TECHNOLOGY.

3 components make up the BAAS wastewater treatment plant from BAAS:

1. **3-chamber anaerobic digestor**
2. **Mineral wool trickling filter**
3. **Receiving watercourse, surface soakaway, soakaway pit**

I. 3-chamber anaerobic digestor

The 3-chamber anaerobic digestor essentially comprises of three chambers.

T-pieces (Ø 100mm) with upward and downward pipe-feed are provided in the partition walls at the same height as the outlet, via which the free wastewater can flow into the next chamber. Coarse solids are kept back in the first chamber where they contaminate, finally settling as sludge.

Finer solids settle in the second chamber. The wastewater, mainly free of solids, flows into the third chamber via the openings of the T-pieces (Ø 100mm) positioned in the first area.

The system is ventilation via the roof using the inlet line provided (DN 150mm). Appropriate movement of the water level is guaranteed with every inflow of wastewater. The drop height between the mouth of the inlet and the water level in the chambers guarantees the movement of the water level, which in turn is governed by the inlet opening of the drain pipe.

A buffer zone is integrated in the 3-chamber anaerobic digestor and is used for level equalisation and continual feed of the filter system. The buffer is designed for a minimum take of half a daily load of wastewater.

The outlet (Ø 150mm) has a metering unit and sets the buffer to precisely zero in 24 hours. This is because no air circulation may take place between anaerobic and filter system.

Free of solids, the draining pre-purified wastewater from the third chamber of the 3-chamber system moves on to a biological purification process.

II. Mineral wool filter system (trickling filter system)

In the mineral wool trickling system, the pre-purified wastewater of the anaerobic digestor is biologically purified by the mineral wool filter enriched with minerals. The number of inhabitants (inhabitant equivalent values) determines the number of filter surfaces/layers. 1 m² mineral wool (WF 12 + 2x9mm fleece) yields an interior surface of 1320m².

The filter system ensures aerobic decomposition of contamination. The aeration necessary for this is guaranteed with the pre-purified wastewater (mainly free of solids) hitting the baffle plate and then deflector.

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The water dropping from filter to filter absorbs oxygen from the ambient air. The intermediate filter gaps provide additional aeration. The individual filter layers store the air and release it to the water.

The filters provide excellent living conditions for the microorganisms necessary for the decomposition of the wastewater contaminants. The filters gain a high degree of mechanical solidity through mineralisation and can absorb a relatively high volume of air.

The filters are connected on their lower side by synthetic fleece. The lower synthetic fleece of the uppermost filter is considerably thicker than the fleece layers of the others. The filters lie on grates held with concrete base and bracket. The top side of the uppermost filter is connected to another 9mm fleece layer made of plastic fibre.

The 9mm bottom fleece of the first filter surface distributes the wastewater over the entire filter area. The wastewater retained on the first filter area forces itself to the side edges of the first filter area, is distributed with the bottom fleece and leaves the first filter.

The water level on the first filter area is generally 3-18cm high. The first filter area assumes the buffering function of the bacteria settled there. This slowly decomposes the wastewater biologically. The sledge settles on the bottom of the first filter surface. The wastewater drops uniformly over the entire filter area from one filter to the other.

Natural atmospheric oxygen, required for nitrification, is enriched through the access and the ventilation slits in the partition of the system. This starts after the first filter.

The wastewater is biologically purified on the first filter surface. The filters below are no longer burdened as much and are used for filtration, purification and nitrification.

A pan-like collection bowl, where the water is collected, is positioned below the filter layers.

A partition with ventilation holes separates the filter tower lengthwise: the filter area in front of the area in which the sand bed is housed.

The overflow pipe to the collection bowl transports the purified wastewater to the sand bed.
The sand filter in the lateral maintenance channel re-filters the water. This is to prevent contamination from entering the inspection shaft/receiving watercourse.

The purified wastewater can then be fed to a soakaway pit for draining away or be routed to a receiving watercourse.

III. Soakaway pit

From the biological purification process, the purified water is passed into the receiving watercourse via a drain pipe (Ø 100mm).

The water sample is taken in the inspection shaft.