

Measurement While Drilling



Customer Challenge

A customer approached Winchester Interconnect™ with production problems related to its existing Measurement While Drilling (MWD) solution. The customer experienced frequent non-productive time due to its MWD cable failures that led to rig shut downs, a serious issue in the oil and gas industry because it costs the end customer money. In addition, during drilling production, the customer experienced intense electromagnetic interference issues (EMI), which distorted the MWD signal to the computer. The EMI issues led to inaccurate drilling data for the directional drillers to properly steer the drilling operation.

Typical MWD designs consist of pressure transducers at the surface of the drilling equipment and a downhole pulser unit that generates fluctuations in the drilling fluid pressure. The pressure transducers receive and measure the pulses and pass signals through a cable assembly to a surface computer. The data received by the surface computer is decoded to give drill bit direction (i.e., inclination, azimuth), which allows the directional drillers to properly steer the drilling operation.



Challenge Review

Winchester reviewed the application and discovered that the existing MWD design consisted of off-the-shelf, low cost cable assemblies. These cables were designed for general purpose use and not to withstand the rugged demands of a drilling well site. As a result, there were several cable failures in the field, including cut cables and broken connectors, and rig operators would rip out connectors from the existing cable by pulling too hard. Keeping the existing design meant that the customer would risk continued rig down time, continually replace cables, and tie up cash flow with extra back-up inventory. Further, Winchester noticed that the existing pressure sensors did not utilize noise filtering functionality. EMI noise was picked up by the existing sensors, which prevented the drilling operators from accurately drilling in the desired locations.

Winchester Solution

To address these problems, Winchester provided pressure sensors with noise filtering electronics to help minimize the EMI issues and receive a cleaner and more accurate pressure signal. Also, after working with the customer's engineering department, Winchester designed in its proprietary cable which incorporates shielding and a cut-resistant, rugged cable jacket to withstand the harsh drilling environments. The cable and transducer interface were designed to be waterproofed, which also helped to eliminate field failures.



Customer Improvement

Winchester's MWD solution provided the customer with:

- A ruggedized cable assembly
- Improved accuracy and noise-free pressure signals
- Improved throughput of oil production due to no field failures from MWD
- Lowered overall cost by eliminating future MWD field failures and eliminating extra MWD parts in inventory



Contact our Winchester Interconnect Experts for your custom solution!

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