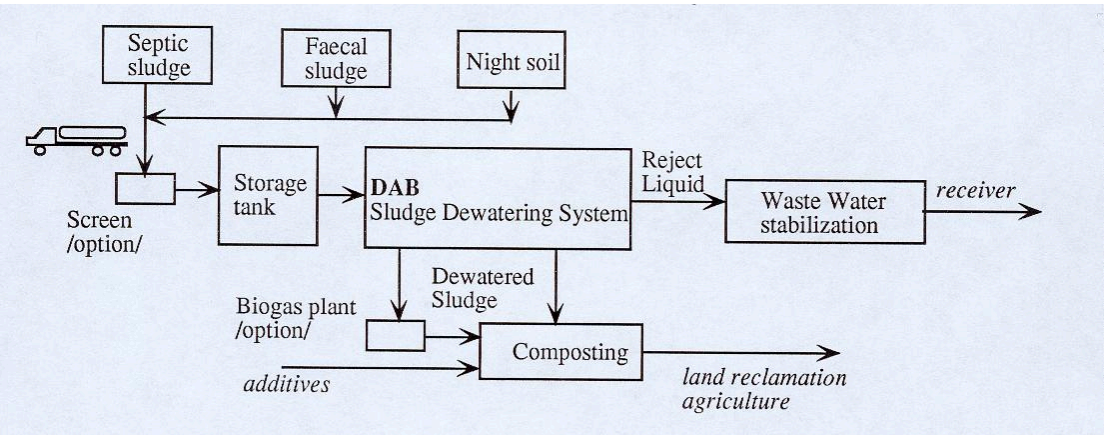
DABSUS consists of three main parts:

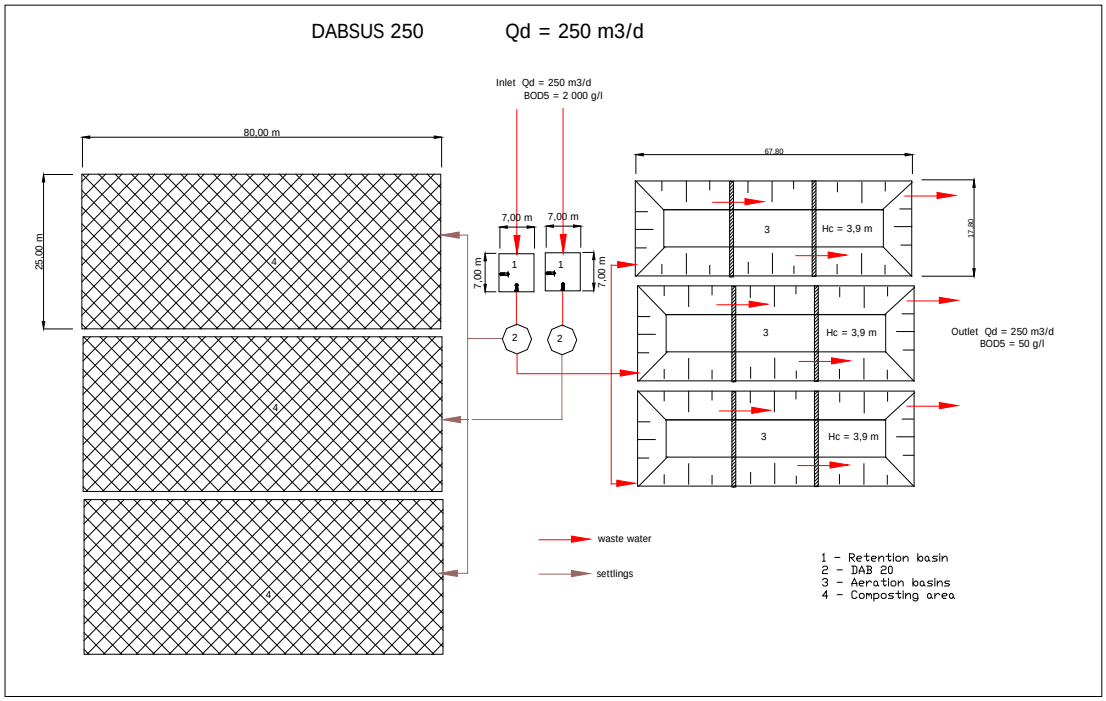
- Sludge dewatering
- Sludge composting
- Biological cleaning of reject water

All the steps of the process are dependent on each other and the final design of DABSUS meets local prerequisites and wishes.

Scheme of DABSUS



Possible design (see even description on the next page)



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Function (see the sketch on the previous page)

- The sludge is dropped to the retention basin (1) (one or two joined chambers). To prevent sedimentation the sludge is stirred.
- Sludge is dewatered in two separated DAB 20 (2).
- Dewatered sludge is composted (4)
- Reject water is led to aeration basin (3). In order to make the cleaning more effective the basin are divided into three compartments, which enforce more turbulence and better mixing.

