

The fixed bed reactor by Ammermann Umwelttechnik

AQUATOP

Top level wastewater treatment technology



Top view AquaTop during aeration in the demonstration tank



AquaTop culture media with membrane disc diffuser



Switch cabinet with control unit and aeration pump

The Aquatop fixed bed by Ammermann is one of the most established biological sewage systems on the market and has already been successfully installed more than 8,000 times.

It is suitable for the treatment of domestic wastewater for 4 to 50 population equivalent (p.e.) and has been developed and tested in accordance with the latest guidelines of EU Standard EN 12566 part 3. It has been approved by the German Building Authority, Deutsches Institut für Bautechnik.

The fixed bed process

The fixed bed process or submerged bioreactor technology is a system using submerged, aerated plastic bodies to provide the microorganisms the surface they need to form so-called fixed biological film. The microorganisms in the water colonise the culture media. Due to the nutrients in the water combined with the aeration of the wastewater, the organisms find ideal living conditions for the treatment of the water. Just like in a stream, treatment occurs naturally without the use of any chemicals.

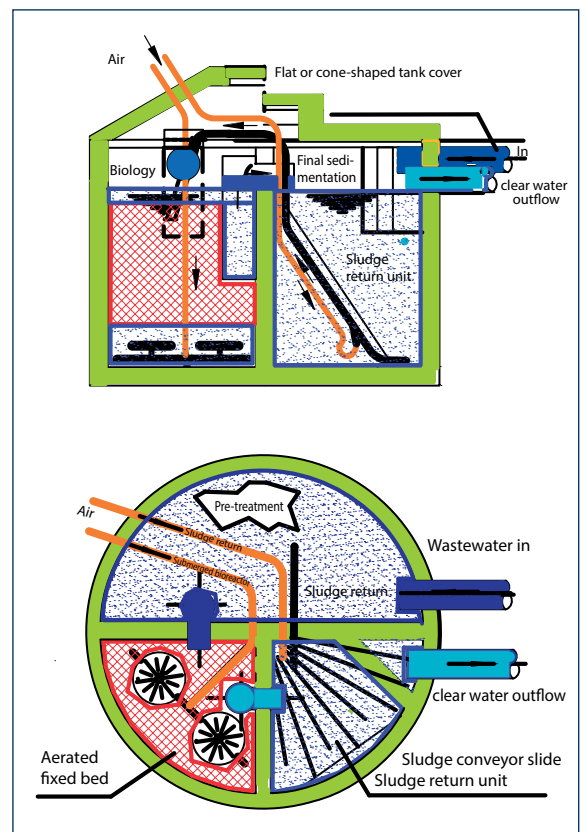
How does it work?

The first chamber of the wastewater treatment plant is used for the separation of solids: primary treatment. The pre-treated wastewater then flows without the aid of a feed pump into the second chamber of the wastewater treatment plant: the so-called biology. The fixed bed reactor is located in this chamber.

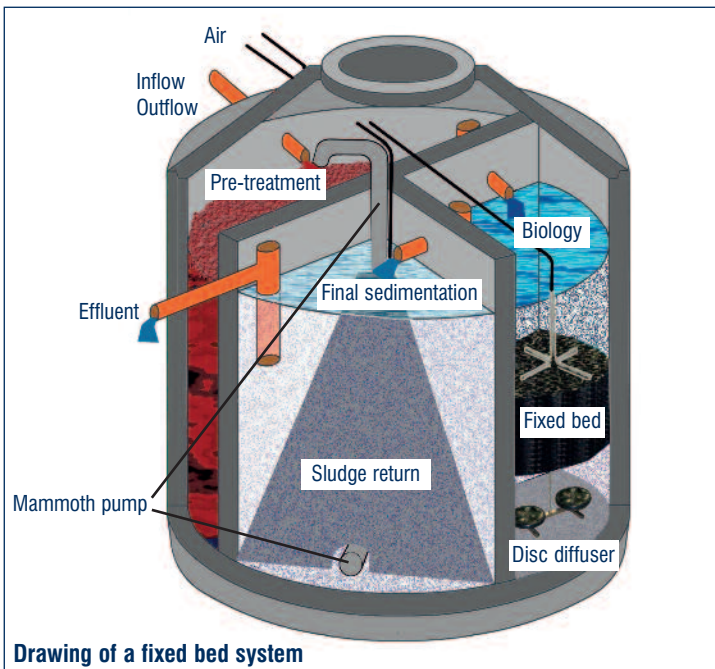
Excess / dead microorganisms are meanwhile flushed with the treatment water into the third chamber of the wastewater treatment plant by means of the natural overflow. Here they settle on the bottom and are then transported back into the first chamber by means of a mammoth pump (airlift with no electrical system).

