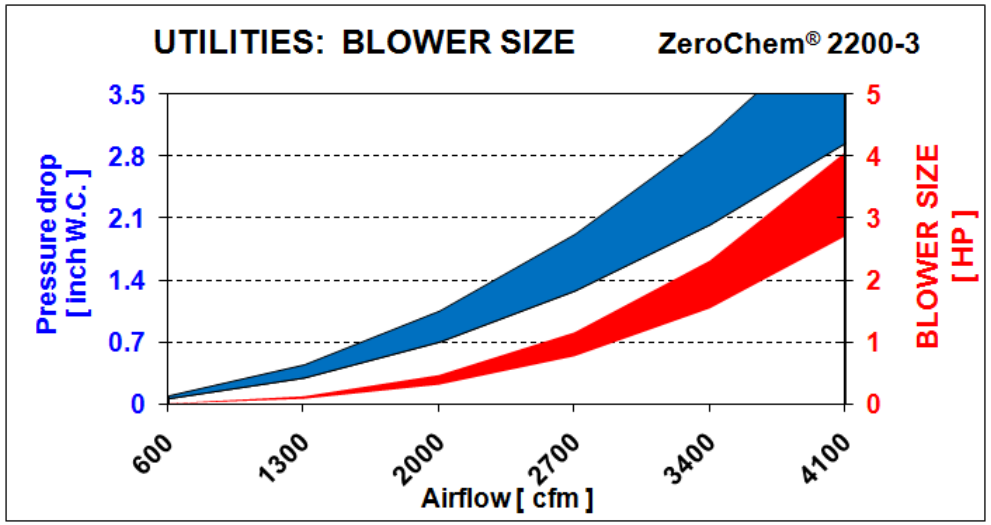
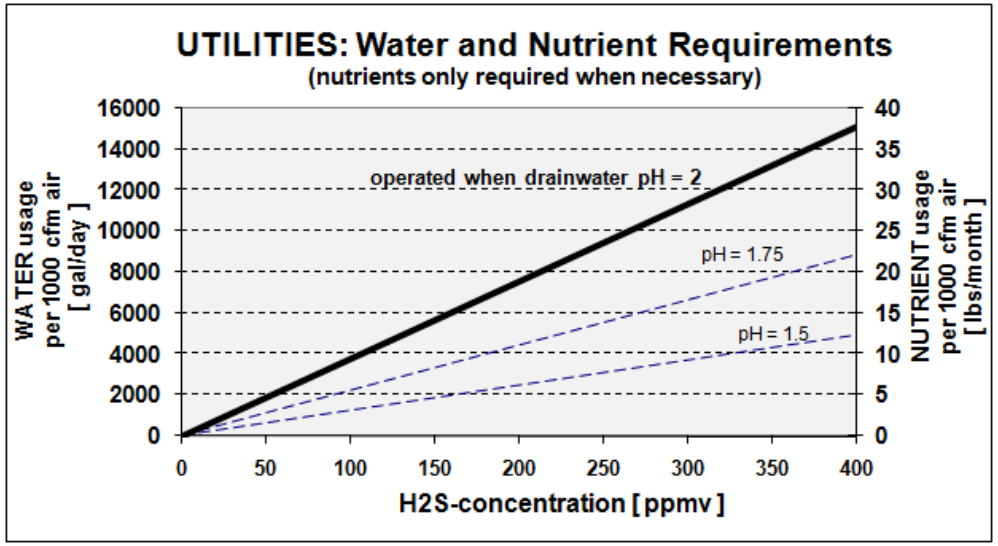
Technical Specification Sheet summary ZeroChem® 2200-3

