

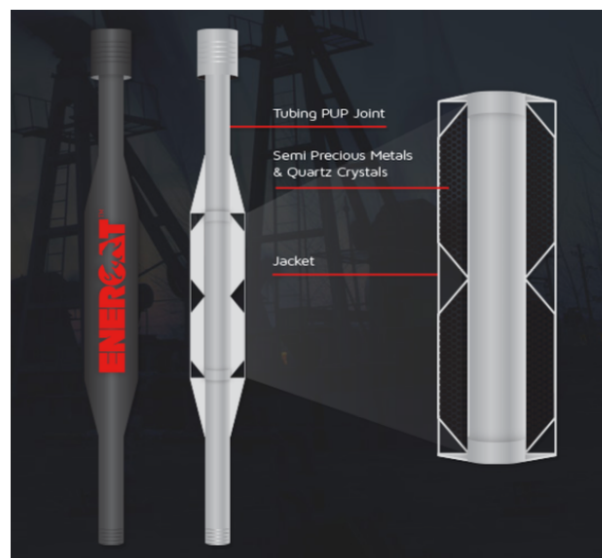


## Enercat™ Oil Tools

Petroleum crude oils are made up of fractions, which contain paraffin and water. When crude oil flows into a wellbore, pressure and temperature are reduced. The critical issue is the physical and chemical changes that occur to the oil because of the drop in temperature and pressure as the oil enters the wellbore at the onset of production. These changes destabilize the micelle structure of the oil as it exists in the reservoir, **leading to paraffin deposition from paraffinic oils, wax deposition from asphaltene-rich oils, increased viscosity in heavy oils and mineral scale deposition from wells with carbonate-rich high water cuts.**

Enercat creates vibrational energy at the far end of the infrared spectrum and **imparts a passive energy** at the reservoir/well bore interface, stabilizing the micelle structure of the oil as it enters the wellbore to prevent paraffin from turning into solid form. This allows the solution to move smoothly and cleanly through the pipe without causing deposition problems.

The innovative Enercat tool looks like a standard production-tubing pup joint (EUE) with a jacket in an aluminum casting. The general workings deep within the tool **comprise energized quartz crystals and semi-precious metals, whose interaction generate a passive energy wave.**



This treated fluid **maintains the heavy constituents within the crude oil mixture at close to its native state effectively**, where it was able to flow through the pore throats of the reservoir rock and into the wellbore readily. The Enercat tool effectively maintains the viscosity of the produced oil at its original reservoir state throughout the production phase. This allows the well to optimize its production capability while minimizing lifting costs by mitigating wax and/or asphaltene flow restrictions. **When it comes to mitigating mineral scale deposition, the application of a passive energy oil well treatment modifies the molecular structure of the water into long thin molecules** as compared to their normally more spherical molecular structure.



The center of this micelle can be **metal, clay, or water**. The essential feature is that the polar groups (such as S-"negative" and/or N-"negative" and/or O- "negative" containing groups) are concentrated towards the center. This often is termed oil external-water internal or **water-in-oil emulsion**.

Enercat **provides a subtle vibrational energy / passive energy waves, which stabilizes the water-in-oil emulsion structure and prevents paraffin being released from the micelle structure and forming solid states.**



Micelle, in physical chemistry, a loosely bound aggregation of several tens or hundreds of atoms, ions (electrically charged atoms), or molecules, forming a colloidal particle.

Enercat works with any pumping system, with the exception of **Electrical Submersible Pumps**. Each application is designed for the specific well depending upon tubing size and fluid volume. Typically, Enercats will be run either **below the pump intake** or **above the pump discharge**, or **as a tail joint at the end of the tubing string**. Simple to install, Enercat requires no external power source, maintenance or servicing and has no internal restrictions.



Pre-Enercat Pour Point 47F (8.3C) Post-Enercat Pour Point 13F (-10.6C)

**With Enercat, you get increased flow rates, less torque pressures and less stress on pumps due to changes in viscosity.**