



#### Membrane contactor model DDM

- Hydrophobic hollow fiber
- Dissolved oxygen < 10 ppb
- Modular, compact layout
- Low operating costs
- Sanitary design
- PLC controlled

## D E A E R A T I O N

Deaerated water is used in the brewing industry for flushing filters, pipes, tanks etc. When used to adjust alcohol content or original gravity after filtration or in high gravity blending, residual oxygen concentration of the deaerated water is critical as it directly influences the quality and shelf-life of the final product.

Designed for most efficient deaeration of water, DENWEL provides a fully automated solution able to economically achieve oxygen levels below 10 ppb.

# D E A E R A T I O N

## Principle

The membrane contactor contains thousands of microporous hydrophobic hollow fibers. They form a large internal surface ensuring a maximal contact area between gas and liquid. A strip gas (CO<sub>2</sub> or Nitrogen) is applied on the inside of the hollow fibers and pulled out by a vacuum. The water flows in counter current on the outside of the fibers. The high difference in partial pressure forces the oxygen out of the liquid phase to permeate through the membrane and be pushed away by the gas.

Depending on the required oxygen level or the total capacity, several membrane contactors can be arranged in parallel or series for optimal performance.

The membrane module also suits perfectly to upgrade existing deaeration plants that no longer fulfill tight limits to lower the final the oxygen concentrations of below 10 ppb.

## Control

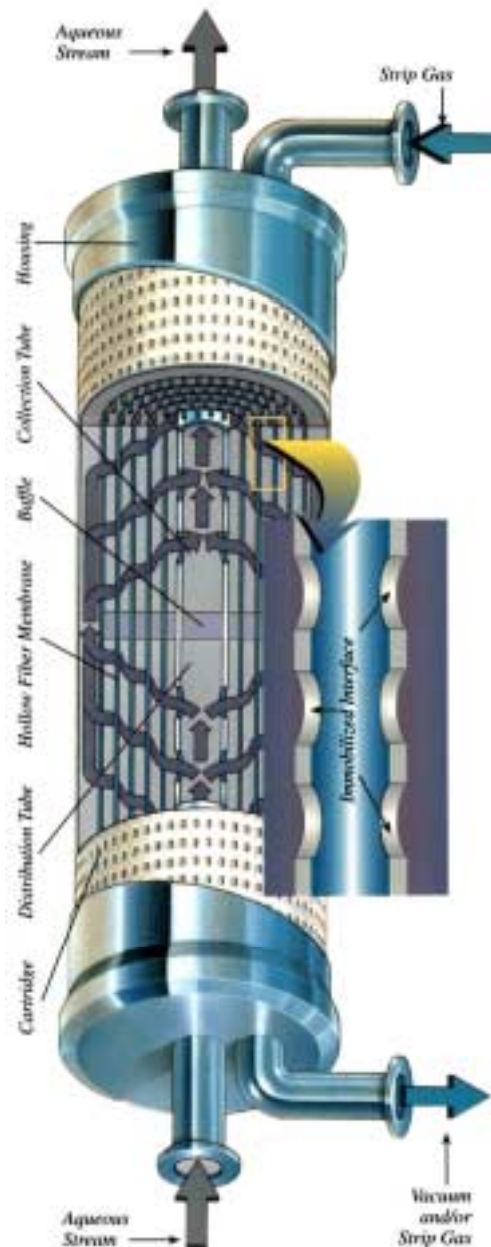
The system is PLC controlled and has automatic modes for continuous deaeration and CIP. Representative screens, control lamps and clear instruction ensure user-friendly operation. Digital and analogue output or optional field-bus interface allow remote control of the system.

## CIP

The unit has an uncompromising sanitary design and is fully cleanable. The polypropylene hollow fibers are FDA approved and CIP compatible; however, for prolonged high performance a gentle temperature gradient should be applied. DEWNEL provides complying software in order to integrate the unit into the plant's cleaning system.

## Design

The unit comes pre-assembled and tested on a compact frame and can be rapidly put into operation. Proven components guarantee low maintenance and extended lifetime. The modular layout allows easy integration into the plant and efficient combination with other process units like vacuum deaeration systems.



## Technical specifications

Nominal capacity: 50 to 1000 hl/h  
Inlet pressure: 3 bar  
O<sub>2</sub> concentration: < 10b

## Auxiliary utilities

Power supply: 230 VAC, 50 Hz  
CO<sub>2</sub>: 6 bar, purity > 99,99%  
Air: 6 bar, dried, oil free