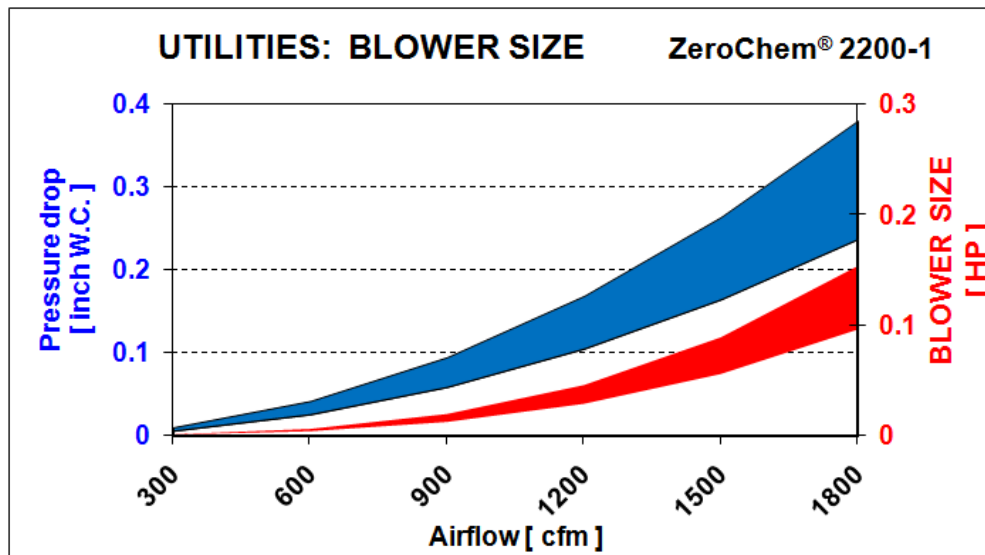


Technical Specification Sheet

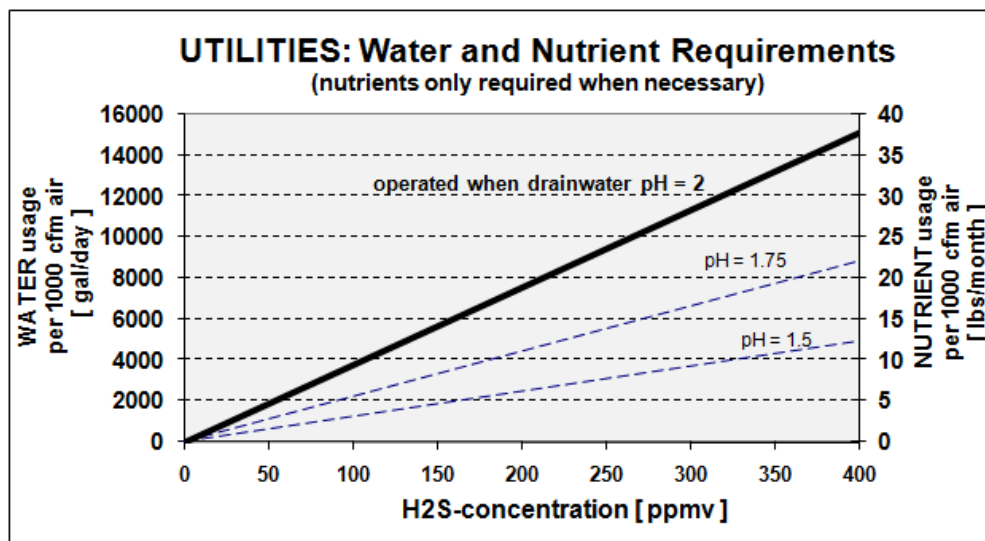
summary

ZeroChem® 2200-1

| | Bioreactor Vessel | Water Panel | Electrical Controller | Recirc Drain |
|--------------------------|---|--|---|---|
| Dimensions : | 122"H x Ø 94" | 32"H x 32"W x 12"D | 12"H x 12"W x 6"D | 2'-4 1/4"L x 3'-1 1/4"H x 1 1/4' W |
| Footprint : | 55 ft ² | N/A | N/A | N/A |
| Weight : | 1918 lbs (transport) 5456 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 : | <p>Color: RAL 7032 (pebble grey)</p> <p>Corrosion protection: Premium vinyl ester resin (ie: Corve 8301 or Heron 922 and blue pigment).</p> <p>External Topcoat: C-glass or synthetic veil with pigmented, isophalic resin and UV filter.</p> <p>Design Life: 50 Years</p> <p>Wind load: max. 140 mph</p> <p>Seismic zone: 4</p> <p>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.</p> <p>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.</p> | <p>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.</p> <p>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.</p> <p>Provided with: Nutrient Dosing System including pump and tank. Panel Heater, 120VAC self-regulating unit.</p> <p>¹ Water pressure must remain constant, meaning fluctuating less than + / - 3 PSI.</p> | <p>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.</p> <p>Power connection: 85-264 VAC; 47-63 Hz; 0.9A@100VAC, 0.6A@200VAC.</p> <p>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.</p> <p>Human Machine Interface (HMI): To view control program settings, system alarms, system status and system data.</p> <p>Provided with: Two communication ports (RS232C with Modbus RTU).</p> | <p>General: This water lock connects to the bioreactor drain and prevents untreated air from bypassing the reactor and serves as a pH sampling location.</p> <p>Position on Bioreactor: The drain is located clockwise at 45° from the Air Inlet position (0°).</p> <p>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.</p> |



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: | |
| <i>* the effluent water complies with the following standards:</i> | |
| 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) | |
| <i>Note:</i> | |
| in case the secondary effluent water deviates from the above requirements, an analysis is necessary and possibly requires specific tailor-made nutrient dosing. | |
| **Total Suspended Solids | |