Sludge dewatering

The sludge is dropped into a retention tank. Since the septic sludge can contain many different foreign issues, such as plastics, pieces of glass or china, metallic items and others, these are separated from the sludge in a mechanical screen. The retention tank is necessary especially in situations where the delivery flow and sludge quality varies significantly.

DAB is a silo container (as shown on the photo) equipped with a double-wall cylinder. The walls are made of a special net, which allows water to pass while the solid particles are retained in the container. Dewatering grade is controlled and adjusted to next steps in the process.

The dewatered sludge is transported to composting step and the reject water goes to biological step. Since there is no mechanical pressure in the dewatering process, only a very small part of solid particles follows with the reject water, which makes the following biological cleaning more effective.

Composting

The dewatered sludge is mixed with other compounds, such as wood chops, saw dust or/and shavers, straw, hay or other biological wastes. All the compounds are mixed and formed into windrows. During the whole process humidity and temperature of the material is carefully controlled. When more moisture is required, the windrow is watered with reject water from DAB. Temperature increases in the windrow up to 70 ºC. In this temperature the most of microbes are killed and the compost becomes biologically safe.

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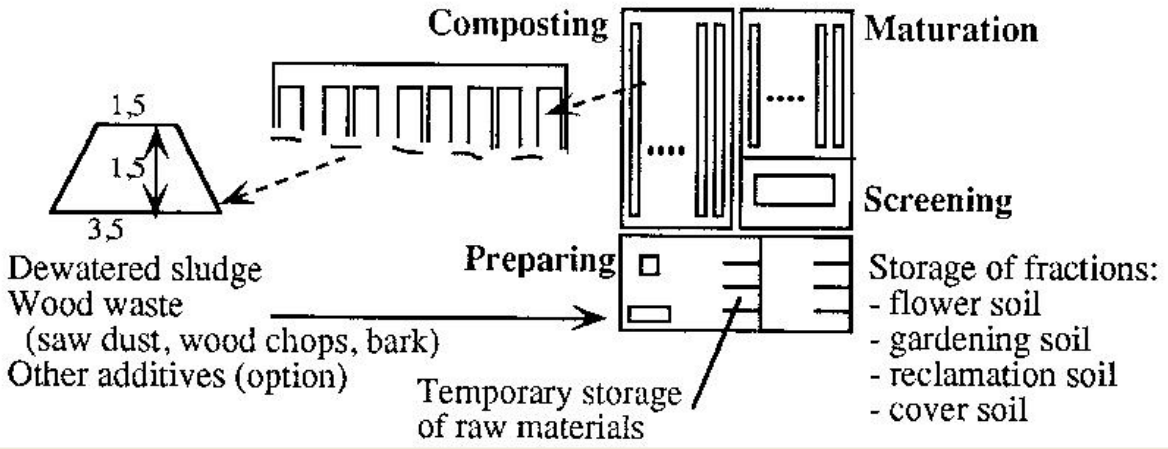
Composting sketch



In order to ensure the necessary grade of composting the material is turned up with suitable frequency, in beginning more often and at the end of the process less frequently. The photo shows turning up of a windrow.

After the main part of composting raw compost is screened and left for maturation. Biological value of ready compost can be increased by adding some extra nutrients. e.g. NPK-agents.

Depending on the climate the composting process takes from 3 to 12 months. The warmer the climate, the shorter the composting process. In a tropic climate, composting should be performed under roof or the windrows must be covered periodically to prevent extensive drying by strong sunshine or washing out by heavy rains.

Biological cleaning of reject water

The reject water from DAB is led to the biological step. The reject water is almost free from suspended solid particles and its BOD is lowered by 20-40%. That is why simple biological treatment, e.g. aeration ponds, can be applied with good result. Aerators are designed for meeting the biological load and hydraulic flow.

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The process is run to achieve BOD of the discharged water below 30. This means that the discharge water can be led to most of recipients.

As a result of aeration a new sludge is formed and sediments on the bottom of the aeration ponds. This sludge is periodically removed, dewatered in DAB and added to the composting material.

Advantages of DABSUS

DABSUS has several advantages and their importance differs in different places:

- Easy installation, service and maintenance
- Low investment cost
- Low running cost, among others because of early removal of sludge
- Low energy consumption
- Increased level of sanitation standard of the environment
- Significantly decreased epidemic hazard
- Significantly decreased pollution of fields, forests, ground water and sea water
- Turning of septic waste into a useful fertilizer
- Possibility of production of full-value fertilizer
- Production of soil improver, which can be used to diminish soil erosion or/and speed up recovery of spoiled land
- Possibility of utilisation of other organic wastes such as branches, green wastes and food rests in the composting process
- Diminished usage of artificial fertilisers
- Diminished production of methane gas (strong green house gas)
- Increased environmental consciousness of the population

Considering all these advantages DABSUS appears to be a very attractive alternative of sludge utilisation.