



Providing Treatment Solutions for Air, Water, & Land

www.TheiaLLC.com

(888)330-2260

H₂S Elimination



Odors and corrosion in wastewater collection systems are a growing problem, especially for older & larger systems. Much of this piping is constructed of concrete, steel, & cast iron. Wastewater Authorities are seeing their collection systems and headworks literally collapsing from H₂S corrosion.

We offer a simple inexpensive solution to eliminate or Hydrogen Sulfide in wastewater without the use of chemicals. Unlike some products in the market today, this approach does not require complicated pressure vessels or the storage or production of oxygen on site. We also do not rely on dangerous and often very expensive chemicals.

Our system consists of a small pump and our Oxygenator Nozzle. This principle has been applied to wastewater systems for over 30 years. Our Systems have been used in lift stations, sludge storage tanks, septage tanks, headworks, clarifiers, leachate storage and treatment systems The systems are simple, robust and effective. This device has been use for many years and even made an appearance in the 1985 EPA Manual on odor and corrosion control. (EPA 625 1 85 018)

The Oxygenator system is are easy to install and the only maintenance required is on the centrifugal pump that is selected for the installation. Typically, this pump is going to be one that is familiar to your staff and we can usually provide one of your choosing so it matches your other pumps. When wastewater is pumped through the Oxygenator, the H₂S and some other reduced sulfur compounds are converted back into soluble sulfates and sulfites which are carried away in the wastewater. Sufficient oxygen is introduced to the wastewater to saturate it with dissolved oxygen which will prevent the future formation of H₂S.

NO compressed air or Oxygen is required. The Oxygenator draws in its own air.



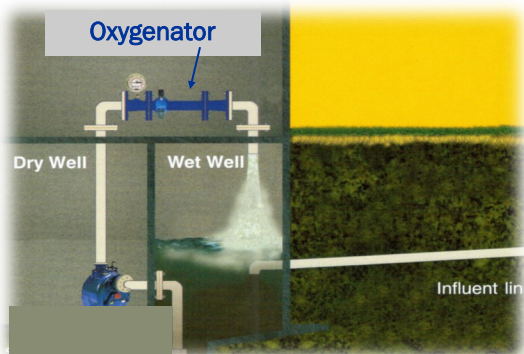
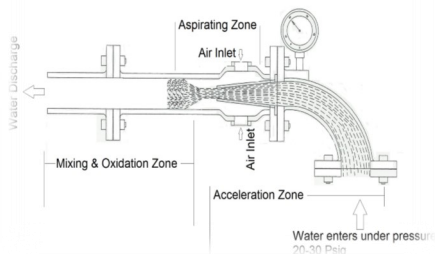


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Oxygenator Nozzle



How does the Oxygenator work?

The Oxygenator is a specially designed aeration device. Water is pumped through the device. As it passes through the nozzle, it creates a low pressure area/vacuum which draws large volumes of air into the water passing through it. The nozzle where the air enters is a very powerful mixing and shearing zone. The fluid is instantly saturated with dissolved oxygen and any oxygen deficient molecules in the water (such as H_2S or iron, etc) is fully oxidized within the length of the nozzle itself.

The unit requires no oxygen source or forced air of any kind, H_2S is oxidized instantly - In the picture to the right, septage is discharged into an open top septage storage tank with **NO release of H_2S** either from the tank or the Oxygenator Nozzle

How does the system work?

We utilize two(2) components, a pump and a nozzle. The system is simple but effective and requires little attention or maintenance. We use a non-clogging pump and the Oxygenator itself will not clog. The Oxygenator itself requires no maintenance and the pump is selected such that it is one that is familiar to your team and easy to maintain.

We have been doing this a long time and have 100% record of success. We cannot solve every issue. If we cannot solve yours, we will tell you right upfront. We also offer pilot tests for almost any application to assure success before asking you to spend your money.

The approach is similar whether you have a tank or a wet well but how it is applied can be catered to your application. We are drawing and pumping wastewater or sludge which allows us to get hydraulic control of the tank or wet well. The Oxygenator provides mixing as well as aeration which can provide a lot of ancillary advantages.





