DISSOLVED OXYGEN BROCHURE

What is DO (dissolved oxygen)?

Dissolved oxygen is the amount of available oxygen in a body of water. This oxygen is separate to the chemical make-up of water (H^2O). Dissolved oxygen levels are determined by the aquatic eco-system &/ or mechanical intervention.
Waterfalls, rapids, & aquatic plant/ animal/ microorganisms in nature create oxygen in water bodies which is then measured as DO. Dissolved oxygen can be generated with the use of certain fountains, venturi's, agitators and other mechanical means.

Why is DO important?

Dissolved oxygen is vital to the eco-system of a water body. The aquatic lifeforms (animals, plants & microorganisms) use this oxygen to survive & process waste. While plants/ algae can generate oxygen through the day via photosynthesis, they use oxygen at night.
Animals & aerobic microorganisms use oxygen to both survive & clean water.
Aerobic beneficial bacteria are the fastest working bacteria when compared to Anaerobic or Anoxic Bacteria. Aerobic bacteria are quick to decompose waste but require larger volumes of oxygen to both survive and perform their functions of breaking down organic waste and converting toxic pollutants into less toxic forms.
If DO levels drop too low overnight, the beneficial bacterial colonies as well as the aquatic lifeforms can be suffocated & ultimately die. This can break the nitrogen cycle & take days, weeks or in severe cases months to recover.

Before

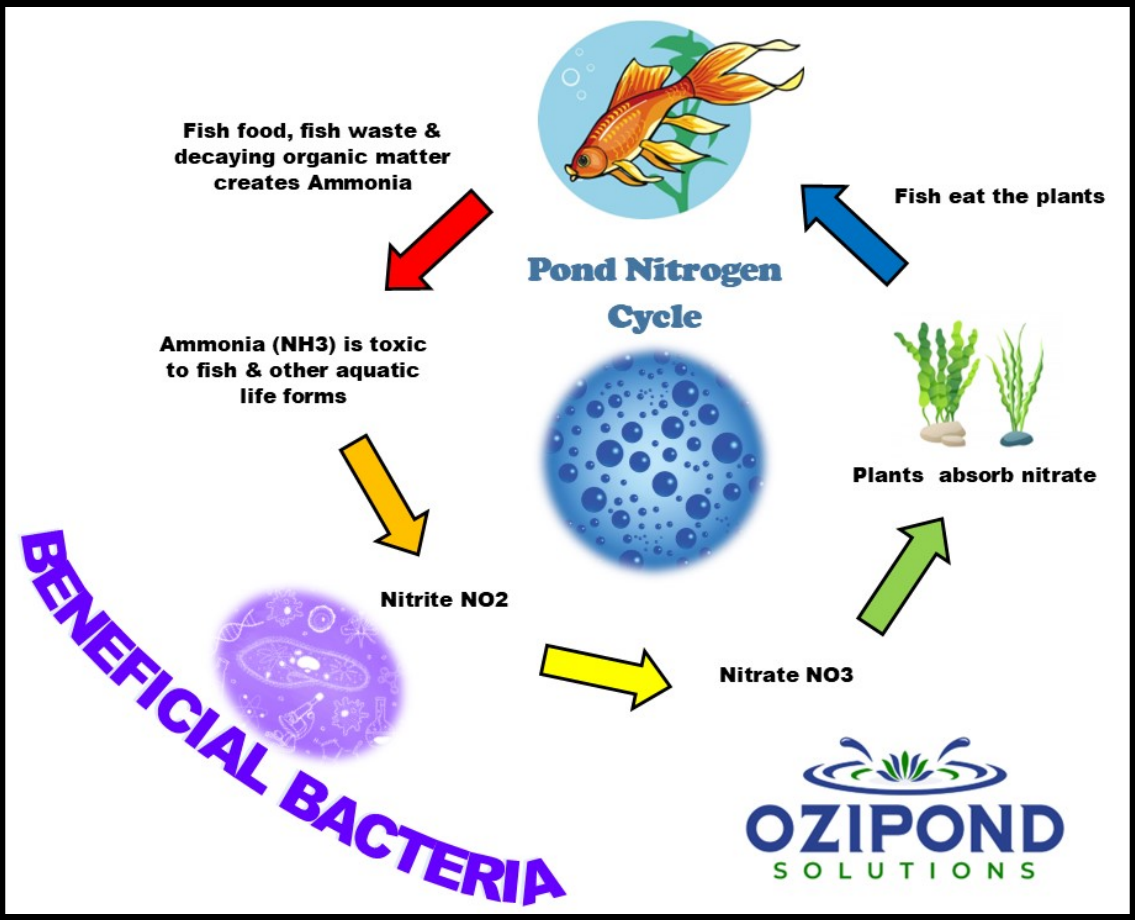
6 Weeks After Lake Fix Enzyme & Aerators

