

Heat Exchanger Expo

Pasadena, TX

December 2021



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Testing and Inspection with Digital
Data Collection Torque Tools and
Systems

Prepared By:

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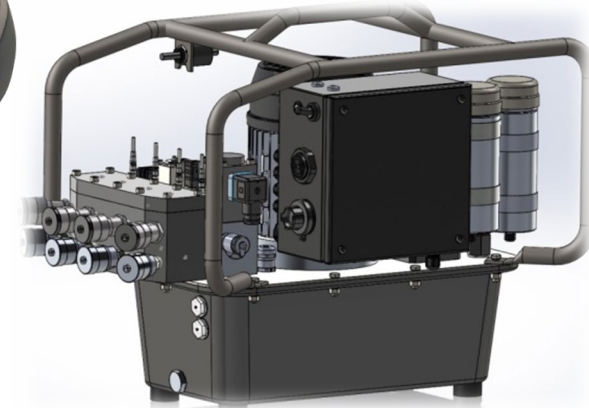
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Standard Tooling Approaches



HYTORC Standard Tooling Lines

- *Hydraulic Square Drive Tools*
- *Hydraulic Low Clearance Tools*
- *Battery Driven Tools*
- *Pneumatic Tools*
- *Digital Power Packs*



36V LITHIUM GUN WITH SLEEVED HYTORC REACTION SOCKET INSTALLED

- *Battery guns available in 700, 1200, 2000, 3000 & 5000ft-lb ratings*
- *Unmatched Portability and safety by combining reaction washers with battery torque multiplying guns*



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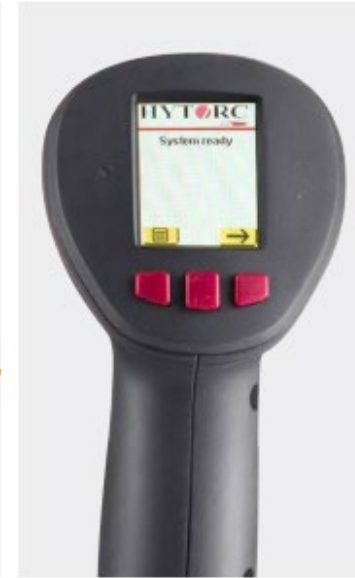
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VECTOR PUMPS WITH BLUETOOTH AND WI-FI CONNECTIVITY

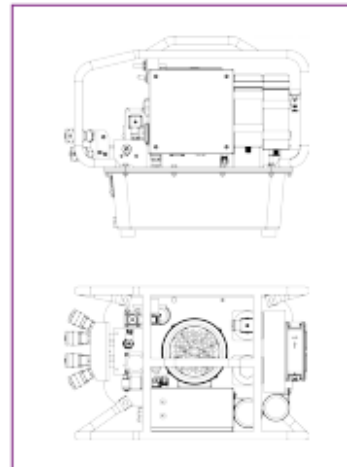
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VECTOR



PUMP SPECIFICATIONS AND FEATURES

Power	115v (20 Amp) / 230v (10 Amp) / 400v (6 Amp)
Data Recording	Yes
Gauge	(Not necessary but can be attached to a process connection on the side of the valve block.)
Reservoir Capacity	2 gals. / 7.5 l
Stages	3
Weight	79 lbs. / 35.8 kg
Maximum Oil Flow Rate*	620 cu. in./min. / 10 l/min.
Oil Cooler	Yes
Protective Caging	Yes
15' Remote Control	Yes
15' Twin Line Steel Braided Hydraulic Hose	Yes

* Maximum Oil Flow Rate is dependent on voltage: 230v and 400v have a higher flow rate.