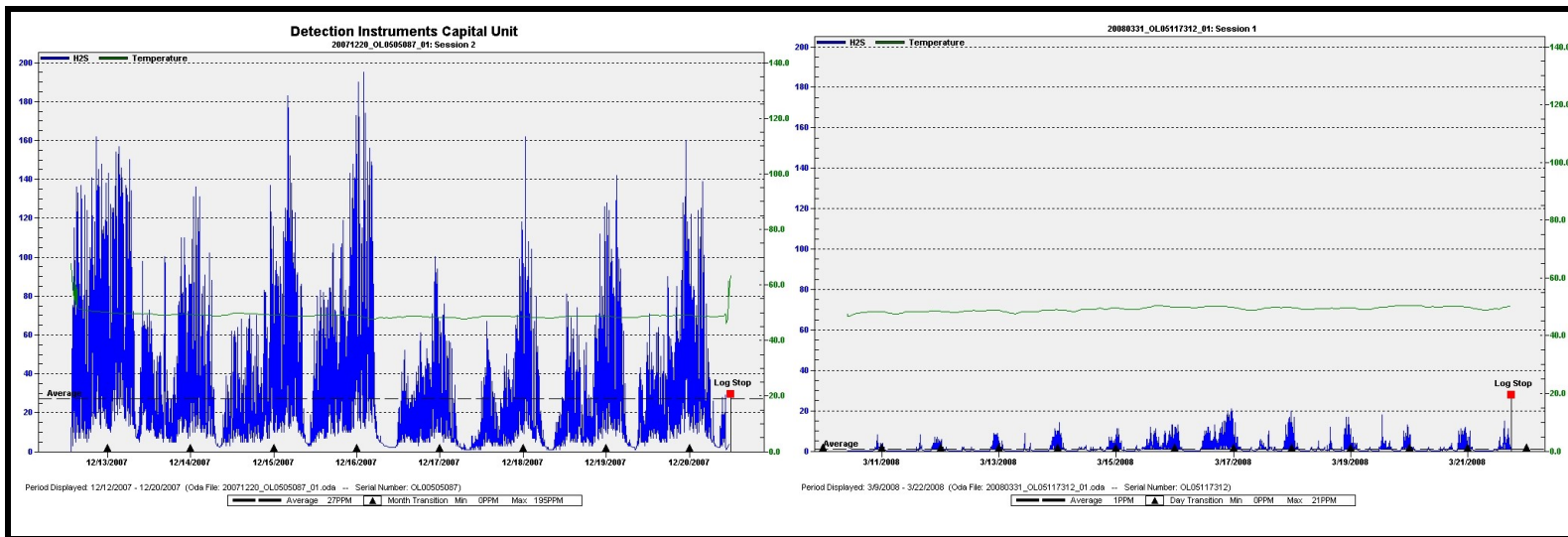
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The World's Most Efficient Aeration System Eliminates H₂S to Prevent Odors & Corrosion

Proven Success: The system has been applied to many applications over many years. Below are the results from a small wastewater Authority in Eastern PA.



Other advantages of this approach:

- ☁ No harsh or hazardous chemicals - safe for your system and your staff
 - ☁ Some chemicals actually kill the bacteria as a means of H₂S suppression
- ☁ We do not put anything in the wastewater that needs to be dealt with later on
- ☁ You Pay for it once - get the results for life
- ☁ Enhances the natural process instead of disturbing it
 - ☁ We convert the biology to an aerobic state.
 - ☁ The bacteria begin to reduce BOD as well as solids
 - ☁ In sludge and septage tanks, this reduction has been very significant
 - ☁ When used before the plant, this conversion reduces the load on the plant and greatly mitigates issues at the Headworks
 - ☁ In wastewater systems, we cause the anaerobic slime layer to degrade and eventually drop off, opening up the pipe.

For some applications, you may want to utilize the Oxygenator together with a chemical for longer forced mains or for applications where other mains join upstream, etc. The Oxygenator can enhance the performance of these chemicals by mixing them thoroughly into the wastewater. If they are an H₂S Killer like our TA-OC chemical, it will stay in the wastewater until the oxygen runs out allowing you to use a lot less.





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Most Efficient Aeration Systems Can also be used for...Aeration

What makes the Oxygenator so much more efficient?

The Oxygenator is the most efficient aeration and oxygen injection technology:

- ☁ Higher Oxygen transfer efficiency
- ☁ High Vol. Gas / Vol. Liquid ratio: 2.2 : 1.0
- ☁ We are pushing water and not air
- ☁ We provide Mixing and Aeration in one step in one device
- ☁ We bring the Oxygen Deficient wastewater to the air



Save Energy...Eliminate Maintenance

Whether we are providing the most efficient and effective aeration system on earth, or eliminating odors and corrosion in your collection system or plant, this versatile device has 1001 uses.

The Oxygenator system utilizes a pump and our aeration nozzle and nothing else. There is very limited maintenance on the system. We do not clog or foul like submerged aerators. The Oxygenator system does not require anything be placed in your tank except suction and discharge piping. Thus, any maintenance that is required is performed on dry land with easy access.

Here are just a few: applications:

- ☁ Lagoon & Pond Aeration
- ☁ Post Aeration - no tank required
- ☁ Aeration tank - upgrades & peak shaving
- ☁ Odor and Corrosion Control
- ☁ Mixing and Equalization
- ☁ Post Aeration from WWTP
- ☁ Sludge Tanks
- ☁ Septage Facilities
- ☁ Landfill Leachate Aeration
- ☁ Supernatant Aeration from Digesters
- ☁ Stripping of CO₂, Radon & VOC's

