SOLVING THE POND PUZZLE ONE "PIECE" AT A TIME!

SUNFLO²

DOES YOUR POND HAVE "PUZZLING" PERFORMANCE?



CHEMISTRY

PHYSICS

SOLUTIONS

PROBLEMS

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Sludge DeTEKtor

STAGNANT CONDITION



BREAKING DOWN THE "PUZZLE"

POND BENEFITS - BIOLOGY, CHEMISTRY & PHYSICS



Aerobic bacteria efficiently digest soluble BOD, handling four times more than other bacteria. The "Oxic" layer benefits from gentle mixing that keeps nutrients, oxygen, and bacteria in close contact. Increasing oxygen in the pond's upper layer further improves nutrient removal.

Facultative bacteria digest semi-soluble nutrients, aided by passive mixing that ensures settling and nutrient distribution. They function with or without oxygen, protecting the anaerobic layer and producing acids essential for anaerobic bacteria.

Anaerobic bacteria digest sludge by using acids from facultative bacteria to break down complex nutrients. They cannot tolerate oxygen and require undisturbed conditions for optimal performance.



Water stabilizes at 9.2 ppm oxygen at 60°C (adjusted for Te and elevation). Aerobic bacteria consume oxygen, so more oxygen means greater removal. Surface movement or rippling enhances oxygen absorption.

All activity occurs at the surface, so constant surface exchange boosts oxygen absorption and gas release. More oxygen intake allows more gases (NH3, CO2) to escape.

Constant surface exchange balances pond temperature, boosts cooling through evaporation, and prevents surface heating that promotes algae growth.



Mother Nature works best in layers. Turbulent mixers (aspirators, diffusers, splashers) disrupt these layers, hindering natural bacterial balance and reactions.

Flow Type - A flow under 1 fps (laminar) moves outward on the surface and inward at intake depth, creating three layers. This prevents hot spots and ensures even activity.

Pulse Mixing—Generating 80–200 pulses per minute creates micro-waves that expand the surface area, extending process time.



Shallow-Flo™ Deep-Flo™

- Reduce Algae, Odor, Sludge & Energy
- Solar Powered
- Reaeration & Recirculation Which Increases Oxygen Concentration
- Winter Processing

Sludge DeTEKtor™

- Remote Controlled
- Measures, Locates, Maps & Computes Volume
- 10K Data Points/Acre
- Comprehensive Report

Floating Sensor Platform™ (FSP)

- Solar Powered
- Monitors & Reports Water Quality
- Real-Time Reporting Directly to Your Phone



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COMMON POND PROBLEMS



Common pond problems include poor oxygen distribution, algae overgrowth, and inefficient nutrient digestion, leading to odors and reduced water quality. Sunflo2's solutions improve oxygen flow, evenly distribute nutrients, and help control algae. By optimizing water movement and surface renewal, Sunflo2 ensures better pond health, reduces odors, and boosts overall treatment efficiency.



ALGAE CONTROL

Algae thrive on excess nutrients. Too much food means too much algae, while too little or poor mixing affects growth. Sunflo2 technology controls algae by managing nutrients and expanding the aerobic layer for faster, complete digestion.

ODOR REDUCTION (H2S)

ODORS H₂S

WINTER

PROCESSING

H2S and other gases oxidize with oxygen. Sunflo2 improves oxygen distribution in the top half of a pond, reducing odor strength and duration.



SLUDGE BUILD-UP

Most operators and engineers know little about a pond's sludge layer. Poor mixing creates uneven mounds and valleys on the bottom. Sunflo2 controls mixing depth, bringing only the top half to the surface every 3–7 days for re-oxygenation.

WINTER PROCESSING

Even under ice, bacteria still work, but their respiration slows, leading to anaerobic digestion and stronger

odors in spring when the ice melts. Sunflo2 units keep a small area of open water (except in the most severe conditions), allowing oxygen to enter and vent odors before spring. While they don't eliminate odor, they reduce the intensity and duration of spring odors.

SUNFLO2 THE SOLUTION TO THE "PUZZLE"



High pH often comes from too much algae (See Algae Control). To reduce ammonia (NH3) and its toxicity, it can be exposed at the air/water interface (surface renewal). Fecal coliforms die quickly in sunlight, which is why UV is effective. Similarly, Sunflo2's surface exposure reduces fecal coliform levels.

STAGNANT CONDITIONS

When water sits still, it can attract insects and promote algae growth, limiting mixing and oxygen. The best solution is continuous surface renewal with Sunflo2, which keeps water temperature uniform and prevents algae and insect breeding.

INCONSISTENT

TOXICITY pH, NH3, Fe

INCONSISTENT/OVERLOADING

There are two types of overloading - Organic and Hydraulic

Organic overloading (too much BOD/acre). Severe organic overload may require a larger pond, but an interim solution is pulse mixing with Sunflo2. This expands the effective surface area 2–4 times, spreading nutrients and allowing more time and oxygen for digestion.

Hydraulic overloading reduces bacteria's time to digest nutrients. Fixing inflow and infiltration is costly and slow. Sunflo2 improves treatment efficiency, helping maintain compliance until repairs are done.

SHORT CIRCUITING



STAGNANT CONDITIONS

Most ponds experience short-circuiting, where water moves too quickly from inlet to outlet, reducing reaction time (MCRT). Sunflo2 units create 360° balanced flow, evenly distributing nutrients for optimal digestion and treatment.



ENERGY & MAINTENANCE COSTS

Typical aeration systems use atmospheric oxygen by

compressing, spraying, or bubbling it, with varying efficiency. Sunflo2 works differently by pulling oxygen-deficient water to the surface, where it instantly absorbs oxygen and spreads it evenly. This top-down oxygenation can save 30+ horsepower, reducing energy costs by \$1.00/day/hp or \$900-\$1,100 per month.



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