



# WATKINS TANK AND VESSEL

## KOTREAT™ COMBINATION THREE-IN-ONE VESSEL



License No. 12F-0101  
Monogrammed Tanks

The KOTREAT™ is a three-in-one vessel. It has more process capacity and produces higher quality oil and gas. You pay only one installation bill and maintain one set of controls with KOTREAT™, not three. And you process more oil, gas, and water in a smaller, more efficient vessel, that maximizes your cash flow and pays for itself quickly! There's just nothing out there like it!!



For the first time ever, Watkins has combined the best features of a Gas Separator, a Free Water Knockout (FWKO) and a Heater Treater. Even though this has never been done before for normal lease oil production applications, the use of individual Separators, followed by an individual Free Water; followed by an individual Heater Treater has been an industry standard for nearly 100 years! Since about 1950, process equipment designers have known that horizontal vessels are at least three times more efficient than vertical vessels. Only the paradigm of "we always did it that way" has kept vertical separators and heater treaters alive. However, the new millennium is overcoming the paradigms of the past, as the industry strives for higher efficiency at lower costs. The paradigm of individual vessels is costly; three vessels with three sets of controls, relief valves, sight glasses, and dump valves. Add to this three installation costs, and three maintenance costs, and the concept of combining all three into a single, horizontal vessel begins to make economic sense. Further add to this 21st century vessel internals, and the "three times advantage" becomes more than five!

So Watkins is introducing operators to the combination three-in-one vessel. Since it's a three phase separator with an emphasis on removing free water prior to treating the oil, it can be considered a FWKO and a heater treater all in one; thus the name KOTREAT™. Assisted by its unique hydro cyclone centrifugal inlet momentum absorber and the ultimate demisting system, specialty "Serpentine Vanes", the KOTREAT™ provides enhanced gas separation from the liquids. These are the most efficient and forgiving demisters known to exist ... in fact they are self-cleaning! Why is demisting such a big deal? Simply, removing oil mist from gas prevents oil carryover. Most separators carry over between 0.1 and 1.0 barrel of crude oil each and every day, a loss to the producer of between \$2,200 and \$22,000 each year. Over the 20 year expected life of the separator, this adds up to between \$43,800 and \$438,000. Carryover losses can exceed the cost of the vessel! So preventing carryover is smart business, and the KOTREAT™ accomplishes this.

Phone: 940-325-6008  
Fax: 940-325-8935

Email: [sales@watkinstankandvessel.com](mailto:sales@watkinstankandvessel.com)  
[www.watkinstankandvessel.com](http://www.watkinstankandvessel.com)



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And since we're already utilizing the Serpentine Vanes to prevent oil carryover in the outlet gas stream, we simply add a few more inches of these Vanes and let them remove all of the free water in the oil and most of the water of emulsion in the oil too. For a negligible added cost, this thoughtful design detail results in a significant and noticeable benefit for the KOTREAT's™ performance in its oil treating capacity and effluent oil quality. This translates to more oil throughput, and lower BS&W in the sales oil. No one has EVER seen a vessel this efficient!

Thought has also been given to address some of the known problems with standard heater treaters. Perhaps the biggest historical and predictable problems are 1) firetube failures, and 2) firetube gasket leaks. The KOTREAT™ soundly resolves both of these issues. Most firetubes fail because the firetube is placed in water. Water corrodes. The KOTREAT'S™ firetube is placed in the oil section; therefore no water, no corrosion! Firetube gaskets fail because traditional firetube flanges and flange gaskets are shop fabricated, not proven ANSI standards. The KOTREAT™ uses no oval firetube flange or home-made firetube flange gasket. Instead, the KOTREAT™ has a full diameter ANSI 150 Raised Face flange set with an ANSI 150 spiral wound gasket. Not only do these design enhancements make sense and eliminate the problems, the flange set gives the owner full, 100% access to the heated section of the vessel, with no 16" manways to crawl through ever again!

The final chapter in all oilfield operations is getting the oil to market in the best possible shape so you get the most for it. The KOTREAT™ decidedly does this better than any conventional unit! All inlet oil is uniformly distributed directly under the firetube. The oil does not pass through the water layer in the heated section of the KOTREAT™ ... a real benefit, insuring that no additional water is picked up by the flowing oil. Instead, the inlet oil is distributed into the oil layer where it dehydrates best. As the heat lowers the viscosity of the crude, the heavier water falls out. The more heat, the lower the viscosity, and the faster the water separation! This is where most heater treaters stop, but not the KOTREAT™.

The KOTREAT™ routes all the oil through a second Serpentine Vane section to make sure the BS&W content of the outlet oil is as low as possible ... in most cases below 0.1%! The difference between 0.5% and 0.1% BS&W in 400 BOPD is worth just over \$35,000 each year to the owner in eliminated deducts. And with excess BS&W penalties in the \$3-\$15/barrel range, if you sell 400 BOPD of off-spec oil now at even \$3 "back", the KOTREAT™ will save you over \$438,000 each year, paying for itself several times over! What an investment!



KOTREAT™ is an HTC trademark

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