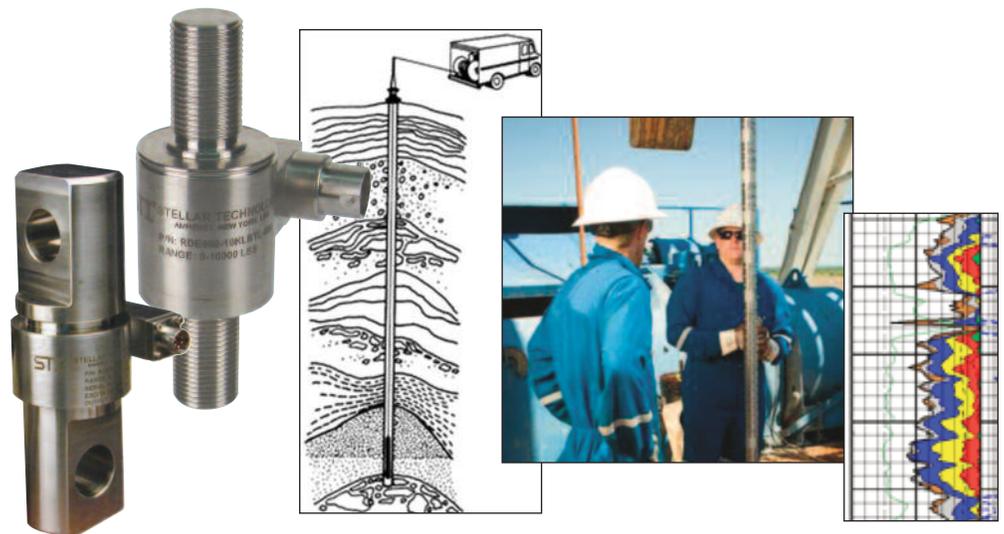


Wireline Tension Monitored

By Downhole Load Cell

Product Hilites



Well logging is a way to find hydrocarbon zones in geological formations by measuring the electrical, acoustic, radioactive, electromagnetic, and other properties of the rocks intersected by the borehole. The logging procedure consists of lowering a logging tool on the end of a wireline into the borehole of the well.

This “tool string” can be up to 100 feet in length and is made up of 4 or 5 logging tools which can have a total cost of up to \$15 million. As the tool string is retrieved from the borehole, the possibility of the tool getting stuck or binding in the hole can be a real problem. It is critical to monitor the forces being exerted to ensure that the cable does not break and drop the instrumentation tool string down the well. If the line does break and the tool is lost, drillers have to send in a ‘fishing crew’ to retrieve the tools from the well, which typically damages the tools and/or the casing. Downtime on the well and cost of the fishing service could cost hundreds of thousands to millions of dollars per occurrence.

A surface mounted weighing system will not react fast enough to detect a tool string or cable that is binding when being pulled out of the casing. The solution devised by STI engineers was to integrate a rod-end load cell into the tool string itself and send it downhole with the other logging tools. This provides a much more accurate and instantaneous measurement of the forces because the measurement is taking place in the tool string, in real time, and at the point of occurrence.

The solution is a customized Model CLC910 tension and compression load cell uniquely configured to integrate with the tool stack. This 75,000lb load cell is only 1.88” diameter with threaded connections at each end. The unit can be battery powered and uses a 5000 ohm bridge to reduce power consumption. Excitation can be up to 15 VDC and output is 2 mV/V at full scale capacity. The load cell is manufactured from high strength tool steel, has an operating temperature range up to 350°F, and is resistant to shock and vibration. Another example of an application solution from the engineers at Stellar Technology.

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