



DEUTSCHE
DEWATEC



SMALL SEWAGE
TREATMENT PLANTS

FIXED BED

DEWATEC 3K PLUS®

SBR

DEWATEC BatchPLUS®



DEUTSCHE DEWATEC Small Sewage Treatment Plants

The clarification of wastewater accumulating from domestic households in Germany is ensured by municipal wastewater treatment plants in over 95 percent of all cases. Where the connection to the mains is missing, the personal responsibility of the property owner is required. Wastewater shall be disposed, so that the groundwater as the main source of drinking water will not be polluted and surface waters like streams, rivers and lakes retain a defined quality.

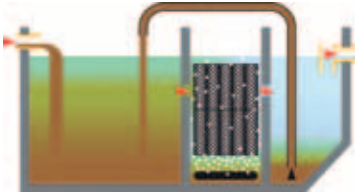
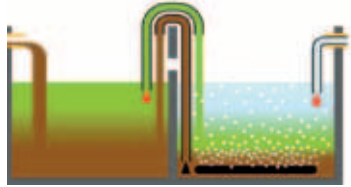
However, most existing plants cannot ensure this, as the inflowing solids - mostly in septic tanks - only settle gradually. Afterwards, this roughly pre-treated wastewater irrigates into the ground.

Its natural cleaning performance is getting more and more taken up: for example, by acid rain as a result of traffic and industry as well as by pesticides and many other substances. This is clearly noticeable in the quality of groundwater. With this, it will be hard to maintain our very good drinking water quality.

Therefore, more and more counties and municipalities are relying on upgrading the existing old plants. Because only fully biological small sewage treatment plants can ensure a sustainable and verifiable water protection, according to the EU Water Framework Directive and the Federal Water Act.

| Performance Class | C | N | D | +P | +H |
|-------------------|---|---|---|----|----|
| SBR-Plant | ✓ | ✓ | ✓ | ✓ | |
| Fixed Bed Plant | ✓ | ✓ | | | |

DEUTSCHE DEWATEC Processes at a Glance

| | Fixed Bed Process | SBR Process |
|--|--|---|
| | 3K PLUS® | BatchPLUS® |
| |  |  |
| Suitable for retrofitting of existing tanks | DEWATEC Retrofitting Unit 3K PLUS® | DEWATEC Retrofitting Unit BatchPLUS® |
| Complete System incl. tank | DEWATEC Complete System 3K PLUS® R | DEWATEC Complete System BatchPLUS® E BatchPLUS® R |
| Special tank for installation in unusable concrete tanks | DEWATEC Complete System 3K PLUS® R | DEWATEC Complete System BatchPLUS® R |
| Performance classes acc. to DIBt Approval Guidelines | C, N | C, N, D, D+P |
| Existing Approvals | X | X |
| Function with fluctuating wastewater inflow | Very Good | Good |
| Ready for the future | X | X |
| Maintenance rate acc. to DIBt Approval Guidelines | 2x Per Year | 2x Per Year 3x Per Year (D+P) |



DEUTSCHE DEWATEC 3K PLUS®



3K PLUS® – Absolutely Reliable!

