Stickup Height Detector

Vision technology to optimize pipe handling operations.

Our Stickup Height Detector is your solution for improved MMC automation performance. This technology uses a high-definition camera and fast image processing to automatically measure the stickup height and allows MMC to perform optimized movements of the roughneck and vertical racker.

Horizontal and vertical movements of the iron roughneck are typically independent trajectories, aided by tool-mounted sensors detecting the pipe and tool joint neck.

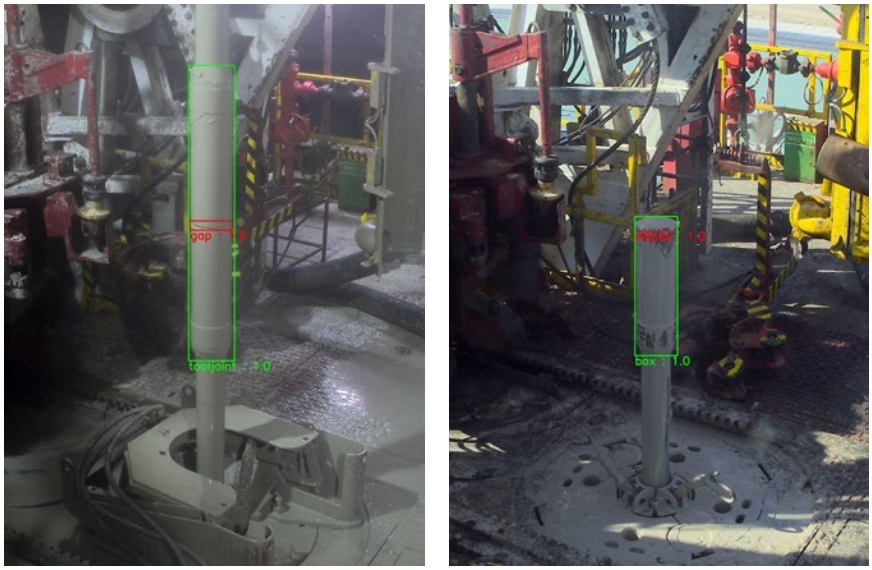

Fig 1. Camera technology analyzing tool joint and stickup height

The standard process requires an operator to visually verify correct iron roughneck jaw position and manually adjust the tool height if needed. By using the Stickup Height Detector solution, accurate pipe stickup height is automatically measured. MMC then uses the measured value and commands the iron roughneck from parked position to the correct make-up or break-out position, performing simultaneous horizontal and vertical movements (see Figure 2). The optimized trajectory reduces overall tripping times.

Figure 2. ARN-200 iron roughneck trajectory optimization during testing and calibration

Benefits

- Reduce connection time of operational sequences
- Optimize iron roughneck trajectory
- Avoid manual height adjustments when deploying the iron roughneck
- Validate tubular information in Tally Master™
- Optimize stabbing operations for rackers, top drive, and drawworks
- Aid ATOM RTX to position tools and end effectors

Features

Camera Kit

- EX-approved (zone 1) stainless steel housing including heater
- Motorized wiper and water sprayer for cleaning

Edge Computing

- Calibration configuration
- Communication modules
- Logging

Engineering

- Rig specific camera configuration
- Camera installation study to provide optimal perspective
- Software programming to interface with existing system
- Hardware and software testing

Performance, handling, and installation data

Processing time for first measurement	1 second
Potential time saving when using tool-joint finder	6 seconds
Potential time saving, manual adjustment	2 to 7 seconds
Accuracy	+/- 2 centimeters
Detection rate	99%
Minimum height above maximum stickup	1 meter
Maximum distance from slips to camera	8 meters
Compatible processes	Trip-in, trip-out, stand building, and add stand. All MMC compatible.