



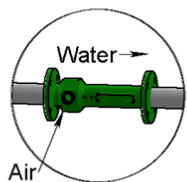
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The OxyStrip System

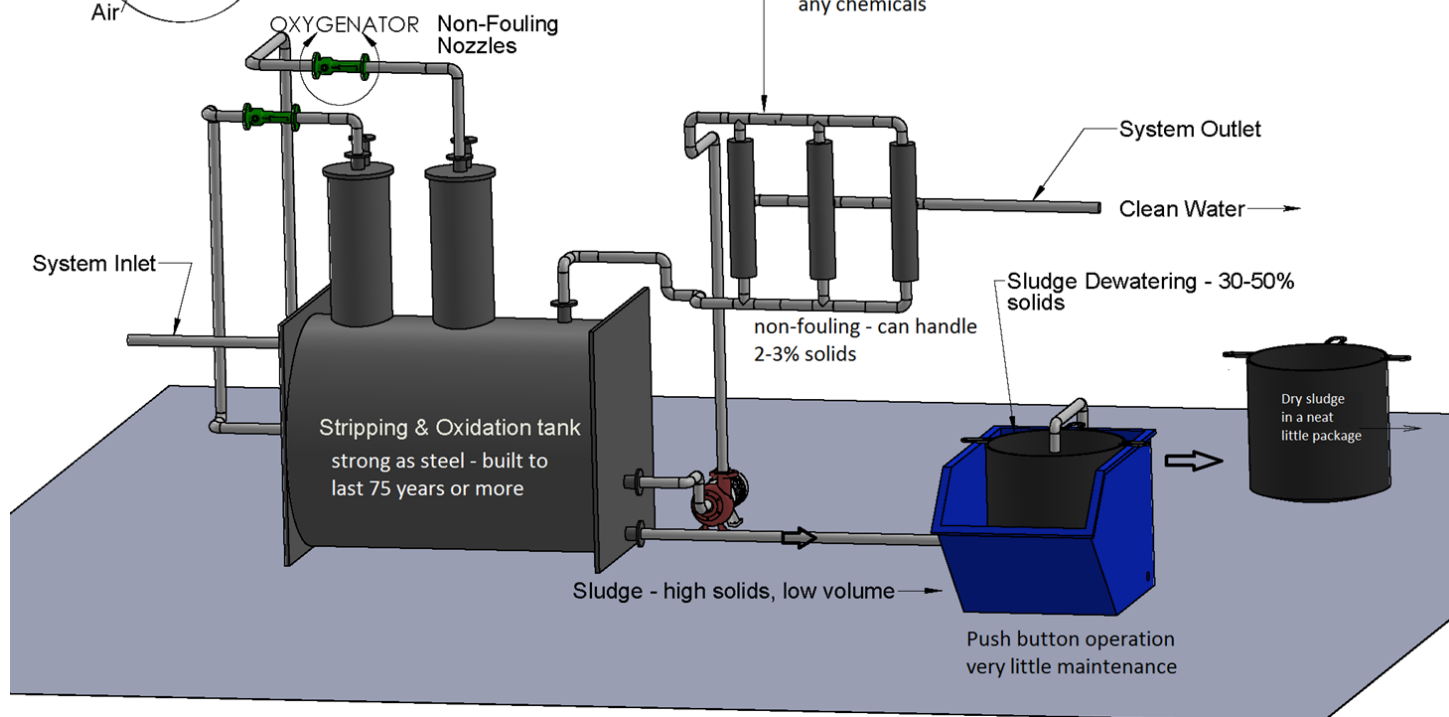
DETAIL OXYGENATOR



Step 1: Strip-Ox System

Strips VOC's, CO₂, Radon, etc while directly oxidizing Iron & Manganese

Step 2: removes solids down to 0.04 microns removing Iron & other metals without adding any chemicals



Iron & Metals Removal without Chemicals & without Maintenance

System advantages:

- ◆ Minimal labor or operator attention.
- ◆ Very low operating costs
- ◆ No harsh chemicals
- ◆ No oxidants eliminates danger of secondary contaminants being created
- ◆ Low capital costs when compared to conventional systems
- ◆ Small footprint
- ◆ System will work in an unmanned location
- ◆ Most tasks are automated
- ◆ Greatly reduces disposal costs