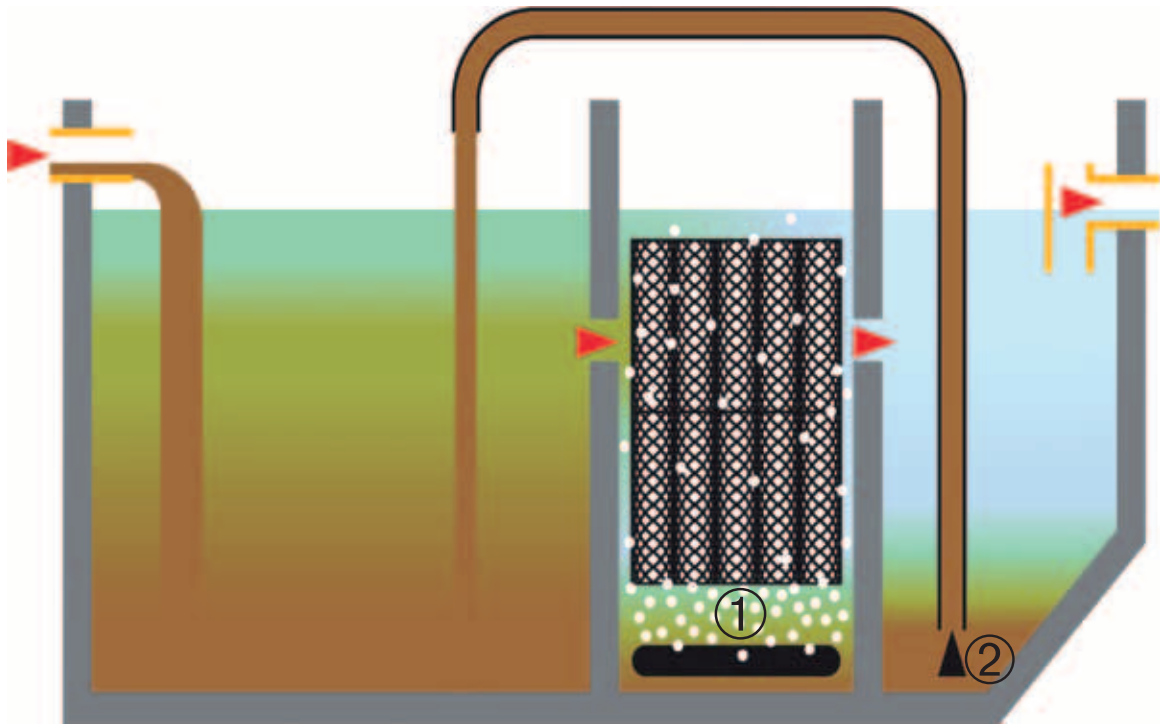
Since the early 90s, there is a no-st-rum for the fully biological treatment of wastewater in a 3-chamber or multi tank systems: The fixed-bed plant 3K PLUS® has been one of the best-selling retrofit plants ever since.

3K PLUS® is operating very stable, even with underload and at low outside temperatures.

3K PLUS® works with submerged fixed bed, which is completely surrounded by wastewater. The design provides an optimal microbial living space (determined in scientific testings).

3K PLUS® works without any submerged rotating or electrical wear parts and offers a fail-safe system control in a separate cabinet.





How Exactly Does the Fixed-Bed Process Work?

The first chamber of the wastewater treatment plant is used for the separation of solids (primary treatment).

From there, the wastewater is fed for biological treatment into the second chamber. Aerators are fixed to the bottom of the second chamber, which mix the wastewater at regular intervals, with an exactly defined volume of air. The submerged fixed bed is installed on top of the aerators (1)

The microorganisms available in the wastewater colonize on it. They form a biofilm, which meets best „working conditions“ by the presence of nutrients in the wastewater in combination with the determined aeration of the fixed bed.

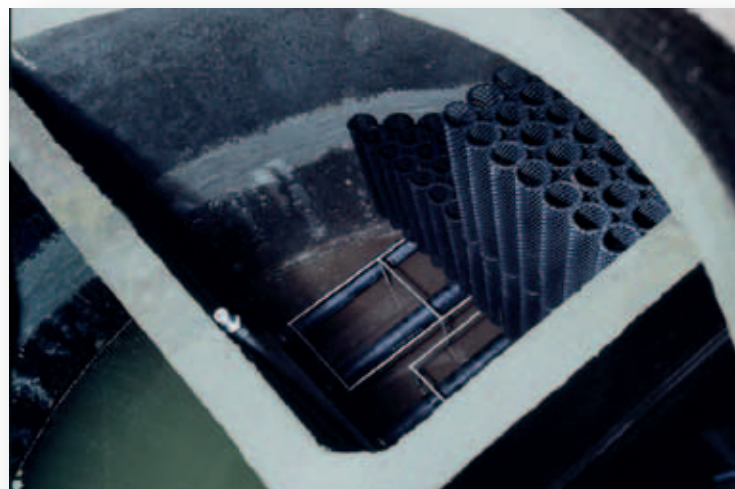
Excess microorganisms are solved by the entraining air from the fixed bed again and again, and then flushed with the biologically treated water into the third chamber for secondary sedimentation. There they settle to the bottom as so-called excess sludge, which is led back to the first chamber of the primary treatment via an airlift (2), before the purified water leaves the wastewater treatment plant.

Excellent Effluent Quality*:

| | |
|-----------------------------|----------------------|
| ■ COD: | 35,0 mg/l - 93,6 % |
| ■ BOD ₅ : | 4,0 mg/l - 98,4 % |
| ■ NH ₄ -N: | 5,1 mg/l - 85,8 %** |
| ■ N _{tot.anorg.} : | 16,0 mg/l - 67,9 %** |
| ■ SS: | 9,0 mg/l - 97,2 % |

* Measured average values and determined efficiencies for 3K PLUS, Performance Class D, during the approval test in Germany by the independent experts at the Aachen Prüfinstitut für Abwassertechnik, short PIA.

