



Liqui-Cel®

Liqui-Cel Membrane Contactors



Cost-Effective, Modular System For THM and VOC Removal

There are many applications that benefit from the removal, or addition, of dissolved gases in liquids, from potable water to carbonated beverages. Previous technologies have offered only limited control and performance, creating operational inefficiencies. They also required large physical footprints for equipment, typically placed outside, making them costly to install and operate.

Liqui-Cel Membrane Contactors from Layne Christensen Company are used extensively for the removal of dissolved gases in a number of industries, including pharmaceutical, power production, microelectronics, food and beverage, as well as in treatment of potable water.

Liqui-Cels are mounted on compact, modular skids that can fit inside of existing buildings, thereby lowering installation costs and making future expansion completed more easily.

Because they do not require chemicals to operate, Liqui-Cels are environmentally friendly and safe for plant employees.

The patented Liqui-Cel Extra-Flow Membrane Contactor design contains thousands of microporous hollow fibers knitted into an array that is wound around a distribution tube with a central baffle.

Using the baffle to direct liquid radially across the membrane array, the membrane allows direct contact between the gas and liquid without dispersion. The gas/liquid interface is immobilized by applying a higher pressure to the liquid stream relative to the gas stream.

Four different polyolefin fibers, each with unique design qualities, are incorporated into different product designs to determine the optimal membrane for each individual application.

Advantages of Liqui-Cels

- Cost-effective alternative to other forms of water treatment
- One-step total gas control
- Compact size allows for reduced footprint
- Retrofits in existing buildings
- Can be expanded easily
- Operates under pressure with no re-pumping
- Responsive to changes in flow rates
- Low air flow capability
- Can eliminate the number of transfer pumps required
- Liqui-Cels can be chemically cleaned
- Multiple contactors allow for redundancy
- Reduces chemical requirements in water
- Environmentally friendly and safe
- Membranes are NSF certified

Liqui-Cel Applications

- Reduction of VOCs
- Reduction of THMs
- Removal of entrained air
- Reduction of Radon



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Layne Christensen Company

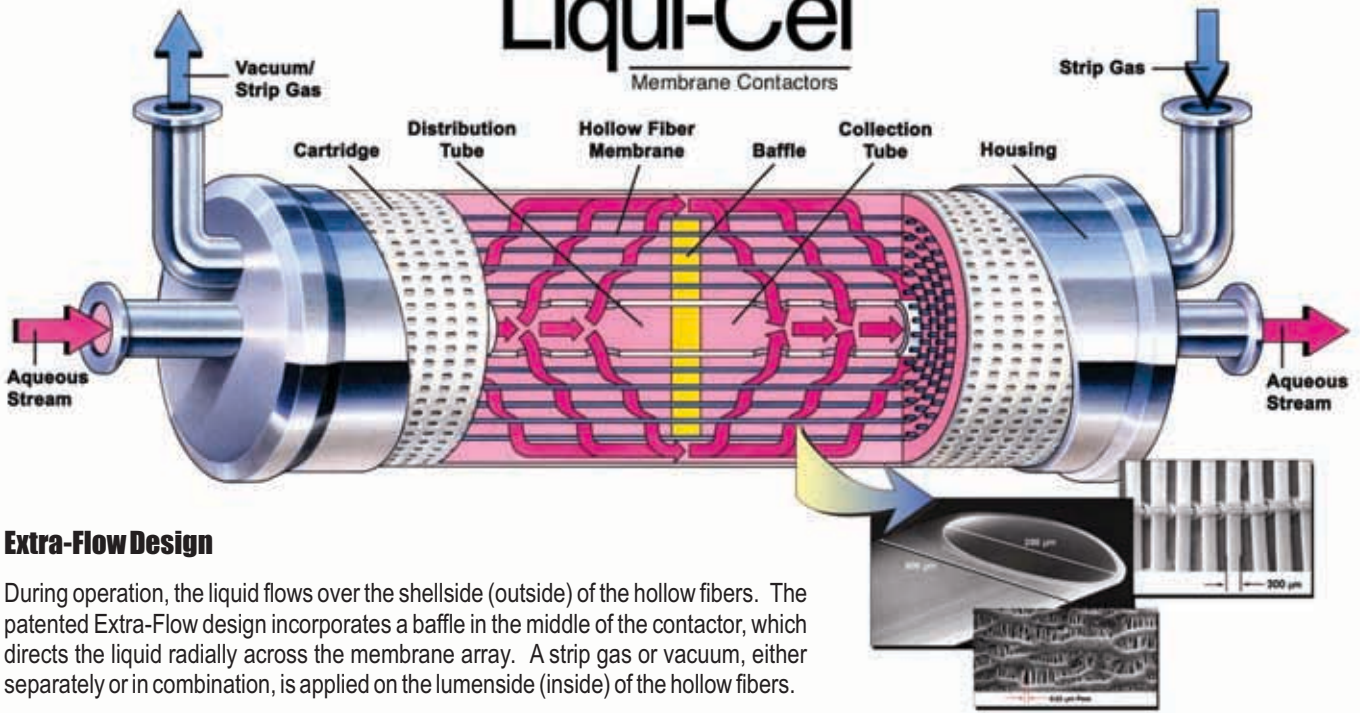
Water Technologies:

Define
Develop
Deliver



Liqui-Cel[®]

Membrane Contactors



Extra-Flow Design

During operation, the liquid flows over the shellside (outside) of the hollow fibers. The patented Extra-Flow design incorporates a baffle in the middle of the contactor, which directs the liquid radially across the membrane array. A strip gas or vacuum, either separately or in combination, is applied on the lumenside (inside) of the hollow fibers.

Because of its hydrophobic nature, the membrane acts as an inert support to allow direct contact between a gas and liquid phase without dispersion. The gas/liquid interface is immobilized at the pore by applying a higher pressure to the liquid stream relative to the gas stream.



Water before, and after, Liqui-Cel entrained air removal.

| Product | Flow Range (one device) |
|---|---|
| Liqui-Cel [®] Extra-Flow 6 x 28 | 5 – 50 gpm (1.1 – 11.4 m ³ /hr) |
| Liqui-Cel [®] Extra-Flow 10 x 28 Also in INDUSTRIAL version | 44 – 250 gpm* (10 – 57 m ³ /hr) 44 – 210 gpm (10 – 48 m ³ /hr) |
| Liqui-Cel [®] Extra-Flow 14 x 28 | 70 – 400 gpm (16-90.8 m ³ /hr) |

* X50 in our high-purity 10-inch contactor is currently rated to 210 gpm in one device

