

## WILSA Cuts Operating Expenses at Oklahoma Disposal Well

ElectroWave® Conditioner (EWC) improves efficiency of separation equipment and significantly reduces chemical costs and daily operating expenses

**Date:** November 2017

**Industry:** Oil & Gas Production

**Application:** Salt Water Disposal

### Success Factors:

- Reduce chemical usage
- Slow formation of semi-solid emulsion “pad” layers in water tanks
- Cleaner water for disposal
- Reduce pumping pressure into disposal well

### WILSA® EWC Results:

- Emulsion-breaking chemicals completely eliminated
- Total chemical costs reduced by approximately 80%
- Improved efficiency of oil/water separation (61.3% increase in skim oil)
- Reduced emulsion pad layer ~90% so oil now flows freely from Gunbarrel Tank to Oil Tank with reduced pad and oil buildup in all Water Tanks
- Cleaner water discharged from oil/water separator
- Cleaner water having a lower viscosity is now injected into the disposal well at a lower pumping pressure (<11%)



An Oklahoma disposal well operator was experiencing severe emulsion and BS&W problems with oilfield production fluids it was collecting.

The high variability of fluid sources (including produced water and flowback) accumulated from a 40-mile radius made it difficult for the operator to cost-effectively separate oil from water with the use of chemicals & gravity separation.

One operating issue was the formation of 1-2 ft. layers of highly viscous emulsion “pads” of oil, solids and water in the gunbarrel separator and water tanks. Further, water directed to the disposal well carried suspended solids coated with oil.

The operator injected an emulsion breaker and surfactant upstream of the gunbarrel separator in an effort to enhance oil/water separation and limit the formation / growth of the emulsion pads.

In spite of heavy chemical usage, the pads of emulsified oil, water, solids and chemicals required extensive daily maintenance and recurring expenditures for cleaning, removal & offsite disposal.

In an effort to improve the efficiency of oil/water separation, generate cleaner water for disposal and significantly reduce chemical usage, the operator installed a WILSA® EWC directly upstream of his gunbarrel separator.

As a result of WILSA® Conditioning, emulsion breaking chemicals were completely eliminated and total chemical costs were reduced by 80%. The 1-2 ft. pads were reduced to low-viscosity emulsion layers that could easily be arrested. WILSA® Conditioning improved the efficiency of oil recovery, resulting in cleaner water being directed to the disposal well, and water pumped into the disposal well is injected at a lower at a lower pumping pressure (<11%).



## 1. CHALLENGE

A disposal well operator was accumulating 2-3 ft “pads” of emulsified oil in its gunbarrel separator and water tanks in various stages of water processing.

## 2. SOLUTION

A WILSA® EWC was installed upstream of the existing gunbarrel separator to improve the efficiency of oil/water separation and reduce the size of emulsion “pad” layers.

## 3. OUTCOME

Chemical usage was significantly reduced and the emulsion layers were practically eliminated, resulting in improved oil recovery, reduced solids and cleaner water.

## 4. VALUE

WILSA® conditioning eliminated the “pad” of emulsified oil & solids that had previously formed in the gunbarrel separator and water tanks. Additionally, improved performance of the gunbarrel separator (61.3% increase in skim oil) resulted in less oil flowing into the water tanks. Demulsifying chemicals were completely eliminated and total chemical usage was reduced by 80%.

As a result of less oil and fewer suspended solids being discharged from the water tanks, cleaner water was injected into the disposal to the well. Water is now pumped into the disposal well at a lower injection pressure (<11%) as a result of WILSA® conditioning reducing the viscosity of water - resulted in lower utility costs (7.4% decrease) after installing the WILSA unit 5 months ago. Ancillary benefits include reduced maintenance throughout the entire water processing system.

*“We were very impressed with the efficiency and time-savings of WILSA® fluid conditioning, and have incorporated it into our everyday operations”*  
—Operations Manager

	Before WILSA® Conditioning	After WILSA® Conditioning
Average oil skim (% per bbl of Salt Water)	0.49%	0.80%
Average Chemical Bill (\$ per bbl of Salt Water)	\$.019	\$.004
Average Utility Bill (\$ per bbl of Salt Water)	\$.058	\$.054
Average Pumping Pressure Into Disposal Well (psi)	1443 psi	1236 psi

\* Data collected independently by operator



WILSA® conditioning reduced operating expenses and increased efficiency associated with the separation of oil & solids from flowback and produced water received by the disposal well.  
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