

## Vero™ Mechanized System

Automates the makeup and evaluation, or breakout, of premium pipe connections on large offshore rigs and drillships

### Applications

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

### Features and Benefits

- The Vero mechanized system automates the final makeup and breakout with computer-controlled precision for enhanced efficiency and integrity:
  - Computer programming and onboard sensors enable the system to complete the entire makeup sequence—from the high-speed spin into the final makeup and evaluation—without inputs or signals from the operator.
  - A system-mounted controller uses a speed-control algorithm to maintain consistent, repeatable makeup to the same OEM (original equipment manufacturer) connection parameters every time.
- The built-in Vero software 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 Vero software evaluates connections according to OEM criteria.
  - The troubleshooting advisor application identifies root causes of makeup issues and recommends corrective action.
- The mechanized system reduces human input and physical work to enhance safety and minimize risks:
  - A hands-free positioning system and Wi-Fi-enabled controller makes operation possible from the control room and away from the rig-floor red zone.
  - Prepopulated parameters eliminate the need for manual entry and an on-site 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 system negate the need to switch load cell connections between makeup and breakout and the redundancy of measurement values.
- The system combines the latest technologies with proven equipment to provide reliable access to operations:
  - Remote-viewing of makeup graphs is included, which depends upon an Internet connection on the rig.



With just a single click from the control room, the Vero mechanized system automates the entire process, from positioning at well center to making up and evaluating the connection.



# Vero™ Mechanized System

## Tool Description

Used for applications on large offshore rigs and drillships, the Weatherford Vero mechanized system enhances connection integrity by automatically making up or breaking out 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 eliminates subjective graphical interpretations.

The mechanized system includes a hands-free positioning system and remote controller. Using onboard sensors and programming logic, the system manages each step in the entire makeup cycle, from the closing to the opening of the door for both makeup and breakout. The system can also be integrated into the rig controls to increase the operational efficiency and to enable control through the driller's chair. During the connection makeup process, real-time torque monitoring and adaptive speed control help to regulate the torque and revolutions per minute. This precise control and consistent evaluation during the connection makeup process increase dependability and repeatability to reduce well integrity risks.

The system offers simple and hands-free operation, which reduces knowledge requirements and eliminates personnel from the rig-floor red zone. With just a single click from the control room, the operator starts the makeup cycle. The system controls the process and makes up and evaluates based on the pipe and thread OEM criteria. The dual displacement motor and hydraulic valve section enable the system to precisely control the connection makeup speed. The integrated tablet and remote control system displays a torque/turns graph, indicates system status, and enables data entry from the control room.

The system includes real-time access for remote viewing of the connection data produced during the well construction process. This access enables offsite monitoring and review of connection makeup graphs and autonomous evaluation results from the system software.

## Specifications

Model	7.6-30	7.6-50	14-100	22-150	30-100
Pipe range	2-3/8 to 7-5/8 in.	2-3/8 to 7-5/8 in.	7 to 14 in.	7 to 22 in.	9-5/8 to 30 in.
Max torque	30,000 ft-lb (40,675 Nm)	50,000 ft-lb (67,791 Nm)	100,000 ft-lb (135,600 Nm)	150,000 ft-lb (203,373 Nm)	100,000 ft-lb (135,600 Nm)
Wi-Fi enabled	Yes	Yes	Yes	Yes	Yes
CRA capability	Yes	Yes	Yes	Yes	Yes
Remote evaluation access	Yes	Yes	Yes	Yes	Yes
Remote diagnostic access	Yes	Yes	Yes	Yes	Yes

