



## ANUBIX™-B Anaerobic reactor

High rate anaerobic wastewater treatment process

### Key features & benefits

- Green energy generation through biogas production from wastewater
- Fully developed and tested on a large variety of effluents
- Low maintenance, robust and reliable no-nonsense system
- Superior three-phase separator for maximized solids separation, minimizing the risk of sludge wash-out and thus allowing for granular or flocculent sludge operation
- Capable of handling medium to high loading rates; up to 15 kg COD/m<sup>3</sup>.d depending on the type of effluent
- Gas-holder not required through integrated storage capacity
- No moving parts inside the reactor

### How we create value

- Tailor-made (turn-key) solutions
- System design focused on minimal maintenance & operational requirements
- Fully automated design
- as per the clients request concrete or steel reactors can be designed
- GWE employs highly experienced technologists and technicians able to provide solutions for any wastewater related problem
- 24/7 reachable, worldwide, fast reacting, after sales service department
- Lab and pilot testing facilities





ANUBIX™-B , GWE’s “work horse” most recent version, is already the 7<sup>th</sup> generation Upflow Anaerobic Sludge Blanket reactor since its launch in 1979. Its constant improvement now allows for the treatment of wastewaters with COD (Chemical Oxygen Demand) values of up to 25,000 mg/l.

In a typical plant, wastewater is first screened and then collected in a buffer tank equipped with an agitator. This tank is designed to allow sufficient qualitative and quantitative equalization, and to partially acidify the wastewater. This allows for a more stable operation and better sludge quality in the next stage: the ANUBIX™-B methane reactor.

Anaerobic purification takes place in the ANUBIX™-B methane reactor. Organic compounds (such as sugars) are largely degraded by anaerobic bacteria (activated anaerobic sludge) and converted into biogas (a mixture of methane and carbon dioxide). Only a small amount of sludge growth takes place at this stage.

Wastewater enters the ANUBIX™-B at the bottom via a special distribution system and rises, through a bed of active anaerobic sludge, to the top part of the reactor at a predetermined speed. Before leaving the mixed liquor passes through a built-in three phase separator at the top which diverts the

biogas and retains solids.

The modular separator units are built in stainless steel and GRP (Glass Reinforced Plastic), and are equipped with an additional cross-flow type parallel plate separator that ensures that even the smallest flocs of methanogenic sludge are retained. This special feature furthermore allows for a fast start-up, even with low quality, non-granular seed sludge.

The clarified effluent leaves the reactor through the central collecting pipe.

Biogas is collected at the top and conveyed for either, further upgrading in e.g. a BIO-SULFURIX™, after which it can be fed to a CHP unit, alternatively it may directly feed into a boiler system for steam production. Excess biogas is sent to an emergency flare.

At the project design phase additional provisions can be foreseen for pre-settling, heating, cooling, CO<sub>2</sub> degasification and inline neutralization if required.

In its seventh generation since 1979, the ANUBIX™-B reactor has proven to be highly reliable (more than 300 plants are currently in operation) and capable of handling high loading rates (up to 15 kg COD/m<sup>3</sup>,d).





### Advantages of ANUBIX™-B (UASB) reactor:

- Works with granular and flocculant sludge
- High amount of biomass and high process efficiency
- Superior separation of suspended matter – minimum risk of excessive sludge loss
- Solid, corrosion resistant construction
- Easily accessible in case of inspection
- No moving parts inside the reactor
- Faster startup
- Superior treatment
  - Lower effluent COD/BOD/TSS
  - Small aerobic polishing stage needed
- Reduced pre-treatment needs
  - Less EQ
  - Less chemical use
- Sludge storage not required
- Gas holder not required
- Robust and reliable
- Steel or concrete construction





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