

# HyVAB®

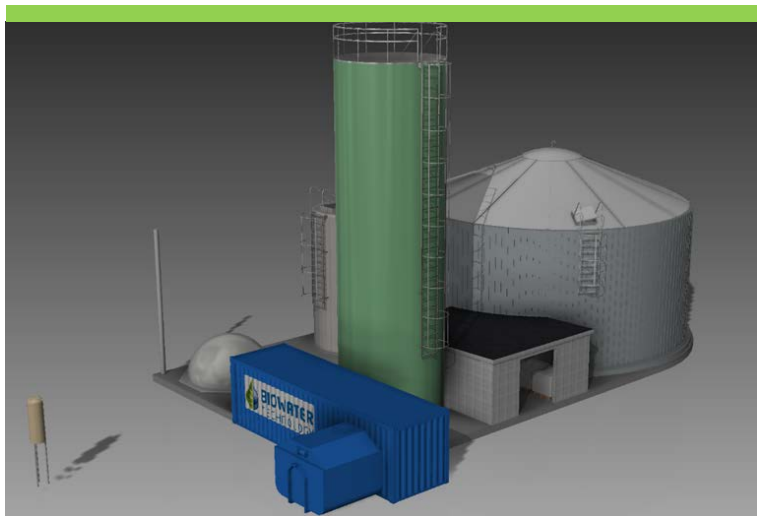
## HYBRID VERTICAL ANAEROBIC BIOFILM

### OUR MOST ADVANCED ULTRA-HIGH RATE TECHNOLOGY

The HyVAB® has been developed by Biowater Technology, with support from The Norwegian Research Council and Innovation Norway, combining Anaerobic Digestion with our patented CFIC® biofilm technology.

### SPACE SAVER, ENERGY GENERATOR

As an ultra-high rate technology, HyVAB® offers a footprint significantly smaller than conventional treatment. This is due to an innovative tower arrangement which minimizes sludge production offering considerable saving potential to the end user. HyVAB® also offers superb sustainability credentials through the production of a proven high quality biogas bi-product available for power and heat generation, and no odours in operation or in effluent.



HyVAB® project design service including process guarantee



### BENEFITS OF HyVAB®

*Suitable for a wide range of industrial applications.*

*COD removal of over to 95% achievable.*

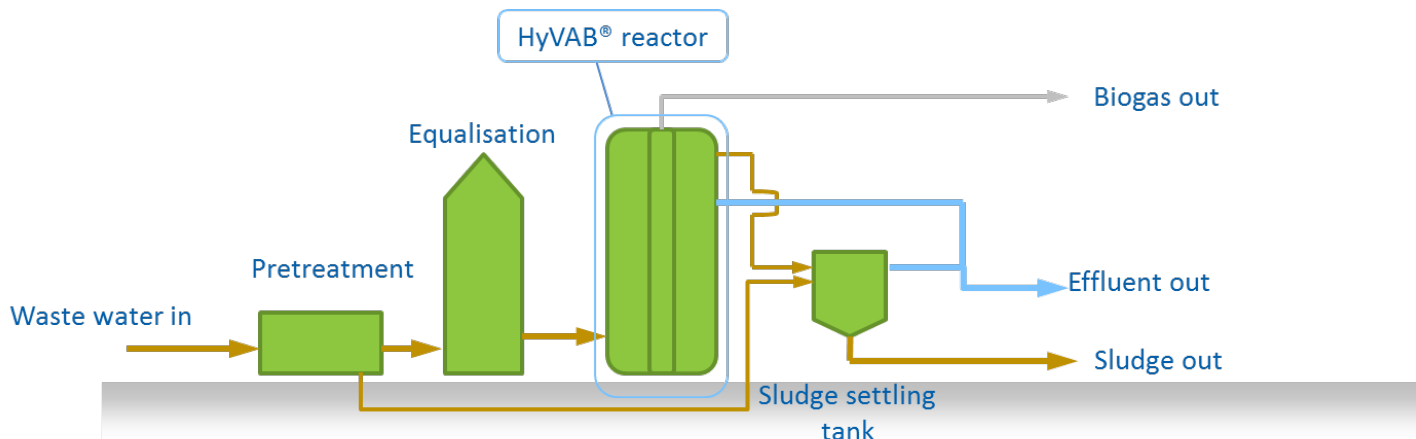
*Significant reduction in sludge production (80%) compared to other state of the art technologies, can allow zero desludge.*