	Bioreactor Vessel	Water Panel	Electrical Controller	Recirc Drain
Dimensions :	**205"H x Ø 94"**	**32"H x 32"W x 12"D**	**12"H x 12"W x 6"D**	**2'-4 ¼"L x 3'-1 ¼"H x1¼' W**
Footprint :	**55 ft²**	N/A	N/A	N/A
Weight :	**4039 lbs** (transport) **14651 lbs** (max. operational)	**97 lbs**	**1 lbs**	**45 lbs**
Materials :	**Fiber Reinforced Plastic** with internal corrosion protecting liner and external UV protecting coating	**Stainless Steel** (cabinet) **PVC** (internal water piping)	**ABS**	**PVC**
Air pressure range :	**- 8" W.C. till + 8" W.C.**	N/A	N/A	**- 8" W.C. till + 8" W.C.**
Water pressure range :	N/A	60 - 75 PSI water source[1]	N/A	**- 8" W.C. till + 8" W.C.**
Additional information :	**Color:** RAL 7032 (pebble grey) **Corrosion protection:** Premium vinyl ester resin (ie: Corve 8301 or Heron 922 and blue pigment). **External Topcoat:** C-glass or synthetic veil with pigmented, isophalic resin and UV filter. **Design Life:** 50 Years **Wind load:** max. 140 mph **Seismic zone:** 4 **Foundation design:** This standard is not part of the scope of supply. As guidance, the pad typically is a minimum of eighteen inch (18") > reactor (Ø) to allow for anchors. **Provided with:** Air Inlet Transition with a 18" diameter flange for ductwork connections. Includes one (1) one-inch coupling for inlet air sampling or measurements.	**Mounting:** The panel should be mounted three (3) feet from the reactor in Class 1, Division 2 area. A pedestal can be provided for mounting as Optional Accessory. **Water Connections:** ANSI 2" flanged inlet water connection to either potable or plant effluent water. **Note:** *A junction box is included for all electrical connections to the Electrical Control.* **Provided with:** ***Nutrient Dosing System*** including pump and tank. ***Panel Heater***, 120VAC self-regulating unit. [1] *Water pressure must remain constant, meaning fluctuating less than + / - 3 PSI.*	**Mounting:** This process control box to be mounted into an electrical panel. It comes with a HMI (4.5" x 3.4") to be mounted in electrical panel. **Power connection:** 85-264 VAC; 47-63 Hz; 0.9A@100VAC, 0.6A@200VAC. **Inlets/Outlets:** 24VDC inputs to connect with the junction box of the Water Panel. Potential free relay outputs to connect with the Water Panel and alarm notifications. Alarm outputs: System Running, System Failure. Labeled terminals for external wiring. **Human Machine Interface (HMI):** To view control program settings, system alarms, system status and system data. **Provided with:** Two communication ports (RS232C with Modbus RTU).	**General:** This water lock connects to the bioreactor drain and prevents untreated air from bypassing the reactor and serves as a pH sampling location. **Position on Bioreactor**: The drain is located clockwise at 45° from the Air Inlet position (0°). **Provided with:** Connections to hook-up the temporary recirculation pump during the start-up to speed-up microbial growth and reduce the duration of the start-up period.



Note: Pressure losses over bioreactor only.



Note: Design bioreactor for standard operation at pH = 2.

UTILITIES: WATER QUALITY	
Quality	Potable water or effluent water from a wastewater treatment facility*
pH	6.0 - 8.0
Min./Max. temperature	10 - 35°C
No nutrients are required if: ** the effluent water complies with the following standards:*	
1. Required quality as originates from an (secondary) aerobic municipal waste water treatment plant; no toxics are present.	
2. COD < 100 mg O_2/L	
3. BOD < 30 mg O_2/L	
4. N_{tot} = 2-20 mg N/L	
5. P_{tot} = 1-5 mg P/L	
6. Chlorine < 5 ppm (total Chlorine; e.g. Cl_2, OCl^-)	
7. TSS** < 20 mg/L (if higher a self-cleaning filter might be possible to use)	
8. Salts < 2,000 ppm (e.g. NaCl, KCl)	
9. Hardness < 400 mg $CaCo_3$ (when system operating at pH=2)	
Note: in case the secondary effluent water deviates from the above requirements, an analysis is necessary and possibibly requires specific tailor-made nutrient dosing.	
**Total Suspended Solids	