

SolaER®
Solar Powered Floating Aspirating Aerator

1. GENERAL

Provide a total of ____ SolaER Solar Powered Floating Aspirating Aerators as manufactured by AEROMIX Systems, Incorporated of Minneapolis, Minnesota, USA. Each shall include a motor, propeller, draft tube, float, solar panels, and controls and when operating shall draw air from above the surface of the water and inject it below the water surface. The rotating propeller shall break up the aspirated air into fine bubbles and thoroughly mix the oxygen with the water. The aerator shall also de-stratify and provide horizontal water circulation without the need for additional components or accessories. Each aerator shall be powered by an electric motor and the energy to drive the motor shall be solar as captured by solar panels. Each aerator shall include the necessary controls and batteries to allow 24 hour operation in all weather conditions.

2. DRAFT TUBE

Each aerator shall include a stainless steel draft tube with an air inlet above the water surface. The draft tube shall provide a conduit for air passage to the propeller. The draft tube shall be constructed of 304 stainless steel for maximum corrosion resistance.

3. SHAFT

A 304 stainless steel solid shaft shall be used to transfer the torque from the motor to the propeller. The shaft shall be precision machined to a maximum runout of no more than 0.005 inches along its entire length assuring straightness and vibration free operation.

4. SHAFT BEARING

The rotating shaft shall be supported by a replaceable UHMW bearing designed to operate in water or in air. The bearing shall be immediately next to the propeller to provide maximum stability at for the shaft.

5. COUPLING

Each aerator shall include flexible coupling to connect the motor shaft to the aerator shaft. The coupling shall allow angular and parallel misalignment of the shafts and be designed to easily allow the motor to be removed from the aerator while leaving the shaft and propeller in place.

6. PROPELLER

A hollow hub propeller shall provide an exit path for the aspirated air through the propeller. The propeller shall be precision cast stainless steel for corrosion resistance and long life in any application. The propeller shall incorporate swept back non-fouling blades to push away debris and prevent foreign material from wrapping around the propeller. An integral diffuser shall be incorporated into the propeller casting for proper air distribution well past the propeller blades.

7. *FLOAT*

Each aerator shall be provided with one float to support the aerator at the water surface. The float shall be no more than 50% submerged during normal operation to assure stability of the aerator. The float shall be foam-filled, low-density polyethylene with ultraviolet inhibitor. Foam shall be water resistant rigid foam. The aerator shall mount to this float by means of two pins, so the mounting angle can be adjusted without removing the aerator from the float. A locking device shall be incorporated into the mount to firmly hold the aerator in position at the chosen angle.

8. *MOTOR*

A fractional horsepower (kilowatt) DC motor shall be used to turn the propeller. The motor shall be of brushless design for long maintenance free operation and shall be capable of operating at any rpm from near zero to over 1800. The motor shall be designed for extended exposure to weather in all climate conditions.

9. *BATTERIES*

Rechargeable batteries shall be provided allowing the system to operate 24 hours per day. The battery system shall have the capacity to allow full speed motor operation for at least 15 hours under no light conditions and after receiving a full charge. The batteries shall be designed to operate in any weather conditions.

10. *SOLAR PANELS*

Solar panels shall be used of adequate size to allow continuous operation of the circulator 24 hours per day, 7 days per week, during periods when solar radiation is at its lowest level for the site. The panels shall be mounted such that they can be positioned for maximum efficiency.

11. *CONTROLS*

The circulator shall be complete with controls to convert the power from the solar panels to all on board systems. These controls shall provide for automatic charging of the batteries and to allow the system to automatically operate on battery power as needed. All control cabinets, wiring, and external electrical connections shall be weather proof and water resistant.

12. *COLD WEATHER OPERATION*

The aerator shall be designed for operation during any weather conditions including ice. The aerator shall not spray or splash liquid into the air causing ice or snow build-up on the aerator or float. The solar panels shall be designed to prevent snow and ice build up on there surface.

13. *EXPERIENCE*

The circulator manufacturer shall have at least 2000 operating installations of aerators and circulators in similar applications and have been in business under the same name and selling water circulators and aerators for at least 10 years.

14. *FACTORY TESTING*

The manufacturer shall have available on site a testing tank with a minimum volume of 100,000 gallons where oxygen transfer rate, velocity, and mixing tests can be executed. The manufacturer of the circulator shall upon request provide certified test results showing the clean water oxygen transfer rate per the ASCE standard. Those results shall be independently confirmed.

15. *WARRANTY*

A warranty statement shall be provided which defines the terms of the warranty.

16. *SAFETY*

The manufacturer shall provide visible safety warning labels on the shipped equipment that comply with OSHA regulations (29 CFR 1910).

17. *INSTALLATION*

All circulators shall be designed so they can be installed and operated immediately upon arrival without assistance from the manufacturer. The manufacturer shall warranty the product when installed by others.

18. *ORIGIN*

Each aerator shall be manufactured in the USA using components mostly made in the USA. Over 80% of the content and labor shall be USA supplied.