Three separate chambers in one or more septic tanks are needed for this treatment procedure: one for pre-treatment, one for the biological treatment and one for the final sedimentation.

If sound, multi-chamber septic tanks are already in place, refitting is a cost-effective option. An uncomplicated control system enables settings to be optimised easily.



Model drawing AquaTop - cross-section and top view



EFFLUENT VALUES:
Effluent values attained at the test area of PIA Aachen
(Development and Assessment Institute in Wastewater Technology)

| Parameter | Min. acc. to DIN 4261 | Min. acc. to EN 12566 | Ø values attained | Min. values |
|------------------------|-----------------------|-----------------------|-------------------|-------------|
| CSB | 150 mg/l | 100 mg/l | 54 mg/l | 22 mg/l |
| BSB₅ | 40 mg/l | 25 mg/l | 12 mg/l | 5 mg/l |
| AFS | 75 mg/l | 50/75 mg/l | 17 mg/l | 3 mg/l |

Comparison of the sludge accumulation according to the German Building Authority "Deutsches Institut für Bautechnik", Berlin.
Amount of sludge in litres per inhabitant

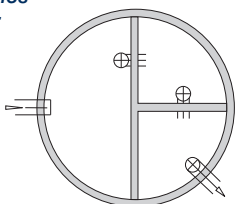
| Interval between removal in years | Trickling filter | AquaTop | SBR plants |
|-----------------------------------|------------------|----------------|------------|
| 1 | 110 | 80 | 220 |
| 2 | 220 | 160 | 440 |
| 3 | 330 | 240 | 660 |

AQUATOP

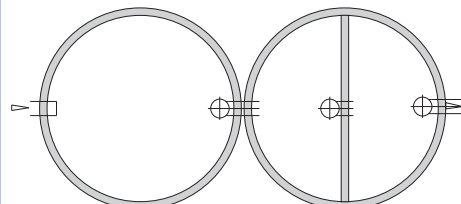
top level wastewater treatment technology

- Ideal for new installation and refitting
- No sensitive pumps in the water
- No electrical components in the water
- Low accumulation of sludge -> low costs for removal of sludge
- Particularly suitable for low usage and use in holiday homes
- All components of plastic or stainless steel
- Certified quality – Made in Germany
- Runs extremely quietly due to linear compressor
- Low power consumption
- No excavator work necessary for re-fittings
- Continuous ongoing further development through own monitoring of more than 2000 plants
- Successfully installed over 15,000 times

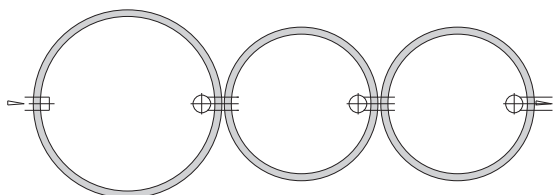
Examples of use:



1 tank, 3 chambers



2 tanks, 3 chambers



3 tanks, 3 chambers

Other alternatives are possible! Installation is possible in virtually all types of wastewater treatment plants!



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