

Sensors

Depthometers help restore oil and gas wells to productivity



Down (the well) for the count: The mobile counter system (inset) runs off 12 Vdc from the CARE Industries truck (right). The sensor (above) also detects any rotational direction change.

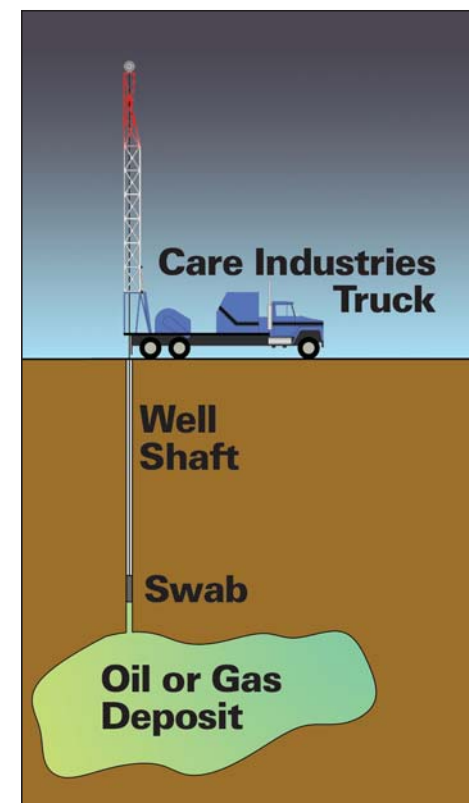
For many years, the process of “swabbing” oil and gas wells has been a successful way to evaluate, test and restore a well back to usable production levels. These wells can have a depth of a few hundred meters to as much as 5000 m.

The swabbing process involves lowering a rubber like plug called a “swab cup” into the well’s tubing or casing on the end of a cable or “sandline.” Once the swab cup has reached the fluid level in the well bore, it will allow fluid to bypass through the center of the cup and seal against the surrounding tubing or casing. The swab cup is lowered to a desired depth “depending on the weight of the fluid” and pulled back to surface. This process will reduce the hydrostatic head and create a vacuum on the well. It’s somewhat



like priming a pump. Once the hydrostatic is lowered and a vacuum is created by the swabbing process, this will initiate the oil or gas well to flow, it will usually continue on its own pressure, becoming once again, a producing well.

Barry Anderson from CARE Industries in Red Deer, AB, is an expert and somewhat of a pioneer in the well swabbing industry. His company manufactures the equipment on single/tandem axle trucks and transforms them into complete, ready-to-go swabbing rigs (above). The main structure of a swab rig is the truck, sandline drum and derrick. One problem that swabbing crews have always had with the swab rigs is determining how far down the well the swab is. The geologic services provide records and data of how deep the wells are but that’s all on paper. How can the swabbing crews determine accurately where the fluid levels are and how much fluid to pull out on each swab?



Swabbing the depths: One problem that swabbing crews have had is determining how far down the well the swab is. Measuring rotation at the sheave continuously with an electronic counter system lets the operator know the exact location.

CARE had the idea to employ an electronic counter system to accurately count the revolutions of the sandline sheave. Measuring rotation at the sheave continuously lets the operator know how deep the swab is. Since the counter system is bi-directional, it detects any rotational direction change in the sheave. That means that the counter’s LED digital readout display goes up and down with the travel of the swab showing the operator exactly where the swab is at all times. The obvious benefit from this is much more efficient swabbing of the well. According to Anderson, “it really saves time when you know where your swab is and allows you to maximize swab cup life and lower operating costs.”

Anderson has worked closely with Dennis Kenny of Electro-Sensors, Inc. (electro-sensors.com) in Minnetonka, MN, to design this effective mobile counter system. Electro-Sensors supplies this counter to CARE Industries as a complete system, with bi-directional sensor, and pulse generating magnetic disc for the sandline sheave. The model CT6000 is powered by 12 Vdc and works off the truck’s electrical system. The user can program the LED display for a direct readout in meaningful units like feet or meters.

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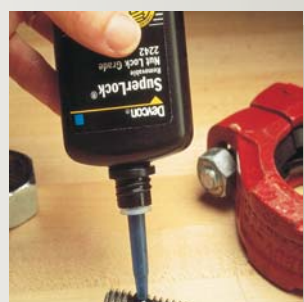


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