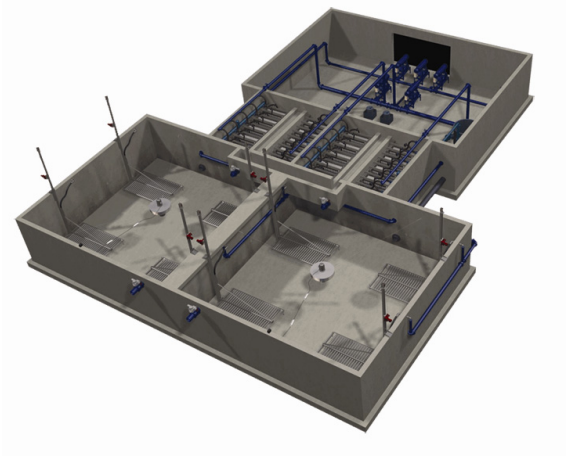
Typical Full Scale Aqua-Aerobic® MBR Schematic



Aqua-Aerobic® MBR Advantages

- Small footprint for space restricted applications
- Modular concept supports ease of expansion
- Flexible retrofit options with minimized civil costs
- Simplified pre-screening requirements
- True batch or continuous fill operation modes
- Superior performance reliability with membrane filtration
- Elevated MLSS for volume reduction or sludge recycle
- Positive barrier ensures high quality effluent is realized, even during severely under-loaded conditions
- Augmented disinfection capabilities
- Lowest energy consumption among MBR systems

Aqua-Aerobic® MBR Applications

- Enhanced biological nutrient removal
- Municipal wastewater reclamation
- Ideal for further treatment by reverse osmosis
- Impaired water bodies (TMDL limits)
- Groundwater re-injection
- Retrofits and expansion of existing treatment works
- Water quality conditioning for salt removal
- Industrial reuse limiting fresh-water demands
- Water purification membrane filtration systems
- Planning for future requirements

AQUA-AEROBIC SYSTEMS, INC.

6306 N. Alpine Road
Rockford, IL 61111

Phone: 815-654-2501
Fax: 815-654-2508
E-mail: solutions@aqua-aerobic.com
Web: www.aqua-aerobic.com

AQUA-AEROBIC SYSTEMS, INC.
PARTNERING FOR SOLUTIONS

AQUA-AEROBIC® MBR
MEMBRANE BIOLOGICAL REACTOR SYSTEM

Quechan Paradise Casino, CA

The Aqua-Aerobic® MBR Membrane Biological Reactor (MBR) is the wastewater treatment system of choice for the Quechan Paradise Casino. This newly constructed gaming facility, located on Native American owned land in Winterhaven, California began its treatment operations in January 2009. Early into the project development, it was decided that the Aqua-Aerobic® MBR system was the optimum solution due to its small footprint, high-quality effluent and low energy consumption. The plant is designed to meet California's strict Title 22 reuse requirements in which effluent is reclaimed to supply drip irrigation for the casino's landscaping and a future onsite golf course.

Quechan Paradise Casino & Resort

Quechan's location and available land will also accommodate a second hotel and gaming facility as part of its planned expansion. The Aqua-Aerobic® MBR system will easily handle the plant's future demands, while continuing to provide sustainable water management for the facility.

Quechan Paradise Casino Plant Design

The treatment facility has an average daily flow of 0.15 mgd and is designed for the following treatment objectives:

	Influent	Effluent
BOD	400	5
TKN	50	—
TN	—	10
TSS	400	5
TP	12	—

The Aqua-Aerobic® MBR system is designed to treat a future flow of 0.25 mgd with only the addition of two membrane modules. All of the tankage and biological treatment equipment is sized to meet this future flow for easy expansion. The design flow reflects weekend operation when peak flows are anticipated, therefore representing full-strength conditions.

The treatment plant resides inside a building with separate rooms for: process equipment, pumps, chemical feed equipment, blowers, and controls. The building size is minimal since the Aqua-Aerobic® MBR system offers a smaller footprint than any other treatment technology.

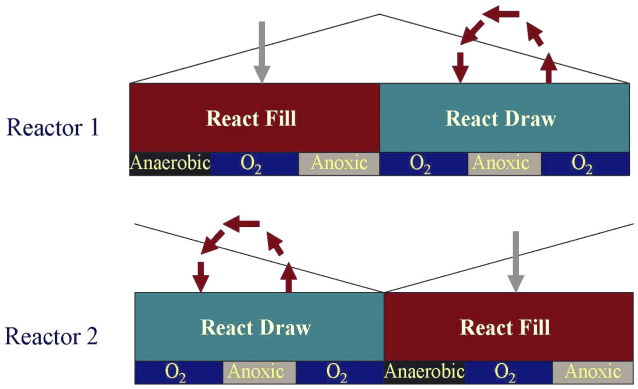
The Quechan Casino project was a design-build concept so startup could be scheduled prior to the area's peak tourist season. Aqua-Aerobic Systems worked closely with Clear Solutions Environeering, Inc. and Roel Construction to get the plant built within a several month period so the casino could be fully operational before its Grand Opening. The Aqua-Aerobic® MBR system was actually started up a month before the casino opened in order to get the biomass to necessary levels for treatment of the Grand Opening flows. The flow was expected to go from < 2% to nearly 100% capacity in one day. Because of Aqua-Aerobic's unique, early startup plan, Quechan avoided the large expense of hauling seed-sludge.

On opening day, the plant processed nearly 100,000 gallons, and the effluent quality was superb. Despite significant fluctuations in daily flows and loads, Quechan continues to record exceptional operating data, with minimal operator input.

Batch Biological Reactor

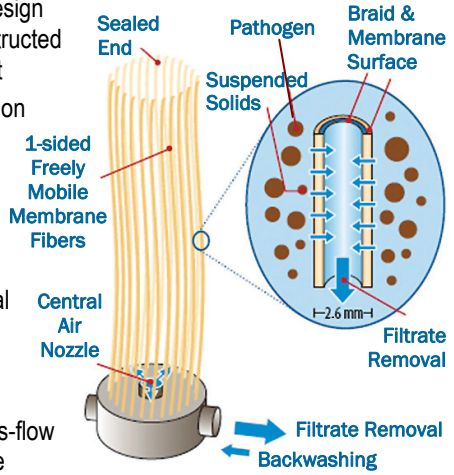
- Proven enhanced nutrient removal (ENR)
- Time-managed control offers unlimited operational flexibility with fewer tanks and elimination of nitrate recycle pumps
- Independent aeration and mixing provides unlimited power control
- On-line, load-proportional demand oxygen control system
- Integrated equalization minimizes membrane area
- Controlled sludge recycle from membrane tanks limits D.O. interference during anoxic treatment
- Predictive evaluation of membrane feed offers planned back-flush and relaxation

One of Quechan's batch biological reactors.



PURON™ Submerged Membranes

- 0.05 micron filtration barrier to bacteria and suspended solids
- Single header design promotes unobstructed solids movement
- Central air injection eliminates sludge buildup at membrane support base
- Braided fiber offers exceptional mechanical strength
- Baffled design accelerates cross-flow within membrane modules



- Chemically resistant material offers flexibility in maintenance and recovery cleaning
- Elevated, stable fluxes maintained at high permeability levels
- Lowest energy consumption among submerged membranes
- Title 22 approved

Quechan's membrane module in air scour mode.

AQUA-AEROBIC SYSTEMS, INC.
PARTNERING FOR SOLUTIONS