

Heavy Crude Oil Applications

THE ISSUE

The high viscosity of heavy crude oils is an inexorable challenge for the oil industry. To produce, store, handle, and transport highly viscous crudes the industry must deploy inherently inefficient technologies such as injecting steam, adding light crude oil diluents, and dosing with drag-reducing and emulsion breaking chemicals, all of which negatively impact oilfield economics.

Suboptimal production flow rates, low recovery (particularly cyclic steam), high friction pressures and asphaltene deposition in production tubulars, rods, flowlines & pumping equipment resulting in costly, periodically recurring remedial maintenance along with high drawdown pressures destabilizing wells because of "sanding" issues all contribute to an industry in need of further technological advances.

ENERCAT™ CONTRIBUTES TO THE SOLUTION

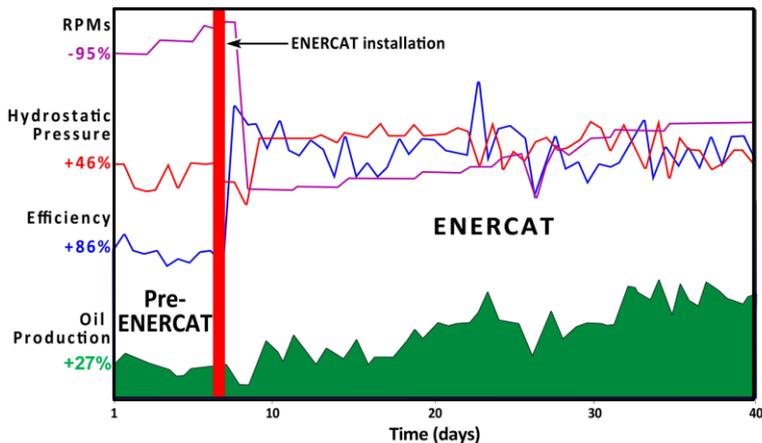
Enercat Technology Inc has a novel yet proven technology, Enercat™ Downhole Tool that contributes to the necessary technological advances because it can substantially reduce heavy crude oil viscosity by weakening the intermolecular London Dispersion forces that cause heavy constituents in the monophasic crude oil mixture to flocculate, agglomerate and increase viscosity during production from the reservoir to the wellhead. Many successful Enercat™ installations supported by empirical laboratory evidence demonstrate the viscosity reducing efficacy of the tool and related oilfield cost savings.

DEMONSTRATING ENERCAT™ COMMERCIAL APPLICATION

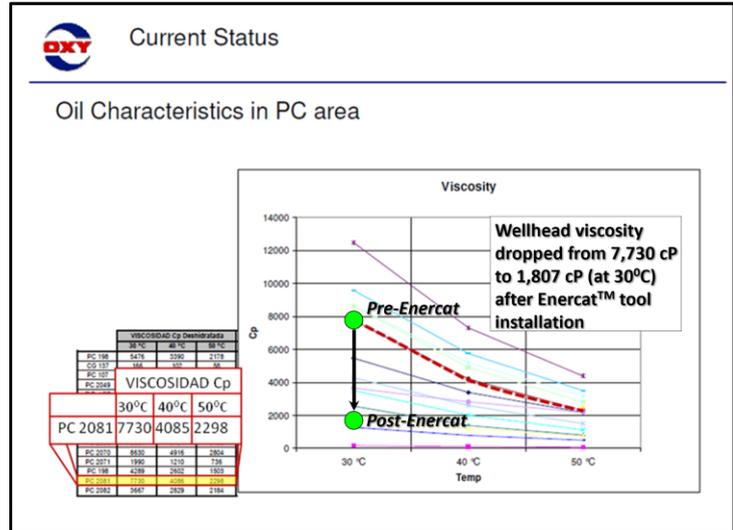
Enercat™ installation in Anderson Exploration's heavy oil well resulted in daily oil production increase from 51.5 bopd to 65.4 bopd, or 27%. High friction losses in the production tubing were impeding production rates and the PCP in turn was running at high torque pressure which caused premature failure. Once installed, the Enercat™ tool kept the oil viscosity at reservoir conditions, lessening the friction and allowing greater inflow into the well through the perforations and tubing as well as promoting a higher fluid column (hydrostatic pressure was increased by 46%). Pressure on the pump was greatly reduced and RPM on the pump were reduced by 95%. The well also experienced a large drop in sand production from 3.1 m³/day to 0.3 m³/day.

INCREASING OIL PRODUCTION & PUMP EFFICIENCY BY ENERCAT™

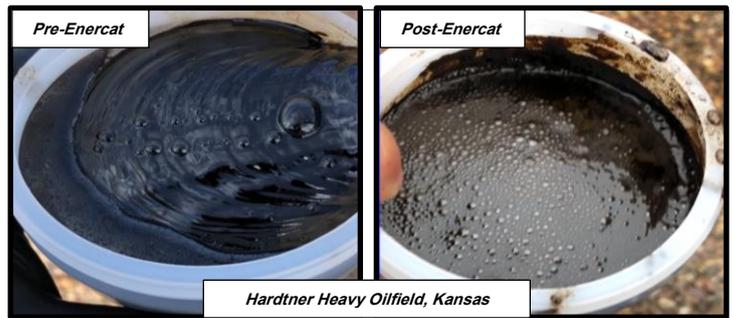
Enercat™ Heavy Oil Case History, Anderson Exploration, Canada



REDUCING WELLHEAD VISCOSITY BY ENERCAT™



VISCOSITY REDUCTION AT HARDTNER FIELD (KS) BY ENERCAT™



VISCOSITY REDUCTION AT EASTON FIELD (KS) BY ENERCAT™

