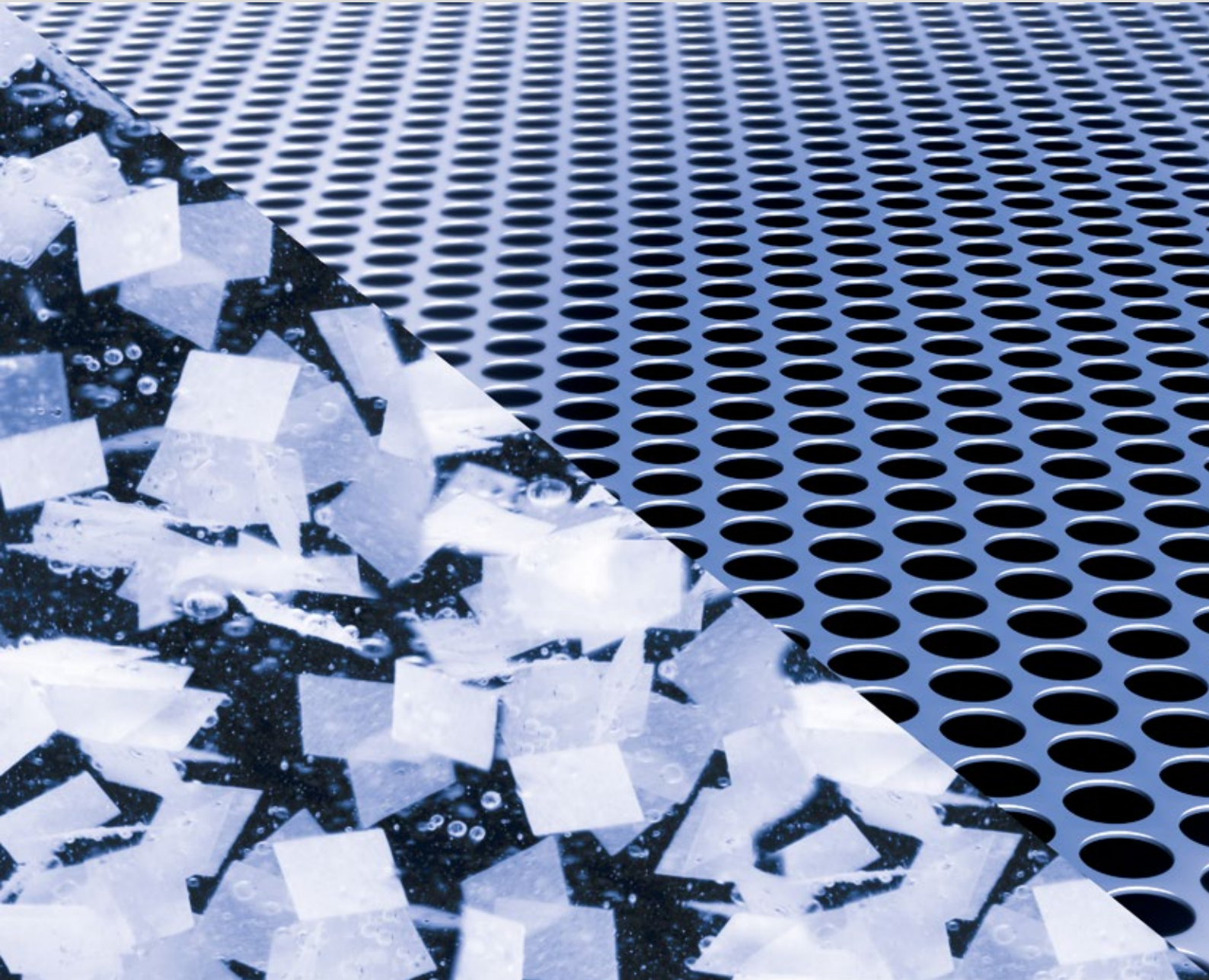


WABAG FLUOPUR®



Moving bed process for biological wastewater treatment

WABAG FLUOPUR®

Biological wastewater treatment using a moving bed process

FLUOPUR® is a moving bed process developed by WABAG for biological wastewater treatment.

It represents the highest technological standard and is the result of WABAG's many years of experience and detailed process knowledge.

FLUOPUR® is employed across the whole spectrum of wastewater treatment, whether for:

- municipal or industrial effluents
- or for landfill leachate.

FLUOPUR® is not only suitable for new facilities, but also the upgrading of existing plants.

Whatever the case, FLUOPUR® is an all-purpose method for:

- Carbon removal
- Nitrification
- Denitrification
- Phosphorus elimination

Adopting the process will provide you with:

- **The optimum use** of existing tank volumes
- **A high degree of flexibility** with regard to continued use of existing aeration systems
- **The cost-effective realisation** of a broad range of plant sizes (100 p.e. upwards)
- **Wide-ranging alternatives** for the treatment of industrial wastewater flows (complete, preliminary or post-treatment)



Chur WWTP, Switzerland
Commissioning 2005-2007, 130'000 p.e.

