PAC helps increase oil recovery by as much as 20 percent

RESULTS

- Achieve as much as a 20% increase in the amount of oil extracted
- Significantly reduce the amount of food grade polymer needed.
- Avoid oil recovery degradation caused by viscosity-driven instability
- Achieve excellent repeatability, even under challenging process conditions
- Maximize oil production while minimizing EOR polymer costs

APPLICATION

In mature, oil-producing reservoirs, conditions like natural fissions in the reservoir rock or resistance from heavier or more viscous oils require enhanced oil recovery (EOR) injection techniques. Polymer flooding is one EOR technique that is gaining popularity because it can significantly improve oil recovery over conventional flooding.

Using water-soluble polymers allows the operators to match the viscosity of the polymer to the oil viscosity. Polymer flooding involves pumping down the correct viscosity polymer mix to clog the small fissures in the core, allowing the larger fissures to remain open for more oil to flow. Small changes in concentration result in significant changes in viscosity. Measuring and controlling the viscosity of the oil to the target can result in millions of dollars per year.

CHALLENGE

Polymer concentration has a significant impact on the viscosity of the solution. The polymers tend to be non-Newtonian, which means they need to be measured at relatively low shear rates. All of the viscosity measurements need to be completed under pressure at multiple points in the stream of fluid being pumped down. This measurement at each of these points is used to attain the ideal viscosity. Then, a final measurement is made at the well head for the final viscosity.

SOLUTIONS

The requirement of measuring at multiple injection points under pressure, combined with the non-Newtonian fluid being pumped, makes in-line viscosity an ideal solution. The VISCOpro 2000 is the only system that can meet the pressure, temperature, viscosity requirements while being at relatively low shear.

The VISCOpro 2000 with the SPL-392 sensor measures the viscosity of oil solutions with a repeatability of +/- 0.8 %. It also measures at lower shear rates, allowing for precise control of the polymer. The SPL-392 can withstand pressures up to 1000 psi, with a special version capable of pressures up to 2500 psi. The VISCOpro 2000 transmitter has an intuitive user interface and can export the data for further analysis and custom reports. For more information about the VISCOpro 2000, visit us online at www.paclp.com.

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