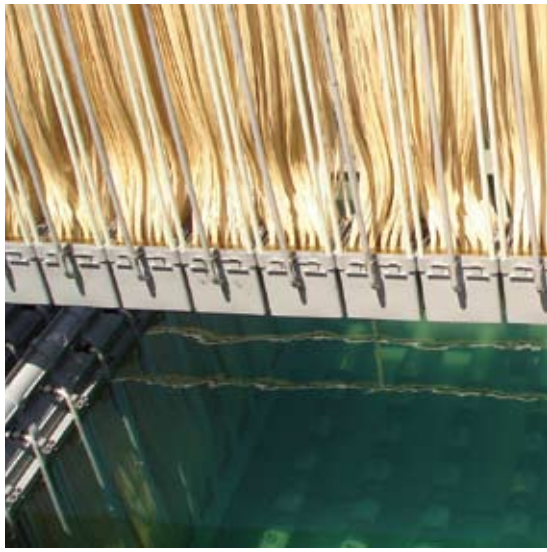
MemPulse™ membrane bioreactor (MBR) system

Water Technologies

SIEMENS

The MemPulse™ MBR provides:

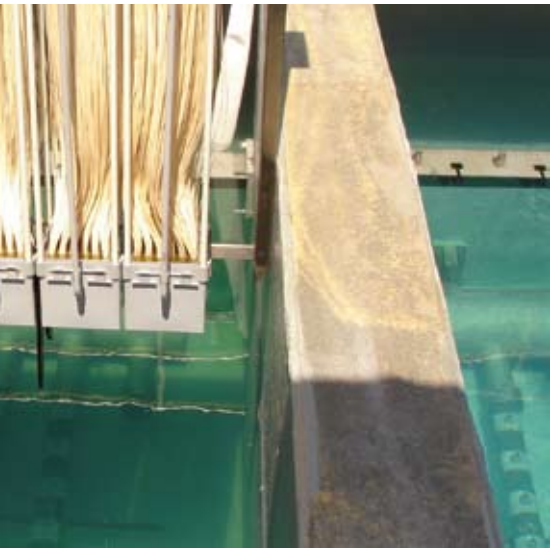
- No moving parts in the membrane air scour process, translating to decreased operating and maintenance costs and increased ease of use
- Continuous air supply to membrane cell and rack
- Reduction in air scour energy by 30%-50%
- Simple retrofit to existing systems
- No change needed in cell dimensions, blower or piping design



Benefits of replacing conventional clarification processes with membrane separation:

- High-quality effluent
- Drastically reduced system footprint
- Fewer process steps
- Eliminates sludge settleability issues
- Modular expansion capacity

The MemPulse™ membrane bioreactor (MBR) system from Siemens is a unique wastewater treatment process that combines an activated sludge biological treatment process with an innovative membrane filtration system. Siemens' continued focus on innovation has created an MBR process that provides superior management of the membrane environment, stable and flexible operation, and less overall maintenance, providing significant cost savings. This process is well-suited to a wide range of municipal and industrial wastewater treatment applications including water reuse, new housing developments, parks and resorts, retrofits and turnkey projects.



New Pulsed Airlift Technology combines simplicity with efficiency

The MemPulse™ MBR is designed to increase dependability, decrease operating and maintenance costs, and dramatically reduce energy usage. The MemPulse™ system generates rapid pulses at each MBR module using a continuous air flow without the use of valves or other moving parts. Scouring effectiveness is increased and energy consumption is reduced.

Cross-Flow Dynamics removes solids, saves energy

The aeration process produces an overall upward flow of fluid within the membrane tank parallel to the membrane surfaces. This creates a cross-flow pattern that prevents solids accumulation at the membrane surface and reduces air scour requirements. The upflow also creates a flotation effect that moves grease, scum and other floatable constituents to the tank surface, where they can readily be removed.

Fluid Renewal System prevents solids accumulation, extends membrane life

To prevent rapid membrane fouling, especially in a high suspended solids environment where continuous fluid transfer is critical, Siemens' "Fluid Renewal System" provides fluid transfer in the form of mixed liquor agitation and air scour energy through our innovative MemPulse™ MBR. This technology introduces air continuously to the base of the module while producing irregular pulses that enter the membrane fiber bundles. The mixed liquor (from a separate biological system) is drawn into the bottom of the membrane modules through an airlift effect. The air bubbles blend with the mixed liquor and rise between the individual membrane fibers, providing scouring energy at the membrane surface as well as fluidizing the membrane surface to prevent solids accumulation.

Superior Solids Distribution provides consistent, worry-free operating conditions

Historically, MBR systems introduced mixed liquor at one end of the tank and pulled return mixed liquor from the far end of the tank. This results in a solids concentration gradient across the tank, with particularly high MLSS at the far end of the tank. This imbalance causes localized areas of high membrane flux in excess of the design operating range, and preferential membrane fouling. The rapid scouring pulses created by MemPulse™ MBR provides even distribution of air and mixed liquor, ensuring consistent operating conditions for all the membrane modules.

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The information provided in this brochure contains merely general descriptions of characteristics of performance which in actual case of use do not always apply as described or which may change as a result of further development of the products. An obligation to provide the respective characteristics shall only exist if expressly agreed in the terms of the contract.

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