Bazenheid WWTP, Switzerland
Commissioning 2008, 32'000 p.e.



Jonschwil WWTP, Switzerland
Commissioning 2004, 7'500 p.e.

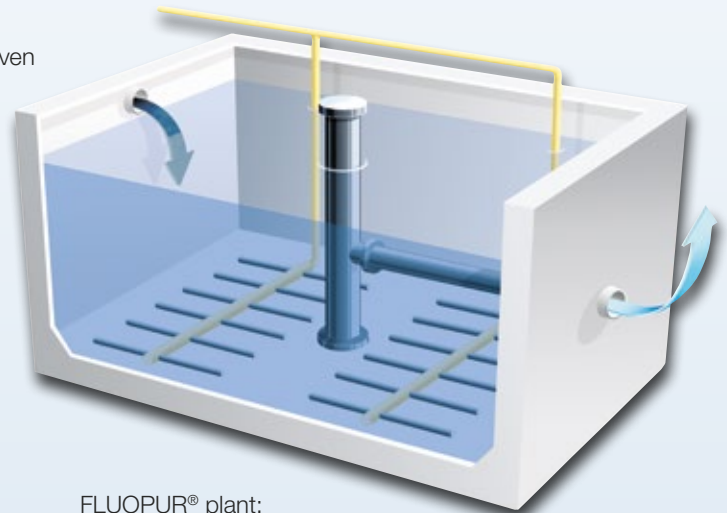
Echallens WWTP, Switzerland
Commissioning 2007, 13'500 p.e.

FLUOPUR® process

Optimum wastewater treatment based on innovation

The FLUOPUR® process offers a diversity of benefits based on proven features:

- Low space requirement
- Low cost realisation
- Low energy consumption



FLUOPUR® plant:
Fine bubble aeration and retaining device

Benefits derived from an intelligent concept...

...for the carrier material:

The FLUOPUR® system employs a proprietary material patented by WABAG as a biomass carrier. This consists of a thermally compacted PE/PP fleece material with high chemical and mechanical stability.

Using this specific carrier material in a fluidisation system results in:

- **Low reactor volume requirements** in a moving bed system due to the high specific surface of the fleece (1,200-1,800 m²/m³)
- **High operational reliability** due to the low volume of the carrier material (15 to 25% filling ratio)



FLUOPUR® carrier material in the moving bed

...for the retaining device:

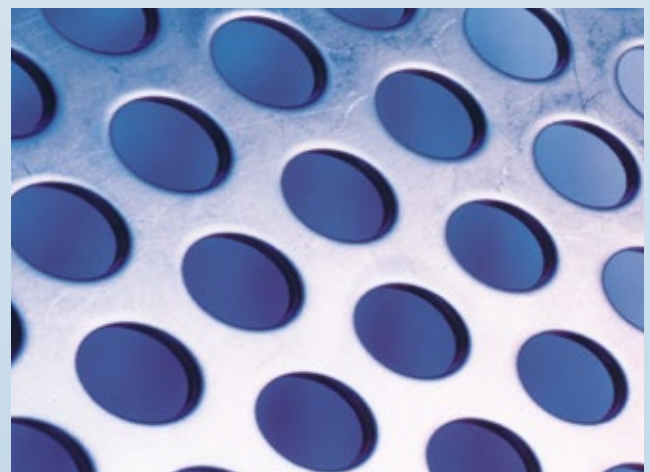
A device which has been finely tuned to the FLUOPUR® process is used for the retention of the carrier material. Specific advantages in the design and operation of facilities derive from the combination of the carrier material and this optimised retaining device. These include:

- **High hydraulic loading capacity** due to the low volume of the fleece
- **Low maintenance costs** due to the self-cleaning action of the fleece

...for the aeration process:

Fine bubble aeration is sufficient to fluidise the carrier material, which means:

- **Low energy consumption** due to efficient aeration
- **The existing aeration system** can often be used



Perforated plate retaining device

High flexibility based on different process applications

The FLUOPUR® system offers a choice of two different types of process application:

- Pure moving bed system
- Hybrid system (combination of activated sludge plus FLUOPUR® carrier material)