**Average values obtained for temperatures ≥ 12 °C





DEUTSCHE DEWATEC 3K PLUS®

**DIBt - Approval
Z-55.6-2**

Simple Design - Superior Reliability!

The retrofitting of all pre-assembled modules is quick and easy realised through the tank opening.

Tank installations are wearless.
No electrically driven or rotating components in the wastewater.

Total aging resistance of all components against domestic wastewater.

“Garden friendly” installation!
In case of retrofitting an existing septic tank, your garden remains untouched.

DIBt approval & CE compliant.
Hardly a wastewater treatment system in Europe has been tested more frequently, so strictly and with such good results.

Proven suitability for underload!
Especially suitable for permanently low wastewater inflow.



... as Retrofitting-Unit or Complete System!

Very Versatile !

Die 3K PLUS® in cylindrical plastic tanks of DEUTSCHE DEWATEC offers a variety of product features, beyond competition. With 3 standard diameters it is ideally suitable for new installations as well as for retrofitting of existing concrete tank. A customized and tailor-made production for your requirements is possible.

Easy installation by fully pre-assembled system – which leads to fault free installation and less time requirement for commissioning.

Custom-fit to your existing underground tank - no need for excavation and heavy construction machinery.

Modular system: all components of the tank equipment are accessible without major installation efforts.

Europ. Patent EP 1380545A1



DIBt - Approval
Z-55.61-386



DEUTSCHE DEWATEC BatchPLUS® Pure

DEUTSCHE DEWATEC BatchPLUS® - The Classic!

With BatchPLUS® our engineers have developed a future-proof product that has proven itself around the world, year after year.

The BatchPLUS® is adapting perfectly and always offers an above-average wastewater treatment. The quality of the system control makes the difference and your sewage so clean.

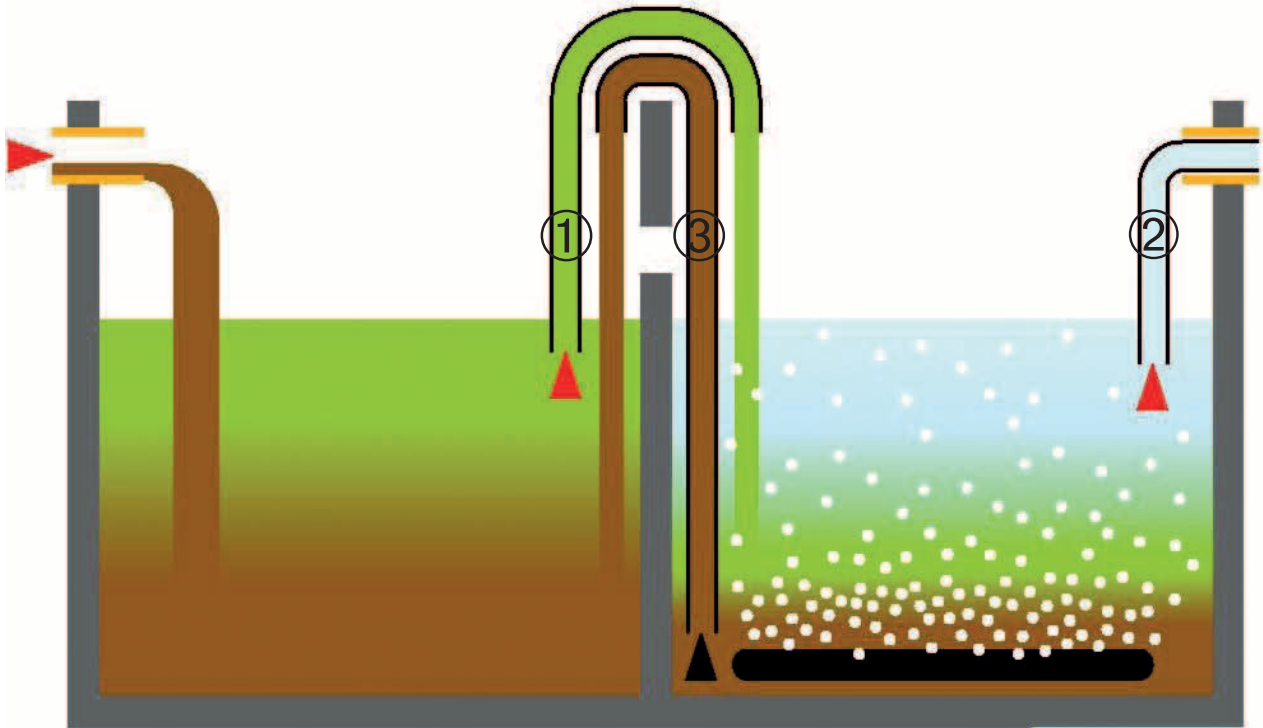
BatchPLUS® is a selected plant technology with plate aerator.

