Public Executive Summary

Convergence of Efficiencies: Can DownStroke, Slow Stroke & PV/Wind Hybrid Give New, Green Life to Off-grid Strippers?

Skillman DownStroke, LLC of Keller, TX proposes the combined use of three unique production technologies to enable off-grid, non-producing oil & gas stripper wells to again produce and with no carbon footprint. While there have been successes using solar energy to power production before, there are application limitations due to the inherent system-wide inefficiencies. The firm intends to apply new efficient technology in downhole pumping, surface pumping, and energy to overcome this.

Sucker rod pumps dominate artificial lift in the US. The Skillman DownStroke sucker rod pump addresses the major weaknesses of the conventional pump and offers a performance profile very attractive to stripper well production. It utilizes gravity to displace fluid on the down stroke, consumes 5 – 50% less energy than conventional suck rod pumps, enhances production for well optimization and operates in all wells at much slower SPM. It is highly efficient and does not lift fluid.

Two pumping units will be tested. The John Crane LVPS (low volume pumping system) was designed and built specifically for use with renewable energy. It is a beam pumping unit designed different from the ground up. It has no crank arms or crank weights; it has less friction with fewer moving parts and is light enough for trailer mounting for testing on pre-install. The UNICO linear rod pumping system takes advantage of the motor reversing and servo positioning capabilities of a flux vector variable-speed drive to directly control the sucker rod using a simple rack-and-pinion mechanism. It has less friction with fewer moving parts and mounts directly to wellhead. It looks to be an economical solution for both capital expenses and costs savings and is very environmentally friendly (lower profile, quiet, energy efficient).

The power for the tests will come from nature itself. The PV (photovoltaic) / Wind hybrid system by bpsolar and powerwind is state-of-the-art. Stripper wells without a source of power may find a viable solution in renewable energy captured by such a system. Many improvements now make solar panels and wind turbines more efficient and reliable than they were even a few years ago.

The combining of these efficient technologies is the next best step in trying to reclaim and produce the thousands of off-grid marginal wells in the United States. The project assumption is that efficiency through this technology will be the answer to recovering these resources.