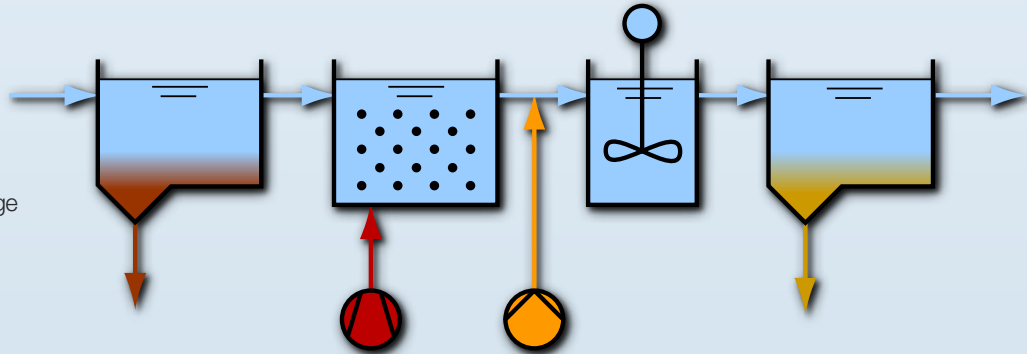
These process applications result in particular benefits:

- A reduction of the sludge load transported to secondary clarification through the elimination of the return sludge (pure moving bed system)
- Easy phosphorus elimination through simultaneous precipitation (hybrid system)

In addition, the FLUOPUR® system can be implemented for pre-treatment, as well as for the post-treatment of municipal or industrial effluents.

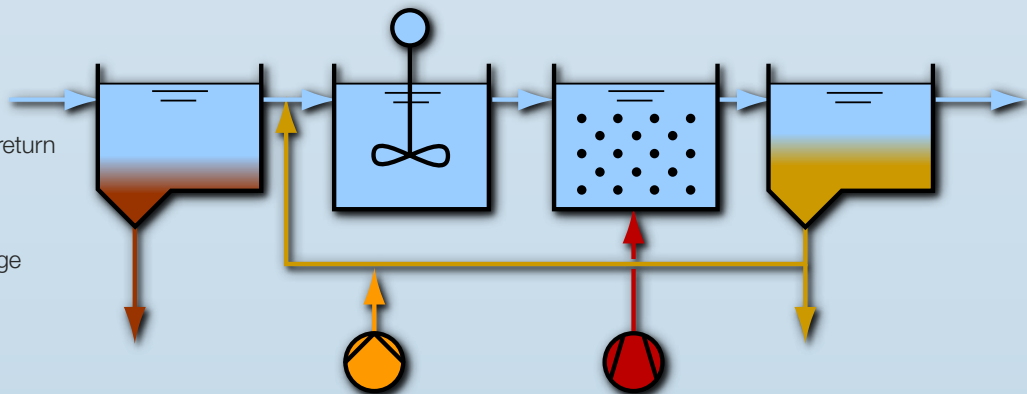
Pure moving bed:

- Anoxic and/or aerobic tanks with FLUOPUR® carrier material
- Precipitation stage for improving the sludge settling property and possible phosphorus elimination
- Secondary clarification for excess sludge
- No sludge recirculation



Hybrid system:

- Anoxic tank with activated sludge
- Aerobic tank with activated sludge and FLUOPUR® carrier material
- Secondary clarification for excess and return sludge
- Sludge recirculation
- Phosphorus precipitation in return sludge



FLUOPUR® advantages in brief

- Flexible and low cost application through the use of existing tank volumes and/or existing aeration systems
- Low energy consumption due to relatively easy fluidisation of the FLUOPUR® carrier material
- High operational flexibility due to low filling ratio

Interlaken WWTP, Switzerland
Commissioning 2012, 40'000 p.e.





WABAG offers sustainable solutions for:

- Drinking water treatment
- Industrial and process water treatment
- Water reclamation
- Sea and brackish water desalination
- Municipal wastewater treatment
- Industrial wastewater treatment
- Sludge treatment

WABAG is one of the world's most innovative water treatment companies with know-how in specific technologies and in-house developed processes such as:

- | | |
|---|--|
| ■ Biofiltration | BIOPUR® |
| ■ Moving bed biology | FLUOPUR® |
| ■ Activated sludge processes | Hybrid™, SBR, MICROPUR-CAS® |
| ■ Membrane bioreactor | MARAPUR®, MICROPUR-MBR® |
| ■ Membrane filtration | RO, MF, UF, NF CERAMOPUR®, CERAMOZONE® |
| ■ Denitrification | BIODEN®, ENR® |
| ■ Oxidation processes | ADOX®, BIOZONE® |
| ■ Adsorption processes | CARBOPUR®, PACOPUR® |
| ■ Thermal desalination | MED, TVC, MVC, MSF MED XXL™ |
| ■ Fine sieving | MICROPUR® |
| ■ Deep bed filtration in various designs | |
| ■ Anaerobic sludge digestion including advanced energy recovery | |

The WABAG Group represents a leading multinational player with companies and offices in 20 countries and a focus on emerging markets in Europe, Africa, Middle East, South East Asia, China and India.



sustainable solutions. [for a better life.](#)

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