

# Raising efficiencies of produced water treatment with Eco1st Separation Enhancer™

**A Wyoming produced water treatment facility can now exceed expectations on clean water standards while doing it in less time.**



## Overview

In the Powder River Basin in Wyoming, Quality Environmental a produced water treatment facility receives 3,000 barrels per day of produced water. This facility has a series of processes common in the industry, to help insure the produced water meets environmental standards prior to disposal.

Starting at the collection point water is run through a shaker screen to help remove heavy debris and solids. Then water is then given to a tank battery consisting of a gun barrel separator and skim tanks where an appropriate amount retention time is applied to separate oil and dissolved solids. The water is then given final treatment through a 10 micron filtration system before being injected in to a disposal well.

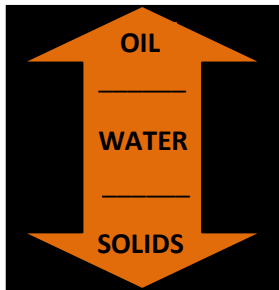
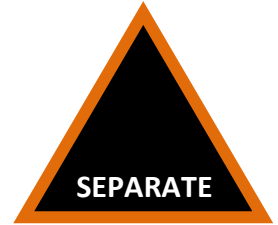
Quality Environment approached Eco1st Technology Group at the end of 2012 to acquire one of their Separation Enhancers. Shortly after making the Separation Enhancer part of their normal process, they noticed a myriad of benefits in the form of improved separation, cleaner produced water, raised efficiency of filtration, and a reduced pressure at the injection well.

CHALLENGE	SOLUTION
<b>Raise performance of shaker screen and separator</b>  They were experiencing deficiencies with the shaker screen blinding over, and the gun barrel requiring long retention time to achieve clear separation of water, hydrocarbons, and TDS.	<b>Unique ionization process brings BS&amp;W content down</b>  The Eco1st Separation Enhancer advances separation as part of its patented ionization process. The shaker screen is not heavily blinded over, and effective separation is occurring in the gun barrel tank with less retention time.
<b>Improve efficiency and economics of filtration</b>  Cost associated with filtration of produced water can be high due to ongoing costs associated with energy to pump water, filter replacements, and labor. These costs can negatively impact economics and reduce return on investment.	<b>New separation technology ran as part of normal process</b>  The Eco1st Separation Enhancer is installed downstream of the 10 micron filtration system. The ionization process acts out the breaking of molecular bonds, thus lightening the workload put on the filtration system.
<b>Manage pressure of water injection at disposal well</b>  After final water treatment the produced water is injected in to a disposal well. Environmental standards require a ceiling on how much pressure they can apply to water injection, which limits the amount of water that can be disposed of.	<b>New separation technology lowers injection well pressures</b>  After making the Separation Enhancer part of their normal process. The ionized water is not only cleaner, but has reduced surface tension which allows for easier injection and percolation through permeable matter.

As part of normal produced water treatment processes the *Eco1st Separation Enhancer* performs multiple duties. It can be utilized to effectively aid in separation. A nice add-on component that compliments any filtration system. A reliable tool to help bring down injection well pressures. Or.....all of the above.

**ONE TOOL**

**X** uses



**IMPROVED SEPARATION**

The Eco1st Separation Enhancer is an industrial quality, time tested, solid state, inline fluid ionization system. Our Enhancers makes use of known electro chemical ionization principles. It induces frequencies to break molecule bonds and route the free electrons to a dedicated earth ground. All treated fluids become ionized, like charges repel; resulting in stratification of each material based on their individual specific gravity.

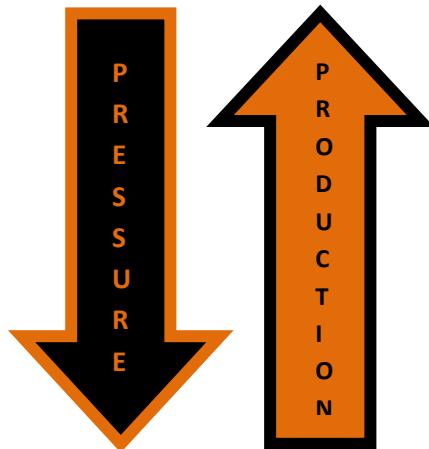
After making the Separation Enhancer part of their normal process the facility observed that the shaker screen no longer were not heavily blinded over by debris. In addition the Separation Enhancer's ionization process led more efficient separation in their gun barrel vessel of oil, water, and suspended solids.



**= INCREASE IN WATER BEFORE FILTER MAINTENANCE**

**A 400% Improvement to the lifespan of filters**

Final treatment of produced water consisted of passing through a 10 micron filtration system. 1,000 barrels of water was usually the standard amount a filter could treat before requiring change and maintenance. After making the Eco1st Separation Enhancer part of their normal process this facility observed 4,000-7,000 barrels of water passing through filters before requiring replacement.



**500psi**

**A 25% reduction in pressure**

After final treatment of the produced water, this facilities primary resource for disposing this water was injection in to a well. Pumping water at high volumes requires high energy costs. Coupled with the fact that all disposal wells are given a limit as to how high pressures can go. In this facilities case they were operating at an average 1950psi. After the installation of the Eco1st Separation Enhancer they observed the injection well reaching an all time low average of 1450psi. This not only allows for greater longevity of the well, but also give this facility to inject higher volumes of water if need be.