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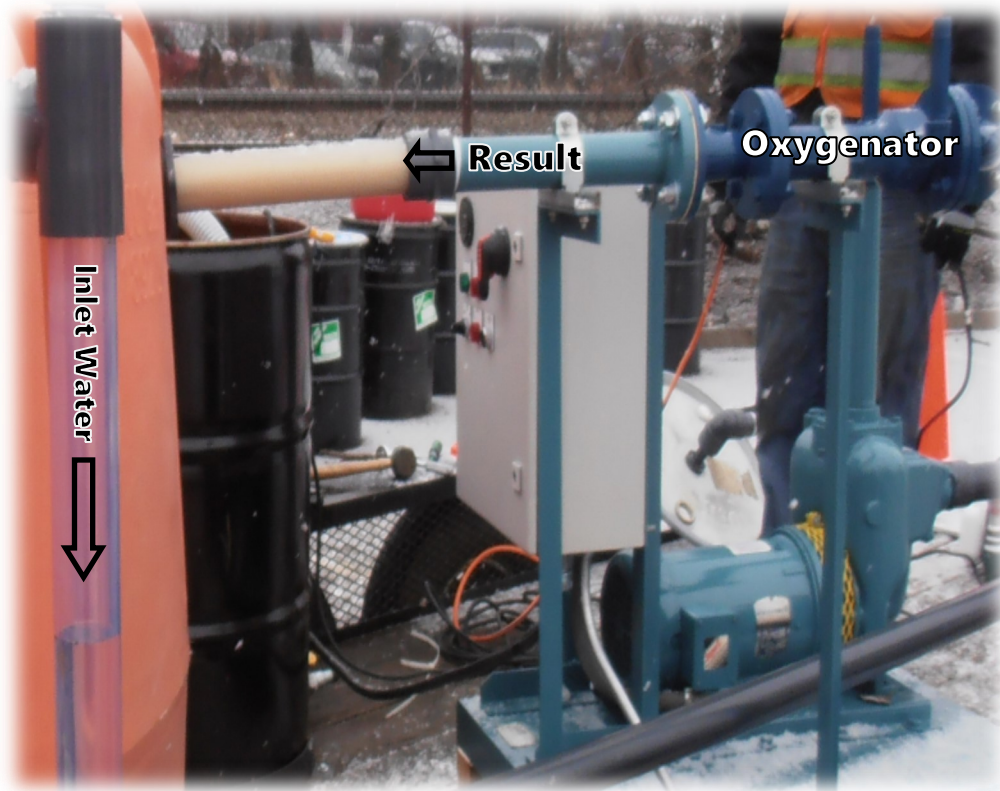




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Theia Water offers the most efficient and cost effective Iron & Metals removal system in the market. This innovative system was developed as a result of our development of our OxyStrip non clog air stripper.

The OxyStrip system **directly oxidizes Iron, Manganese, and Hydrogen Sulfide** while also stripping CO₂, Radon, and VOC's. While the introduction of air into water has always been known to oxidize some Iron, the OxyStrip system directly oxidizes the compounds as they pass through the nozzle. This design guarantees the complete oxidation of the iron and manganese using nothing but air.

From this basic concept, Theia can provide a complete Iron removal system that will remove all iron in the water without introducing any chemicals. For Manganese removal, the pH of the water must be raised which can be accomplished very simply. The OxyStrip system mitigates the use of chemistry by removing the Carbon Dioxide present, raising the pH naturally.

When sufficient Iron is present, the system will also naturally precipitate out Arsenic as well as Lead that is present in the water. For other metals, a precipitating agent can be added into the primary OxyStrip tank which has substantial mixing energy.

NOTE: For applications where stripping is not desired, the system can be configured to mute this effect

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Sludge Removal

Settling: Theia's unique stripping and oxidation tank is designed to aid in the settling of oxidized metals. While this tank is available in a range of materials, the standard tank is Structurally Reinforced Polyethylene. The tank includes 2 or more discrete chambers with an integral settling chamber. The tank has a bottom sludge collection and draw system to allow for periodic removal of sludge.



Cone Bottom
Oxy Tank

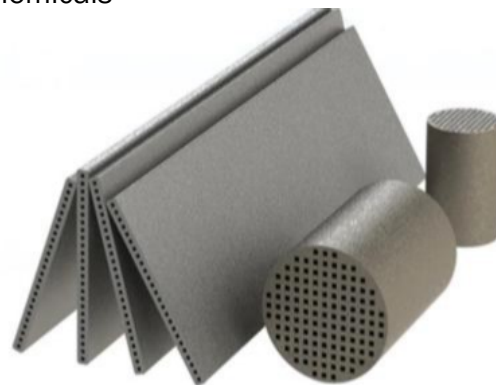
Step 2: Filtration

Filtration: For complete metals and solids removal a filtration step will follow the OxyStrip system. While any mechanical filtration can be applied here, Theia offers a unique approach that offers a simpler and higher efficiency design.

TW-SC series filters offer the removal efficiency and range of Ultrafiltration/Microfiltration with the robust nature and ease of use of a cartridge or media filter. These heavy duty filters are made from solid Silica Carbide.

The main advantages in terms of performance are:

- ◆ Removal of particulate down to 0.04 microns (soon to be 0.01)
- ◆ Removal of iron, manganese, & arsenic without the use of chemicals
- ◆ Even remove bacteria and some viruses
- ◆ Higher flux rates
- ◆ Low pressure drops
- ◆ NSF approved



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In terms of the material, no substance on earth is more robust for this application:

- ◆ No erosion or abrasion issues
- ◆ Usable pH range of 0-14
- ◆ No loss of integrity over long life (10-20 years or more)
- ◆ Can handle up to 3-5 % solids

The filters are permanent (guaranteed for 10 years) and backwash is fully automated, generating a low volume, highly concentrated sludge. For highly fouling service, the membranes are cleaned in place with a simple acid or caustic solution which is low volume and contained and easily disposed of.



Step 3: Sludge Removal

Removal of metals means sludge, no way around that. Theia offers a simple way to minimize the volume of sludge with a simple dewatering system.

Theia's Easy Sludge system is a simple, fully automated, system that dewateres the sludge generated in the precipitation, settling, and filtration stages of the system.

The Easy Sludge System consists of a few basic parts:

Sludge filter: Theia utilizes a high-strength, permeable, specially engineered textile filter bag designed for containment and dewatering of high moisture content sludge. This uniquely designed filter is designed to be modular and easy to handle on site without special equipment

Sludge Handling Box: The box is designed to hold one or more sludge filters. The Box allows the solids to dewater through the filters and recaptures the water that is sent back to the system. Solids are removed from the box still in their filters which are modular to allow for easy removal.

