

AEROMIX SYSTEMS

LumenAER™ Solar-Powered Circulator

Your Solar Solution in Aeration and CirculationSM



The LumenAER is a solar powered floating circulator that distributes oxygen deficient water from the lower levels and exposes it to the surface for rapid oxygenation and distribution.

LumenAER circulators provide environmentally friendly solutions to a variety of water quality problems affecting wastewater and freshwater ponds lakes, and reservoirs. Rugged all stainless steel construction makes LumenAER circulates ideal for any water or wastewater application. Special anti-icing features allow LumenAER units to operate in cold climates.

LumenAER circulators help treat common water quality problems such as:

- Algae
- Odor
- Sludge
- BOD/TSS/NH₃/pH violations
- Excessive nutrient concentrations

AEROMIX has unique installations in more than 75 countries worldwide.

Applications

FRESHWATER

Drinking Water Reservoirs

Stormwater Ponds

Recreational Lakes

WASTEWATER

Primary, Secondary, Polishing Ponds

Industrial Process Ponds

Storage, Leachate Ponds



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Made in the U.S.A.
Covered by U.S. Patents: 7,121,536
B2, 6,439,853 B2, and D 322,118.



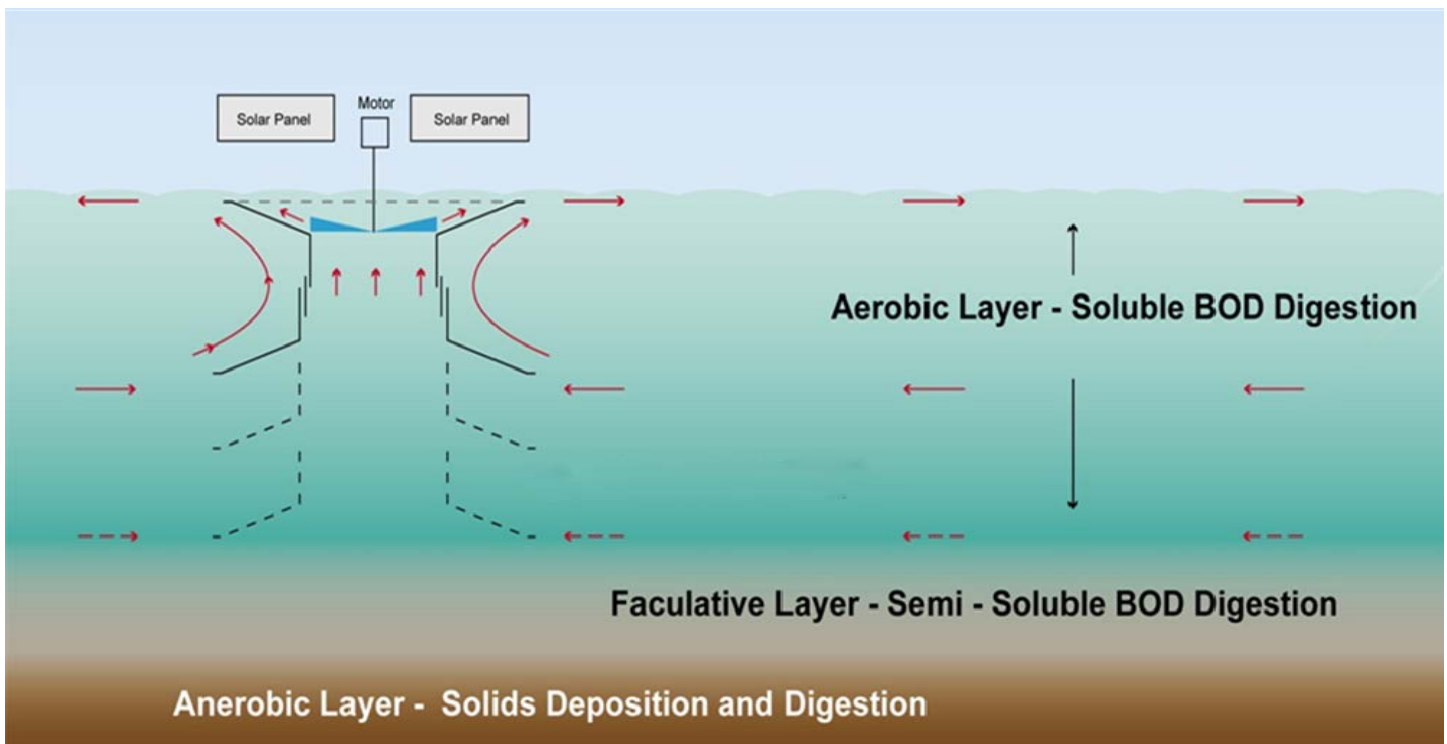
HOW IT WORKS

LumenAER™ Solar-Powered Circulator



At the heart of the LumenAER is a slowly rotating impeller, an intake, and discharge assembly. The LumenAER unit draws large volumes of oxygen deficient water from the intake level vertically through the unit to discharge on the surface. Water exits the dish as a thin sheet for exposure to the atmosphere where nearly instant oxygen diffusion into the water can occur. All LumenAER circulators obtain all their energy from the sun. Using solar panels and special controls, LumenAER units convert solar radiation into electricity to drive and operate the brushless motor.