With the FlexEN®- technology, the BatchPLUS® has low energy consumption and above-average reliability, low installation time and is cost and maintenance friendly.

BatchPLUS® is fully biological, and is available for the performance classes C, N, D and + P.

BatchPLUS® of course with DIBt approval and CE certification.





This is how the SBR Process Works

The first chamber of the wastewater treatment plant is used for the separation of solids (primary treatment).

From there, the wastewater is fed for biological treatment into the second chamber (1)

During this process, and even some time after, the biological treatment zone is aerated. This means oxygen is specifically added. As a result the sludge is „activated“ and the microorganisms perform their cleaning work.

After aeration, a break/pause follows. Thereby, the clear water separates from the activated sludge. Now, first a precisely defined quantity of the treated wastewater is discharged. (2)

Then, the excess part of the activated sludge is transported back to the first chamber. (3)
The biological treatment zone can now be recharged.

Even here an excellent Effluent Quality*:

- COD: 41,6 mg/l - 93,7%
- BOD₅: 8,6 mg/l - 97,2%
- NH₄-N: 1,7 mg/l - 99,3%**
- N_{tot,anorg.}: 15,4 mg/l - 70,2%**
- SS: 13,9 mg/l - 96,4%

* Measured average values and determined efficiencies for BatchPLUS®, Performance Class D, during the approval test in Germany by the independent experts at the Aachen Prüfinstitut für Abwassertechnik, short PIA

**Average values obtained for temperatures ≥ 12 °C



DEUTSCHE DEWATEC BatchPLUS® Relax



DEUTSCHE DEWATEC BatchPLUS® Relax- Incredibly Comfortable!

BatchPLUS® Relax is a prefabricated installation kit for easy hanging on the partition wall. All lifting devices are on a bracket.

BatchPLUS® Relax impresses with easy installation. The retrofitting of all pre-assembled modules can be carried out quick and easy through the tank opening. All components are absolutely resistant to aging and environmentally-friendly.

BatchPLUS® Pure & Relax have a reduced solids and particle discharge by means of a patented clear water discharge.

Compared with conventional clear water discharge equipments this serves to protect our environment.

... and are glad to have a garden-friendly installation in case of a retrofitting!!!



DIBt - Approval
Z-55.3-120 - Performance Class C
Z-55.3-121 - Performance Class N
Z-55.3- 70 - Performance Class D
Z-55.3-102 - Performance Class +P



DEUTSCHE DEWATEC BatchPLUS®

Also as a Complete System



DIBt

- Approval
Z-55.3-122
Z-55.3-123
Z-55.3-92
Z-55.3-101

DEUTSCHE DEWATEC BatchPLUS® & Cylindrical Tank

Complete system with a customized and tailor-made manufacturing for your needs!

Both complete plant systems have low energy requirements by FlexEN® technology. In case the wastewater inflow is low, the unit automatically switches to a best, power saving operating mode. Low maintenance expenses due to mature technology and the bundling of technical units outside the tank and the wastewater.

DEUTSCHE DEWATEC BatchPLUS® & Rectangular Tank

Completely preassembled system! The jointless rectangular tank offers reliability over decades by its structure and wall thickness. With this, its dimensions and weight are so small, that the installation can be realised quick and easy, garden friendly and cost effective with minimal excavation – what could be better!



DIBt - Approval
Z-55.31-387



Installation of Your Complete System

**DEUTSCHE DEWATEC
3K PLUS® oder BatchPLUS® & Tanks
As Simple and Garden Friendly as that!**



Controls D-Pilot for 3K PLUS® & BatchPLUS®



Console for weather-protected
indoor installation



Optional wall cabinet for indoor
and outdoor installation



Optional
weather-protected
outdoor cabinet for
outdoor installation

Individual Electronic Components for Indoor and Outdoor Installation

- Advanced control for smooth operation
- Graphical Display
- Safe and simple to use
- Compact design with integrated magnetic valves
- As an alternative to the clearwater lifting device, a submersible pump can also be connected



Steel Cabinets have a Long Tradition!

Due to the excellent surface coating, it can be easily used for indoor and outdoor installations.

Together with the compressor, selected as the best to the needs, you can get a steel closet as an option, which combines the maximum reduction of operating noise, durability and good design.



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