

TVTbio Floating BioReactor for Wastewater Treatment

- **Quickly mitigates fines due to non-compliance**
- **Controls DO and pH to eliminate fluctuating discharges**
- **Increases microbial density by 10⁶**
- **Handles variability in wastewater loading**
- **Stops odor complaints**
- **Provides a stable and predictable biological environment**
- **Modular & deployable**
- **Payback in 12 – 24 months**
- **Expense-neutral ownership with lease option**

The TVT BioReactor is suitable for municipal wastewater, agricultural lagoons and ponds, and industrial carbon-based waste streams. It consists of an activated sludge system combined with a patented biological treatment process that increases microbe populations *by a factor of 1,000,000* - exponentially improving the performance over conventional treatment methods.

Working with proven patented technologies, specific bacterial formulations in the biochamber are combined with aeration to degrade the wastewater in the lagoon, retention pond or aeration unit. The combined bio-mechanical approach allows for quicker recovery from shock loading or spills, eliminates odors, and increases overall efficiency.

The biochamber is filled with polypropylene packing medium, which acts as a substrate for biofilm growth and provides optimum conditions for rapid and continuous growth of application-specific microbial cultures.

The TVT BioReactor is available in two sizes: a 20-foot version that recirculates up to 500,000 gallons per day and a 30-foot version which recirculates up to 1 million gallons per day. It not only handles the daily inflow but treats the existing lagoon quickly and efficiently.

While the TVTbio system provides improved treatment efficiency without adding biological cultures, its performance is dramatically increased



with the addition of application-specific microbiology cultures, reducing the need for continuous microbial additions and often eliminating some of the installed aeration equipment, resulting in lower operating costs. The bacteria chosen for production are target specific, not pathogenic, and are proven safe.

The basic TVTbio system includes the floating HDPE BioReactor with sampling ports and FRP decking, aeration equipment with variable speed drives and instrumentation. The instrumentation package provides dissolved oxygen control, pH and temperature monitoring and data logging. The DO analyzer features a self-washing routine as standard. Dock access and additional measurement points such as lagoon level, influent flow, effluent flow and one or more remote sampling pods for DO, pH and temperature are available as options.

A color operator touchscreen provides web-enabled access to measurement information and data logs, with remote notification. Ethernet TCP/IP and Modbus RS-485 communications are included as standard. The data acquisition and control unit, operator touchscreen and variable speed drives are mounted in NEMA 4X, all-weather enclosures and the VFD keypad provides complete manual operational backup to the touchscreen. Indicator lamps are provided for remote verification of equipment operation.

TECHNICAL SPECIFICATIONS, BIOREACTOR**Dimensions:**

TVT-BIO-20

Length: 20 feet (6.1 m)

Width: 8 feet (2.43 m)

Height: 7 feet (2.13 m)

TVT-BIO-30

Length: 30 feet (9.1 m)

Width: 8 feet (2.43 m)

Height: 7 feet (2.13 m)

Power Requirement: 480Vac, 50/60 Hz**Horsepower (VFD):**

Aerator 7.5 HP (5.5 kW)

Rotary Blower 5 HP (4 kW)

Treatment Capacity:

TVT-BIO-20

Inflow: 45,000 gallons/day

Total: 500,000 gallons/day

Turndown: 11:1

TVT-BIO-30

Inflow: 90,000 gallons/day

1,000,000 gallons/day

Turndown: 11:1

Materials of Construction:

Body: high-density polyethylene (HDPE)

Deck & railings: fiberglass reinforced polymer (FRP)

TECHNICAL SPECIFICATIONS, SENSORS**Dissolved Oxygen Analyzer**Range: 0 - 25 mg/l or ppm
0 - 120 % SAT

Accuracy: +/- 0,1% of reading

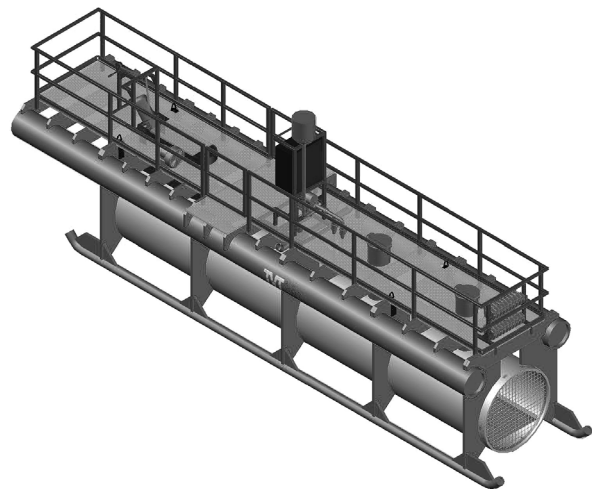
Response Time: t_{90} less than 1 second**pH & Temperature Transmitter**

Range: 0 -14 pH / - 1000 ... + 1000 mV

Input Impedance, pH: $> 2 \times 10^{12} \Omega$ Accuracy: $\pm 0,01$ pH / 1 mVLinearity: $\pm 0,01$ pH / 1 mV

Response time: Approx. 10 sec.

- *Installs in existing lagoons*
- *Operates with minimal monthly maintenance*
- *Controls nitrification*
- *Increases DO to meet biological oxygen demand (BOD)*
- *Controls odor*
- *Reduces fats, oils, and grease (FOG)*
- *Improves settling ability of sludge*
- *Reduces operational costs*



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