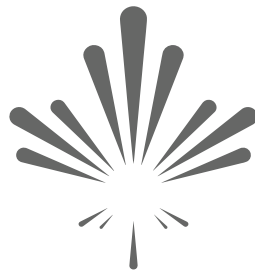


EnerLITE RECOVER

DIRECT EMULSION RECOVERY SERVICE



AES DRILLING FLUIDS





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EnerLITE RECOVER[†]

Direct Emulsion Recovery Service

Description

The EnerLITE system has saved millions in well costs through its ability to control mud weight through narrow drilling windows. EnerLITE RECOVER dramatically lowers the cost of running the EnerLITE direct emulsion system by minimizing dilution rates and enabling fluid system components to be recycled.

While drilling, a flocculant enhances solids control efficiency to aggressively remove drill solids that elevate the mud weight and compromise fluid properties. At the end of a project, a combination of breaker and flocculant separates solids, brine and oil. This reduces disposal volumes as the brine and oil can be reused for other drilling fluid applications.

The system utilizes the existing centrifuge to apply the treatment with a minimal impact on the rigsite footprint. The liquid products are transferred via injection pump to the feed pump suction where they are mixed with the EnerLITE drilling fluid. In many cases, effluent density is lowered by 0.4 to 0.8 lbm/gal versus 0.1 lbm/gal before treatment.

DESCRIPTION

- A service to minimize oil consumption while drilling with EnerLITE and reclaim system fluids after drilling
- Enhanced density control with diesel or mineral oil non-continuous phase EnerLITE systems

BENEFITS

- Reduces dilution requirements to maintain mud weights while drilling
- Does not impact base oil, allowing for reuse in new EnerLITE or AES VERT formulations
- Improves logistics with lower oil consumption and reduced disposal volumes

APPLICATIONS

- EnerLITE direct emulsion drilling fluid system
- High rates of penetration or where solids control throughput is limited
- At the end of a pad or between campaigns where storing and reusing whole EnerLITE drilling fluid is not desired



Untreated 9.3 lbm/gal EnerLITE

8.6 lbm/gal EnerLITE after EnerLITE RECOVER treatment (solids recovery mode)

8.4 lbm/gal EnerLITE after EnerLITE RECOVER Treatment (fluid recovery mode)

Applications

EnerLITE is RECOVER is ideal for any EnerLITE drilling fluid application. During the drilling phase, lower dilution rates reduce not only base oil cost, but also ease logistical concerns securing oil volumes. At the end of a project, the separation of fluid into distinct phases allows for their selective reuse and disposal.

Prior to deploying EnerLITE RECOVER, AES Drilling Fluids will assess the available equipment and make recommendations to maximize service performance. Treatment requirements may vary by the condition of the fluid and laboratory testing of a sample prior to use will aid to determine the best combination of products to achieve the best results.

Performance

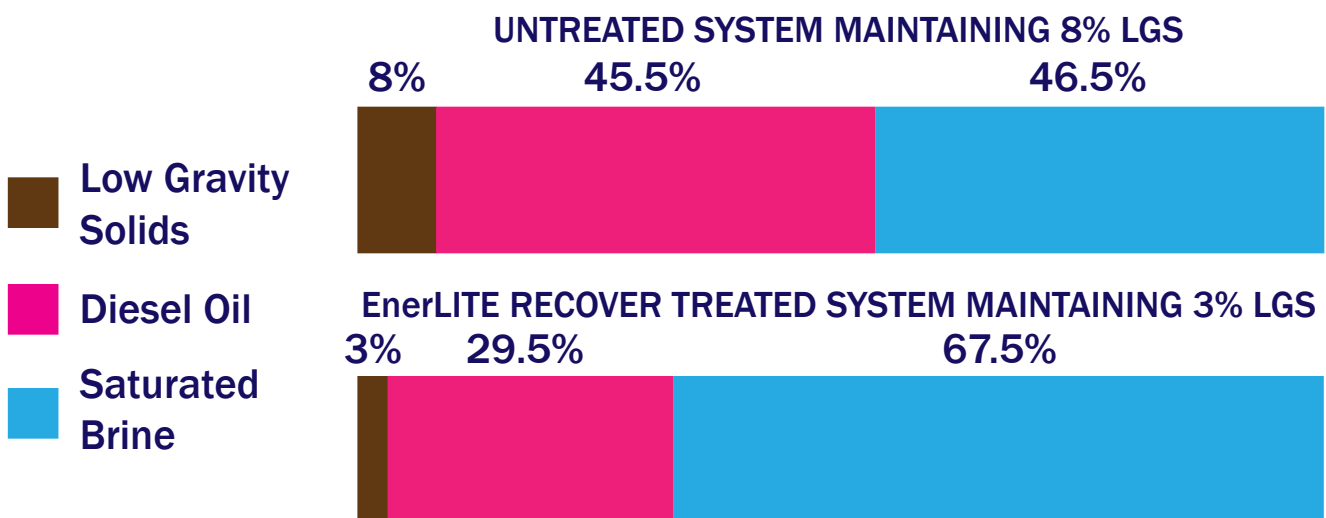
While performance can vary by the condition of the fluid, results from EnerLITE RECOVER show dramatic savings. In a recent application using the solids recovery mode, centrifuge effluent density was only reduced by 0.1 lbm/gal. With EnerLITE RECOVER, effluent density dropped by more than 0.4 lbm/gal, enhancing density control. Oil additions were reduced by 25% during treatment.





