

EverGreen Burner Minimizes Environmental Impact in Heavy Oil Development

High-performance effluent burner produces no fallout or smoke in Saudi well test

CHALLENGE

Reduce heavy oil viscosity to burn well effluent in exploration well in field with low gas rate and little liquid-density contrast.

SOLUTION

Recirculate oil flow and burn using the EverGreen* minimal environmental impact well effluent burner to improve efficiency while mitigating environmental damage.

RESULTS

Eliminated risk of heavy oil cooling down into tanks while burning with higher efficiency and minimized environmental impact.



Clean disposal of well effluent

Heavy oil production is linked with frontier exploration risks, lower gas costs, and low pricing differentials, but its high viscosity poses a challenge to efficient completion. One contractor with a heavy oil well in Saudi Arabia was facing this challenge but was unable to find a way to process and measure flow data with accuracy and burn the oil effluent properly. The well's environment had an extremely low gas rate, a low contrast of liquid density, and the instability of the well led to carryover and carryunder, contaminating the different effluents after separation. Without an efficient alternative to traditional heavy oil burners, the operator risked inefficient burning, fallouts, and large plumes of black smoke.

Minimize smoke and risk of fallout

After consulting with the operator, Schlumberger proposed the use of the EverGreen effluent burner, which was specifically designed to minimize environmental damage while efficiently burning effluents. Due to the high viscosity of the oil, Schlumberger modified the operator's original well test workflow to bring the viscosity within a range suitable to process, burn, and measure the effluent with efficiency.

In the operator's environment, recirculating the heavy oil in tanks prefilled with diesel while heating the mixture at strategic points can significantly enhance final results by reducing viscosity. Following the workflow proposed by Schlumberger, the operator recirculated its heavy oil with diesel and slowly aligned the flow to a burner, returned the rest to the tank, and alternated between the left and right sides of the skimmer. This was repeated until the trial concluded.

Lower viscosity and environmental impact

The trial test was completed successfully, and the operator noted the benefits of the recirculating procedure used in conjunction with the EverGreen burner. The operator was able to burn effluent with high efficiency while preserving environmental awareness in their heavy oil test. Viscosity levels of the heavy oil were successfully lowered to fit the burner envelope, the effluent was burned with higher efficiency, and both environmental damage and the risk of heavy oil cooldown was minimized.



EverGreen burner with monojet configuration produced no smoke or fallout while burning heavy oil.

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Well Testing