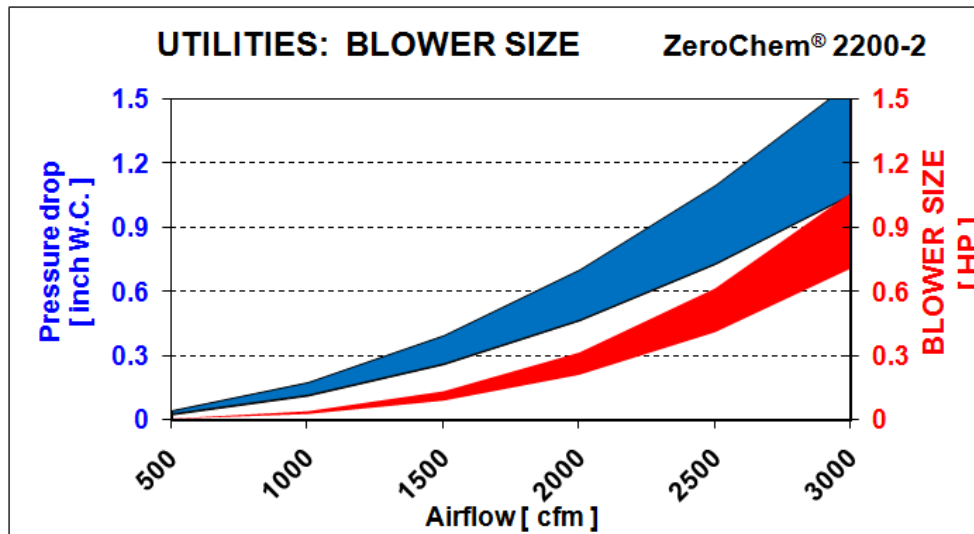


# Technical Specification Sheet

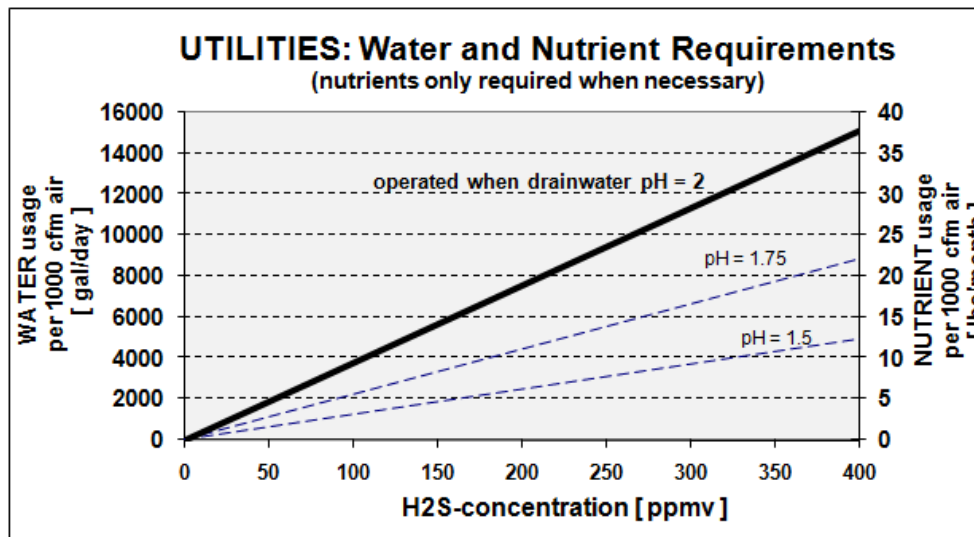
## summary

### ZeroChem® 2200-2

|                          | Bioreactor Vessel   | Water Panel  | Electrical Controller   | Recirc Drain  |
|--------------------------|---|--|---|---|
| Dimensions :             | 163½"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 x 1¼' W   |
| Footprint :              | 55 ft <sup>2</sup>  | N/A  | N/A   | N/A   |
| Weight :                 | 2978 lbs (transport)<br>10054 lbs (max. operational)  | 97 lbs   | 1 lbs   | 45 lbs  |
| Materials :              | Fiber Reinforced Plastic<br>with internal corrosion protecting liner and<br>external UV protecting coating  | Stainless Steel (cabinet)<br>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 <sup>1</sup>  | N/A   | - 8" W.C. till + 8" W.C.  |
| Additional information : | <p><b>Color:</b> RAL 7032 (pebble grey)</p> <p><b>Corrosion protection:</b><br/>Premium vinyl ester resin (ie: Corve 8301 or Heron 922 and blue pigment).</p> <p><b>External Topcoat:</b><br/>C-glass or synthetic veil with pigmented, isophalic resin and UV filter.</p> <p><b>Design Life:</b> 50 Years</p> <p><b>Wind load:</b> max. 140 mph</p> <p><b>Seismic zone:</b> 4</p> <p><b>Foundation design:</b><br/>This standard is not part of the scope of supply. As guidance, the pad typically is a minimum of eighteen inch (18") &gt; reactor (Ø) to allow for anchors.</p> <p><b>Provided with:</b><br/>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><b>Mounting:</b><br/>The panel should be mounted three (3) feet from the reactor in Class 1, Division 2 area.<br/>A pedestal can be provided for mounting as Optional Accessory.</p> <p><b>Water Connections:</b><br/>ANSI 2" flanged inlet water connection to either potable or plant effluent water.<br/><b>Note:</b> A junction box is included for all electrical connections to the Electrical Control.</p> <p><b>Provided with:</b><br/><b>Nutrient Dosing System</b> including pump and tank.<br/><b>Panel Heater</b>, 120VAC self-regulating unit.</p> <p><sup>1</sup> Water pressure must remain constant, meaning fluctuating less than + / - 3 PSI.</p> | <p><b>Mounting:</b><br/>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><b>Power connection:</b><br/>85-264 VAC; 47-63 Hz;<br/>0.9A@100VAC, 0.6A@200VAC.</p> <p><b>Inlets/Outlets:</b><br/>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><b>Human Machine Interface (HMI):</b><br/>To view control program settings, system alarms, system status and system data.</p> <p><b>Provided with:</b><br/>Two communication ports (RS232C with Modbus RTU).</p> | <p><b>General:</b><br/>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><b>Position on Bioreactor:</b><br/>The drain is located clockwise at 45° from the Air Inlet position (0°).</p> <p><b>Provided with:</b><br/>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   |
| <b>No nutrients are required if:</b>  |   |
| * 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 <sub>2</sub> /L   |   |
| 3. BOD < 30 mg O <sub>2</sub> /L  |   |
| 4. N <sub>tot</sub> = 2-20 mg N/L   |   |
| 5. P <sub>tot</sub> = 1-5 mg P/L  |   |
| 6. Chlorine < 5 ppm (total Chlorine; e.g. Cl <sub>2</sub> , OCl <sup>-</sup> )  |   |
| 7. TSS** < 20 mg/L<br>(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 <sub>3</sub> ( 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  |   |