A deep mixing option with three 12" tubes allows for selective mixing simultaneously to minimize upsets and maximize oxygen distribution.





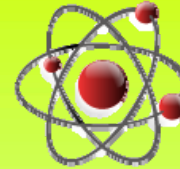
BIOLOGY

The LumenAER's circulation method creates an "aerobic layer or cap by recycling or actively mixing the upper two-thirds of pond volume.

Non-aggressive circulation expands and increases oxygen concentration in the aerobic layer; increasing and accelerating the digestion of soluble BOD.

Non-turbulent mixing allows semi-soluble waste to descend to the facultative zone where the bacteria are energized by the availability of oxygen.

A by-product of facultative digestion is the production of acids. These acids are needed by anaerobic bacteria to digest solids, thereby increasing the rate of sludge digestion.



PHYSICS

Low speed, non-turbulent, vertical, and horizontal circulation results in laminar flow (radially outward) at the surface and radially inward at the selected depth.

MCRT (contact time between bacteria, oxygen, and nutrients) is increased via recirculation of the upper two-thirds of the pond resulting in more complete digestion of organics.

Continual recycling increases oxygen absorption while distributing oxygen deeper into the pond where it can be utilized.

Low fluid velocities (<1 fps) allows solids to descend naturally and more uniformly, thus minimizing sludge buildup/hot spots/overloading.



CHEMISTRY

Surface renewal created by the low speed, high volume LumenAER impeller increases the mass transfer of gases through the pond surface (i.e. oxygen absorption or re-aeration) while also exhausting gases (NH₃, CO₂) out of the pond.

Re-oxygenation is quick and effortless because water is drawn from what is typically an oxygen deficient layer. The chemical reactions due to stable pH and temperature values are more balanced and complete. As water is cycled to the surface, warm stagnant conditions are eliminated, thereby limiting algal blooms.

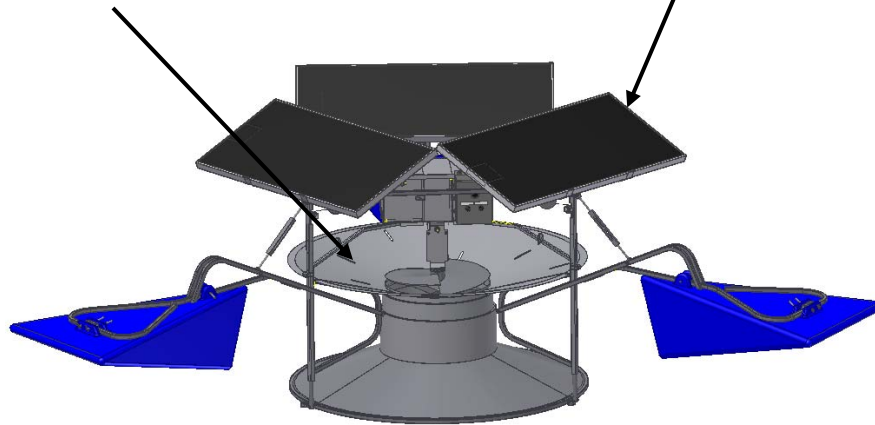


PRODUCT FEATURES

LumenAER™ Solar-Powered Circulator

The bell shaped distribution dish distributes water radially outward 360 degrees in a thin layer in a manner known as laminar flow. The matching intake dish draws water radially inward 360 at a depth defined by the operator. A telescoping tube connects the upper distribution dish with the intake dish and allows the operator to vary the intake depth based upon treatment needs or conditions.

Three 120+ watt panels collect solar energy which is routed to a charge controller and then to two 105amp/hour AGM batteries (above surface).



The LumenAER also features a 24-volt DC motor used to rotate the 24" diameter impeller at various rpm (typically 60 winter, 75 spring/fall, 90 summer) to optimize mixing 24/7 during the various seasons. A high intensity daylight visible light flashes with each rotation, making it easy to identify rpm and operational status.

Motor and controls are housed in a NEMA 4X enclosure. Selector switches allow for on/off operation, fwd/rev. SCADA or remote controls for system status available through a mod-bus RS-232 connection for data logging/monitoring via a cellular or wireless network.



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AEROMIX offers many solar choices for circulation and aeration including:

- SolarAER™ surface aspirating aerators
- PhotonAER™ submersible aspirating aerators
- SunAER™ diffused aeration systems, and
- AuraAER™ solar powered floating fountains.