

Oxygen generator (oxygen generator) in aquaculture industry: working principle and its benefits to fish industry



onsite oxygen generating system. Oxygen generation for fish farms helps improve the level of oxygen that fish directly absorb through the water. This supply of oxygen helps raise a variety of fish species including salmon, trout, striped bass, tilapia, and shrimp. To learn more about the role of onsite oxygen generation for fish farming and the benefits of onsite oxygen generation, here's what you need to know.

The Role of Oxygen Generators in Aquaculture

All living creatures, including those that live underwater, need oxygen to survive. In aquaculture, oxygen generators are used to diffuse dissolved oxygen (DO) into water to increase stocking density and production yields. Higher DO levels in the marine environment result in a lower mortality rate and higher food conversion rates for the aquatic creatures. DO is gaseous oxygen that is dissolved into water that fish directly absorb through their gills and skin for respiration. Maintaining optimal growth conditions can be challenging without an active onsite oxygen management and supply system.

With an onsite oxygen generator, you can inject high-purity oxygen into the raceways, ponds, or tanks that these fish and shrimp inhabit. This provides significant productivity gains and reduces the risks of mortality caused by poor water quality. A consistently high DO level is the key to achieving better results and improving bottom line profits for fish farmers. Here's how the generators work for these systems.

A side stream of water from the tank, pond, or raceway is pumped at pressure through a venturi nozzle. Oxygen from the generator is injected here. This saturates the water with oxygen which is then distributed through high velocity mixing nozzles along the bottom of the vessel. The flow of oxygen can either be manually regulated or automatically controlled using a DO analyzer and probe. The levels are regulated and controlled to ensure that a saturation of 70% or concentration of 5 or 6 parts per million (ppm) of DO is established as this is essential for stable fish growth.

Benefits of Using Onsite Oxygen Generation in Aquaculture

Simple, Dependable and Low Maintenance

With an onsite oxygen generator, you don't have to worry about any complicated procedures to get your oxygen supply. Your in-house oxygen generators will use the air in the atmosphere to get the job done. These oxygen generators can be "plug and play" systems that have minimal maintenance requirements that include periodic compressor maintenance and filter element changes. Downtime for maintenance is typically less than 8 hours per year.

Profitable

The return on investment for installing an onsite oxygen generator is incredible and one of the main reasons why so many companies are giving up the traditional method of outsourcing conventional oxygen supply such as cylinder gas or bulk liquid oxygen. After the initial investment, and assuming proper maintenance practices are undertaken, you will have a system that runs well for many, many years of operation. With a guaranteed oxygen supply, your company will also be able to offer higher quality fish to your customers that will sell at premium prices. You'll make your money back in no time.

Additional Advantages:

- Increase stock density by maintaining a higher level of dissolved oxygen (DO)
- Produce larger quantities of high-quality fish
- Increase reproduction rates
- Decrease mortality, disease, and stress on fish
- Ensure the flavor of fish by providing a clean environment
- Prevent ice from forming during winter months
- Increase the oxygen content over a typical air-fed aerating system
- Ensure uniform DO levels throughout tanks and ponds
- Displace excess nitrogen
- Improve water quality

- Provide feed gas to an existing ozone generator for disinfection
- Higher profits due to better weight gain and higher fish quality

Applications of Onsite Oxygen Generators in Aquaculture Fish Hatcheries

Here are some of the applications of onsite oxygen generators in the aquaculture fishing industry:

- Broodstock units
- Larval rearing units
- Weaning units
- Treatment for seawater wells
- Biological filter of re-circulating systems
- Ozone generation for water sterilization

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