TECAT
PERFORMANCE SYSTEMS

Application: Torque/Turn Measurements

The Challenge

In modern drilling rigs, the make-up and break-out of drill strings is typically performed with the use of hydraulic chain tongs. The hydraulic pressure in the tongs is correlated to the torque on the pipe, and the number of turns are recorded, so as to develop a torque-turn curve. These curves are then monitored, to ensure that the proper torque is achieved at a specified number of turns. The existing torque-turn monitoring systems on these hydraulic chain tongs are both expensive and inaccurate. TECAT was challenged to develop a reduced cost torque monitoring system that could be used on existing hydraulic chain tongs.

System Requirements

- ✓ Reduced cost over existing systems.
- ✓ Increased accuracy over existing systems.
- ✓ Ease of operation: The system must be easy to install and operate.
- ✓ Real-time Data: The system must be capable of plotting curves in real-time for use by the operator.
- ✓ Rugged design: The system must withstand the environmental conditions found on an oil rig derrick.

The TECAT Solution

TECAT adapted their WISER product to a load cell, so as to measure the force in the movement of the tightening arm of a hydraulic chain tong, along with an enclosed sensor to record the number of turns required to fully torque the joint. The TECAT solution:

- ✓ Reduces costs compared to the leading torque-turn measurement systems.
- ✓ Improves accuracy of torque measurement from ± 1% to ± 0.1%
- ✓ Produces real-time torque-turn curves on a nearby laptop with a wireless connection to the measurement system.
- ✓ Withstands the harsh environment with a ruggedized sensor enclosure and no wires.
- ✓ Installs easily on a wide range of commercially available chain tongs.

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