*The technology can realize Zero Energy Use and even a Positive Energy generation.*

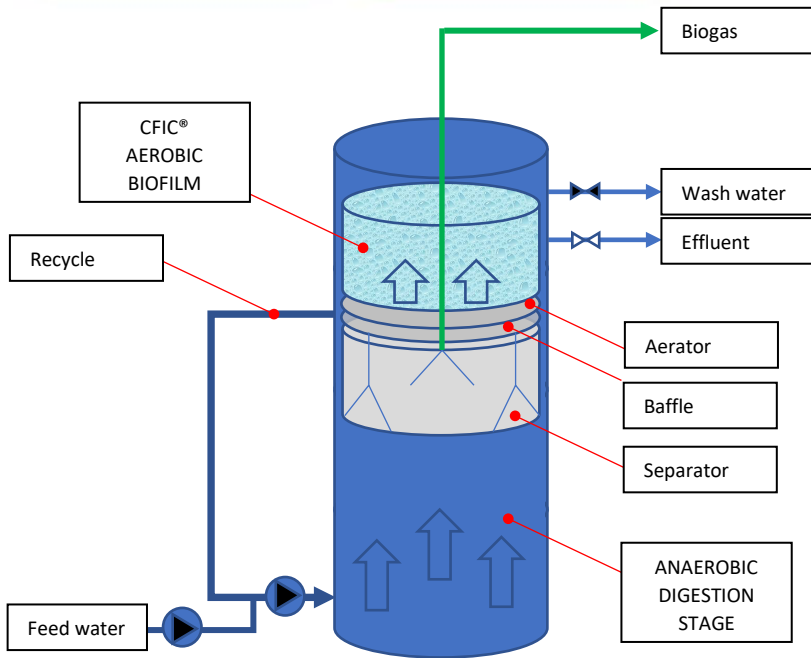
*High concentration methane (up to 84%) in generated biogas, perfect for energy generation.*



Turnkey HyVAB® project delivery by Biowater



Typical HyVAB® process arrangement



HOW HyVAB® WORKS IN TWO STEPS

- In the bottom of the reactor (the first step) is an anaerobic biological reactor, where 75% of the organic waste is converted into methane gas.
- At the top level of the tower (the second stage) is a new type of aerated biofilm reactor which utilises Biowater’s CFIC® process. This consumes the remaining organics and odorous gases that emerge.

PARTNER OF CHOICE

Biowater support customers from the earliest project stages through to handover and service agreements. Early partnering services include sampling and analysis to understand the specific waste water qualities, and pilot trials using our innovative containerised pilot HyVAB® plants.



HyVAB® pilot container

SERVICES

We will guide you through the process from start to finish:

- Upgrade existing plants.
- Greenfield plants.
- training/education.
- Sampling and pilot studies
- Operational cost analysis
- Process selection
- Service, maintenance and optimisation

CONTINUOUS IMPROVEMENT AND TotEx

The HyVAB® design is always improving to keep our technology state of the art and to continuously offer improving value to our customers. Ongoing research and development, and pilot trials for complex non-routine applications/industries maintain the HyVAB® as the most advanced ultra-high rate waste water treatment solution.

Specific ongoing trials are optimising HyVAB® for:

- Municipal Treatment
- Pharmaceutical Industry
- Tobacco Industry.
- Oil Industry
- Combination with tertiary treatment.

PRODUCTS FROM BIOWATER

CMFF - Complete Mix Fixed Film

CFAS - Combined Fixed Film Activated Sludge

CFIC - Continuous Flow Intermittent Cleaning Package Plants

HyVAB – Hybrid Vertical Anaerobic Biofilm

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Biowater Technology is an innovative company with over 40 years of experience in the biological treatment field. Our focus is on saving energy and resource recovery, with water as our major resource.