What is a good amount of DO?

We aim to achieve a minimum of 3.0 – 3.5 Mg/ Litre of dissolved oxygen in the water before sunrise, which ensures the survival of beneficial microorganisms within the water body. Overnight all the living aquatic lifeforms use oxygen resulting in the lowest oxygens levels being observed before sunrise. When there are large algal blooms, we have seen oxygen levels plummet to zero or become negatively charged in the worst-case scenarios. Algae has a large body mass that consumes oxygen rapidly when sunlight isn't present, but will create large amounts of oxygen when sunlight is present.
Oxygen levels of 3.0 Mg/ L is the minimum we like to see, above 7.0 Mg/ L is considered good, while anything over 10.0 Mg/ L is considered excellent.

What is the Nitrogen Cycle?

The nitrogen cycle is the process of the beneficial microorganisms in a body of water that convert (oxidise) toxic ammonia into less toxic nitrite & nitrate. This process in basic form removes the hydrogen from Ammonia (NH3) and adds 2 oxygen molecules to make Nitrite (NO2). The third step is adding another oxygen molecule creating Nitrate (NO3). Ammonia is toxic even at low levels, where Nitrate is generally only toxic at higher levels. Plants use nitrate as a food source, so having plants in a body of water can be very beneficial in most cases, finalising the process of the nitrogen cycle by consuming the nitrates. Other organisms can also consume the nitrates, but plants are the most effective method.



What is Lake Fix Enzyme & how does Lake Fix Enzyme affect DO levels & the nitrogen cycle?

Lake Fix Enzyme is a powerful enzyme solution that cleans and clears lakes by breaking down organic matter & increases the beneficial bacteria concentration levels in the water. Enzymes are a catalyst for beneficial bacteria which essentially speeds up the process of organic waste decomposition. Strong enzymes like Lake Fix Enzyme enhance the beneficial bacteria's capabilities beyond their own enzyme capabilities & also helps breakdown organic waste into smaller particles that are easier for the beneficial bacteria to consume.

Lake Fix Enzyme has shown to initially decrease dissolved oxygen levels for around 1-2 weeks after dosing (each situation varies). This DO decrease is due to BOD (biological oxygen demand) increase. After around 1-2 weeks we see an increase in DO levels, of around 40-60% & in some cases as high as up to 400% increase. Long-term use of Lake Fix Enzyme has shown to increase oxygen levels by up to 20 times the original readings (each situation varies).

Lake Fix Enzyme speeds up the nitrogen cycle by enhancing the beneficial bacteria & breaking down organic waste more rapidly. This increased speed of the nitrogen cycle is why DO levels are so important as the beneficial bacteria use more oxygen initially & we need to maintain healthy DO levels to keep the beneficial bacterial colonies alive & thriving.

What affect does the AirDuck Aerator have on DO levels?

The AirDuck Aerator Nozzles are one of the best ways to add dissolved oxygen to a body of water. The micro bubbles allow for maximum oxygen transfer into the water column.

AirDuck Nozzles are not particularly designed for water flow control but can assist in this matter.

The AirDuck nozzles have shown to increase oxygen levels by up to 300% (each situation varies).

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