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A Review of the Methods for Enhancing Oil Well Production Efficiency

Abstract:

In a world where crude oil resources are dwindling and the demand for energy is continuously rising, enhanced oil recovery (EOR) technologies have become critically important. While traditional production methods can only recover 30 to 40 percent of the oil present in reservoirs, advanced EOR technologies provide access to substantial amounts of the remaining oil. These technologies, which include a variety of methods such as chemical flooding, water injection, gas injection, steam injection, combustion, and ultrasonic stimulation, significantly improve oil displacement efficiency. This review paper examines these innovative techniques and analyzes their impact on reducing interfacial tension, controlling fluid mobility, and enhancing the efficiency of injected fluids. It also explores miscible and immiscible gas flooding processes as well as steam and combustion injection techniques, each of which, offers different approaches to increasing oil recovery.

Keywords: Enhanced oil recovery; Reducing interfacial tension; Chemical injection; Steam injection; Biological injection; Nano material injection

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