

AutoTong™ System for Conventional Operations

Automates the makeup and evaluation of pipe connections to enhance connection integrity

Applications

- Casing strings
- Standard tubular strings
- Premium, corrosion-resistant alloy (CRA) tubular strings
- Completion strings

Features and Benefits

- The AutoTong system automates the final makeup with smooth, computer-controlled precision for enhanced efficiency and integrity:
 - A speed-control algorithm uses continuous torque measurements, which signals the system to automatically slow down the makeup speed when approaching the optimum torque. These speed adjustments eliminate the need for a traditional dump valve and the corresponding sudden stops in the makeup process.
 - A tong-mounted controller uses a speed-control algorithm to maintain consistent, repeatable makeup to the same OEM (original equipment manufacturer) connection parameters every time.
- The AutoEvaluate™ feature autonomously evaluates and accepts or rejects connections with improved accuracy:
 - Automatic torque-shoulder detection increases accuracy, which eliminates the need for manual data adjustments by an operator.
 - Integrated JAM® (joint-analyzed makeup) software evaluates connections according to OEM criteria.
 - The troubleshooting advisor application identifies root causes of makeup issues and recommends corrective action.
- The system reduces human input and physical work to enhance safety and minimize risks:
 - The JAMPro™ joint-analyzed makeup system includes prepopulated parameters that eliminate the need for manual entry and an on-site JAM operator.
 - Load-cell identification capability eliminates the need to manually enter load-cell information, which reduces the possibility of overtorqued or undertorqued connections and potentially catastrophic failures.
 - Electric load cells mounted on each side of the tong negate the need to switch load cell connections between makeup and breakout.



The Weatherford AutoTong system for conventional operations uses a manual power tong in automated makeup applications. After manually positioning the tong to the pipe, the operator pushes a button, and the system automatically identifies components, controls makeup speeds, detects shoulder torques, and evaluates connections.



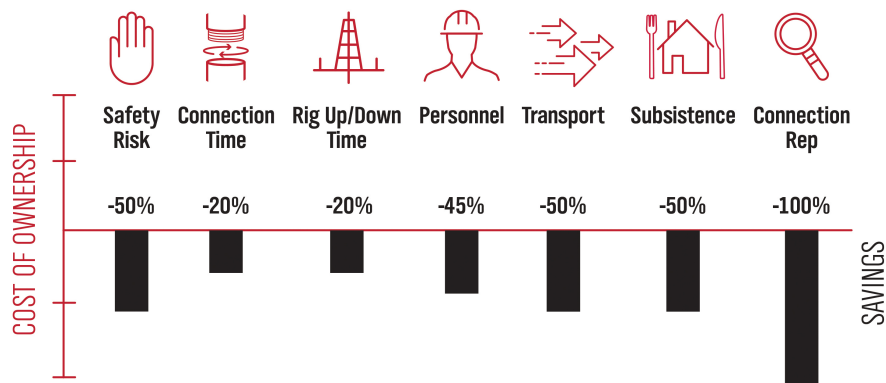
AutoTong™ System for Conventional Operations

Tool Description

The Weatherford AutoTong system is the world's first technology to enhance connection integrity by automatically making up pipe and by autonomously evaluating pipe connections. Automated makeup enables precise control of the process, independent from any operator-specific influences or other human factors. Autonomous evaluation—made possible with the AutoEvaluate feature—eliminates subjective graphical interpretations. The system fully controls makeup to the final torque, and it evaluates makeup data with resolution 10 times more refined than the human eye can see on the previous JAM screen. This precise control and consistent evaluation increases the dependability and repeatability of the connection makeup process to reduce well integrity risks.

Simple operation shortens the learning curve and reduces the knowledge requirement for personnel. To initiate the final makeup process, the operator pushes a single button on the handgrip of the tong. The AutoTong system determines the connection makeup parameters based on pipe and thread OEM criteria. The dual displacement motor and hydraulic valve section enable the system to precisely control the connection makeup speed. A tablet mounted on the tong displays a torque/turns graph, indicates tong status, and enables data entry.

A Cost Comparison of Conventional Tubular-Running Equipment Versus the AutoTong System



The AutoTong system reduces an average offshore budget by about 20%. While every operation is unique, this automated system delivers connection integrity while decreasing the number of personnel and time required for any tubular-running job. Below is an estimate based on an average offshore, single-completion-running operation in the South China Sea.

