



# Nanobubble Technology

## Naturally Control Algae and Improve Water Quality

Each year, the news is filled with headlines warning of invasive species, harmful algal blooms, and deadly cyanotoxins plaguing our lakes, ponds and waterways. As urban development, pollution and natural habitat loss continue to rise, our aquatic ecosystems suffer from nutrient loading and poor water quality as a result. Thankfully, new industry-changing innovations, like nanobubble technology, are becoming available to help combat these unprecedented obstacles.

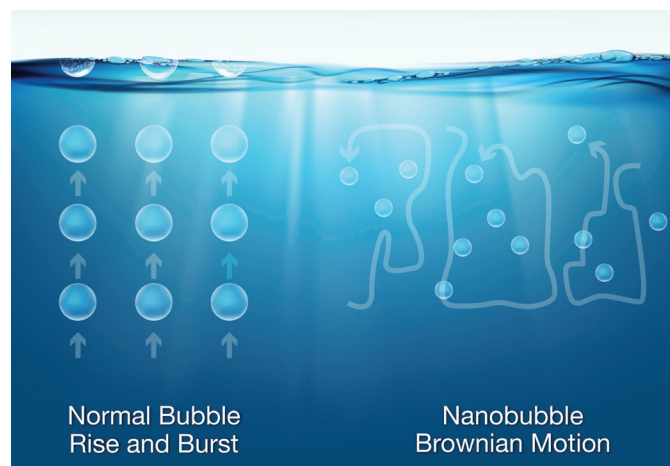
Nanobubble treatments offer a premium lake management tool that is designed to naturally control algae by providing unparalleled direct and lasting oxygenation of the waterbody. This new technology is an exciting solution poised to transform the entire freshwater management industry.

### What are Nanobubbles and How Do They Improve Water Quality?

Nanobubbles produced by small onshore gas transfer mechanisms are ultra-fine and nearly invisible to the eye; in fact, at less than 1 micrometer, they are about 400 times smaller in diameter than human hair and 1 million times smaller than bubbles produced by submersed aeration systems. As a result of their size, nanobubbles have no natural buoyancy.

#### Benefits of nanobubbles:

- Remain within the water column for extended periods of time, as long as two to three months.
- Provide unparalleled direct oxygenation of the water and the typically anoxic sediment water interface at the bottom.
- Control algae and dangerous cyanobacteria, as demonstrated by laboratory testing.
- Sustains the rapid growth of beneficial bacteria and desirable microbes.
- Eliminates the toxins produced by cyanobacteria.
- Prevents accumulation of anaerobic bottom muck and sediments.
- Within a few days—and even hours—water quality can return to its natural balance without traditional herbicides.



*Nanobubble treatments saturate water with up to 79,000x more oxygen than submersed aeration systems!*

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## Nanobubble Treatments vs. Fountains vs. Submersed Aeration Systems: What's the Difference?

Dissolved oxygen (DO) is essential for a healthy, balanced aquatic ecosystem and can be promoted through several lake and pond management solutions. Nanobubble technology, fountains and aeration systems all provide a level of dissolved oxygen within the water column but each work differently and each with their own unique benefits and limitations.

### Nanobubble Treatments

- Permanent installation of a nanobubble generator is not required to reap the benefits, as Nanobubbles can be introduced into your waterbody via reoccurring treatments when the aquatic system needs it.
- Nanobubbles are different in that they provide a different form of dissolved gases and do not rise to the surface, thus they do not offer the vertical mixing benefits provided by fountains and submersed aeration systems.



### Submersed Aeration Systems

- Beneficial for larger waterbodies, submersed aeration systems utilize an on-shore compressor to pump air through a subsurface tube that oxygenates the water from the bottom to top.
- As bubbles rise from the depths, they increase dissolved oxygen throughout the waterbody and disrupt undesirable stratification by circulating the bottom water up to the surface where it is exposed to surface air.



### Floating Fountains

- Properly-sized fountains provide essential water column mixing in shallow waterbodies.
- As water falls from the air, it bursts across the surface, accelerating the release of submersed gases and introducing beneficial dissolved oxygen into the top layer of water.



## ACHIEVING THE BEST RESULTS

Each with their own benefits and limitations, nanobubble treatments, submersed aeration systems and fountains should be paired together to better target your unique water quality problems and achieve the best results. No matter how you use your waterbody, it's worth leveraging these natural management tools to ensure a healthy future of your freshwater resource.

Utilize nanobubble technology to help  
revitalize your lake, pond or waterway.

Call 855.976.9569 to get a conversation started with one of our specialists.

**SOLITUDE**  
LAKE MANAGEMENT

Learn more: [solitudelakemanagement.com/nanobubbles](https://solitudelakemanagement.com/nanobubbles)

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