



Oil Refinery Effluent Separator: One of a set of four—total capacity 20,000 US gpm (4600 m<sup>3</sup>/hr)

*As Green, Green, Green as  
It Gets!*<sub>tm</sub>

*MSR COALESCING MEDIA HAS NO MOVING PARTS, NEEDS NO  
CONSUMABLES, AND THE RECOVERED OIL IS RECYCLABLE!*

Equipment for Separation of Oil and Water for  
the Hydrocarbon Industry

# MSR Separators are for Use Wherever You Need to Separate Oil from Water

Production Facilities

Refineries

Salt water disposal

Natural Gas Plants



In 1996, Kirby Mohr was asked to redesign two existing concrete API separators installed in a refinery in the northeastern United States. The intent of the redesign was increasing the allowable flow and providing better quality effluent. This redesign included splitting each of the nominal 4000 GPM separators into two separators. The four separators were then fitted with coalescing media to give a flow rate of 5000 GPM each -- a total of 20,000 GPM. This was the big increase in capacity the customer wanted: from a total capacity of 8000 GPM to 20,000 GPM. The coalescing media that was installed was manufactured of UV protected polypropylene.

Over the next 17 years, the coalescing systems performed very well producing effluents that were often less than 5 mg per liter. In 2013, it was decided that it was time to replace the coalescing media in those four separators and MSR media was chosen for the replacement. The separator replacement was very simple, using some of the previous brackets and added some additional ones. The MSR media utilized is also UV protected and is expected to have a similar long effective lifespan.



Outlet end of Media with Brackets

## SALT WATER DISPOSAL WELL SYSTEMS

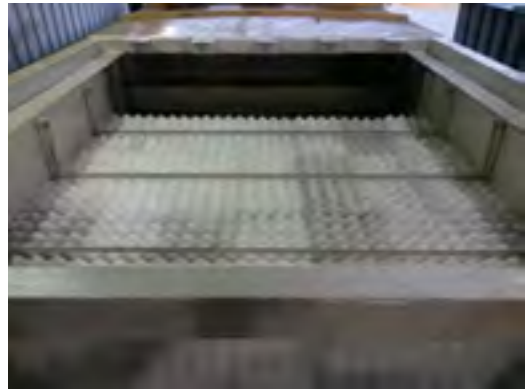
MSR was approached by the operator of several brine disposal well sites about designing a system to remove the oil that is remaining in produced water after initial treatment with gunbarrels or other simple separation devices. The produced salt water that arrives at the disposal wells often contains as much as 1% or 2% oil. Current operations include pumping the water down the disposal wells with the oil content included. This practice not only is wasteful of oil, but it can cause downhole problems with plugging from hydrocarbons and possible biological growth.

Over the life of the disposal well, capturing the residual oil so that it does not enter the disposal well is very economically attractive because of the double benefit of selling the oil and having fewer problems with the well. It was decided that the best thing to do was to do a very small scale test utilizing water from one of the well site tanks to determine what would be necessary to capture the residual oil. The test indicated that it was possible to remove the oil to low levels of effluent concentration.

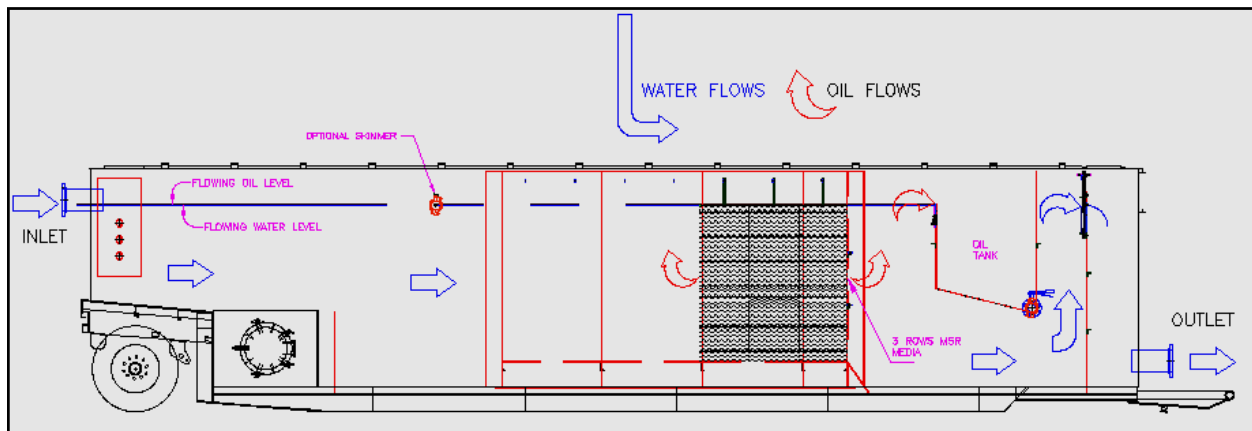
Because many wells are remotely located, it was determined that a typical 500 barrel Frac tank fitted with coalescing media and appropriate baffles would be a convenient way to provide separators at these remote sites. MSR designed the separation equipment to go inside a standard Frac tank, with a versatile design intended for use with between one and seven rows of our coalescing media. The intent of this design is that the system can readily be adapted for use in different process conditions by simply adding additional media. The nominal flow rate for this design is 36,000 barrels per day (1050 gpm) of water, although the allowable flow rate will vary depending upon the crude oil gravity, operating temperature, and average oil droplet size. The amount of oil captured will vary based on the amount of oil in the feed stream, but could be several hundred barrels per day or even more if there is more oil in the feed.

Three of these systems have been constructed by Dragon Products of Beaumont Texas. These tanks are currently being installed and MSR will provide information on their operation as soon as it is available.

Three of these systems have been constructed by Dragon Products of Beaumont Texas. These tanks are currently being installed and MSR will provide information on their operation as soon as it is available. A technical paper concerning this project is scheduled for presentation at the October 2014 International Petroleum Environment Conference in Houston, Texas.



TOP VIEW WITH COVER OPEN



TYPICAL FRAC TANK-BASED SYSTEM FLOW PATTERN

## Specialty Separations of Oil and Water

### Any Size:

Mohr Separations Research offers virtually any size separator that might be needed from the giant 20,000 gpm system installed at a US Refinery and the heavy duty high pressure cylindrical separator shown on the truck ready to be shipped (one of two installed at a Wyoming natural gas facility) below to the very small plastic units that can be used for small separation requirements. We utilize a proprietary process simulation program to custom design each separator so that you can be sure that the effluent water will meet your regulatory requirements. Please call and see how our experience can work for you in meeting your environmental needs.



**1000 GPM WATER PROCESSING SYSTEM**  
This system is installed at a large natural gas production facility owned by a major oil company.



**MSR DESIGN OIL PRODUCTION SEPARATOR (ROMANIA)**

This system was constructed locally in Romania utilizing MSR technology and design and is owned by a local company

Mohr Separations Research, Inc.  
1278 FM 407 Suite 109  
Lewisville, TX 75077 USA  
✉: [info@oilandwaterseparator.com](mailto:info@oilandwaterseparator.com)

© Mohr Separations Research, 2001-2014  
☎: 918-299-9290  
☎: 866-910-5912  
Website: [www.oilandwaterseparator.com](http://www.oilandwaterseparator.com).