Note the comparison in the example below, which features a 9.4 lbm/gal EnerLITE system using diesel oil and saturated sodium chloride brine. Increase drilled solids accumulation requires significantly more oil to control the density and avoid the risk of losses. This oil consumption increases overall cost, and in some cases, results in final oil:water ratios exceeding 50:50. With EnerLITE RECOVER, it is possible to maintain lower overall solids to minimize extra oil consumption while drilling.

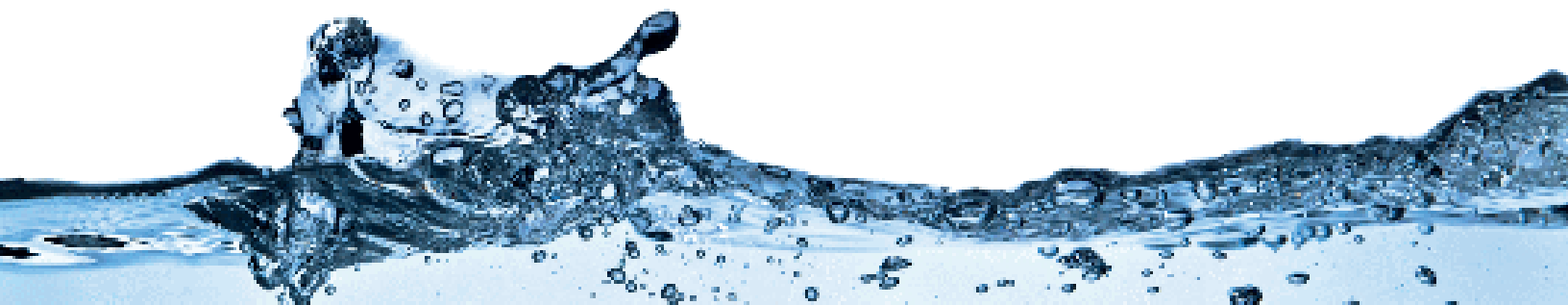
In fluid recovery mode, the separated oil phase of the emulsion has shown potential recovery rates exceeding 50%. Testing verifies that the chemistry acts on the water phase to insure recovered oil is compatible for use as new AES VERT or EnerLITE. The brine phase is also available for use as a drilling fluid, further reducing disposal volumes.

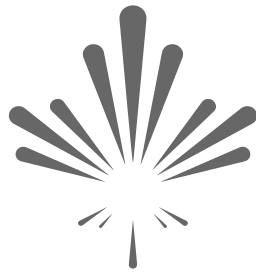
The new economics introduced by EnerLITE RECOVER expand the application opportunities of the EnerLITE system beyond its traditional usage in vertical intermediate sections. Greater simplicity and savings is now possible through the reduced consumption, transportation, and waste volumes EnerLITE RECOVER provides.

Example: Oil to maintain 9.4 lbm/gal Mud Weight



-  **REDUCE DILUTION REQUIREMENTS**
-  **REUSE OIL AND BRINE**
-  **LOWER DISPOSAL VOLUMES**
-  **LESS TRUCKING OF OIL AND WASTE**





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