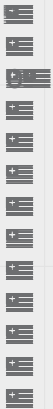


### Off-Spec Oil Bottlenecks Oil Movement and Operation



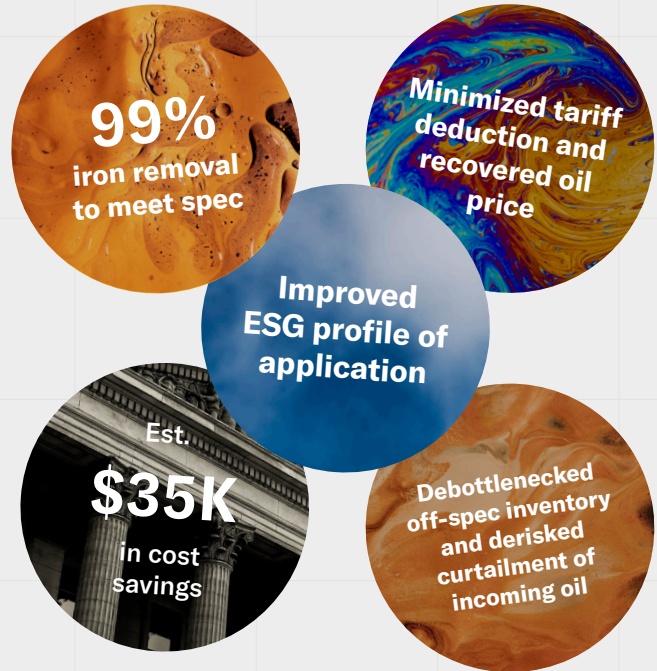
#### Solution Verza360® G5 for Iron in Oil Removal

Solugen’s iron control and surfactant chemistries were proposed for iron in oil removal after field testing. The ratio of Verza (Verza) and a cationic surfactant was recommended for trial. Verza is a proprietary carbon-negative, partially neutralized, and biodegradable organic acid (Verza) blend that is effective at controlling iron-containing scales.

Verza itself is effective at enhancing chelation properties of other carboxylic acids, enabling the chelation power to be more effectual for systems containing iron.

#### Trial Applying Verza Treatment to Off-Spec Oil

Prior to treatment, the raw crude oil containing 4,500 ppm iron was pre-conditioned through a



#### Results and Conclusion

##### Verza Treatment Enhances Iron in Oil Removal and Improves Profitability

4,000 ppm of the Verza-based treatment plus heat and gravitational settling was applied in the field, enabling a 99% reduction of iron in oil (2,390 ppm to 32 ppm) within 24 hours (Figure 1).

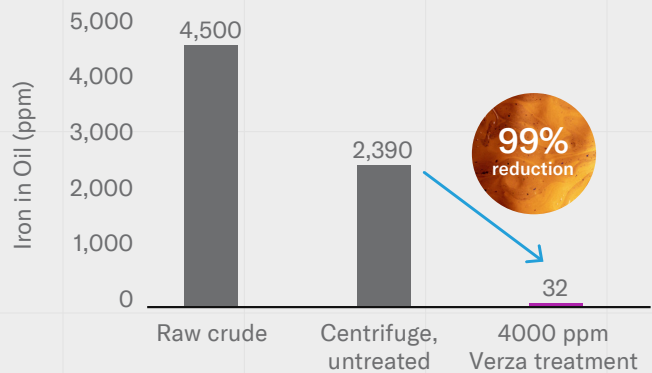
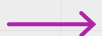



Figure 1. Iron in Oil Concentration Post-Treatment with Verza and Heat



## Oil & Gas Solutions Case Study



As a result, the trader was able to:

- Meet <50 ppm iron in oil spec for sale.
- De-bottleneck stacked inventory of off-spec crude and de-risk curtailment of incoming oil loads (10K-20K bbl/day).
- Minimize crude blending to meet spec.
- Eliminate pump failures, corrosive chemical use, and hazards to operator.
- Improve environmental footprint.

Considering the incumbent program in place, applying the Verza-based program in this case saved the trader an estimated \$35K in costs, enabling an improvement to the trader's overall bottom line.

To learn more, visit [solugen.com/oilandgas](https://solugen.com/oilandgas) or email us at [energysolutions@solugen.com](mailto:energysolutions@solugen.com).