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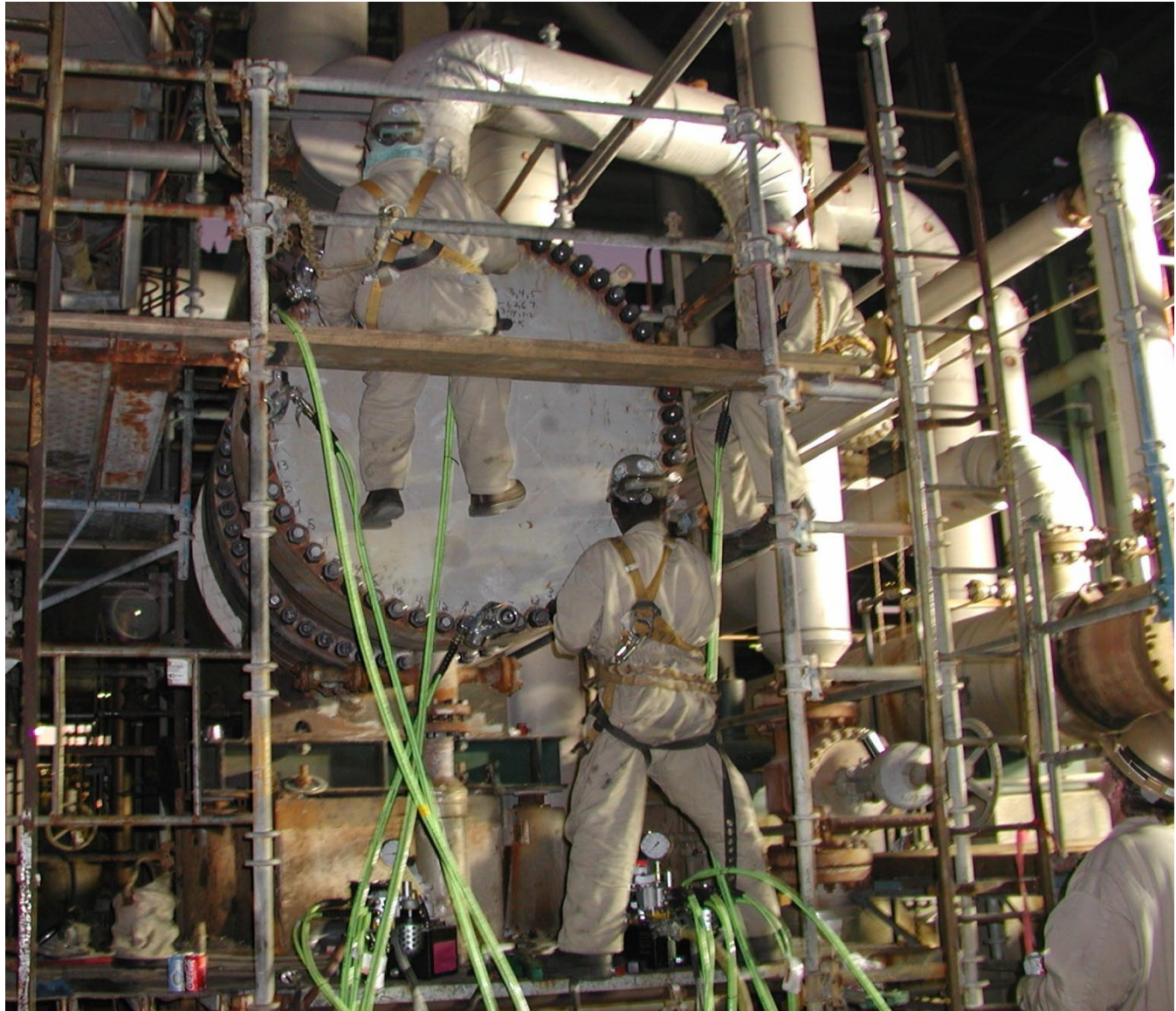
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Safety - Quality - Schedule



Elimination of the Reaction Arm

Washers Don't Move...

- ***HYTORC FASTENERS ALLOW THE TOOL TO REACT ON THE WASHER***



HYTORC Washer
Seen from Bottom (Left)
Seen from Top (Right)



Eliminate Unsafe and Often Inconvenient Reaction Arms with the Addition of a HYTORC Washer

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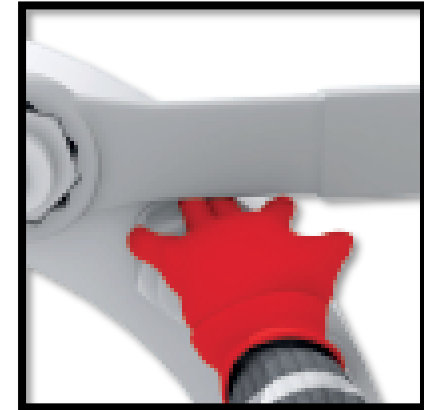
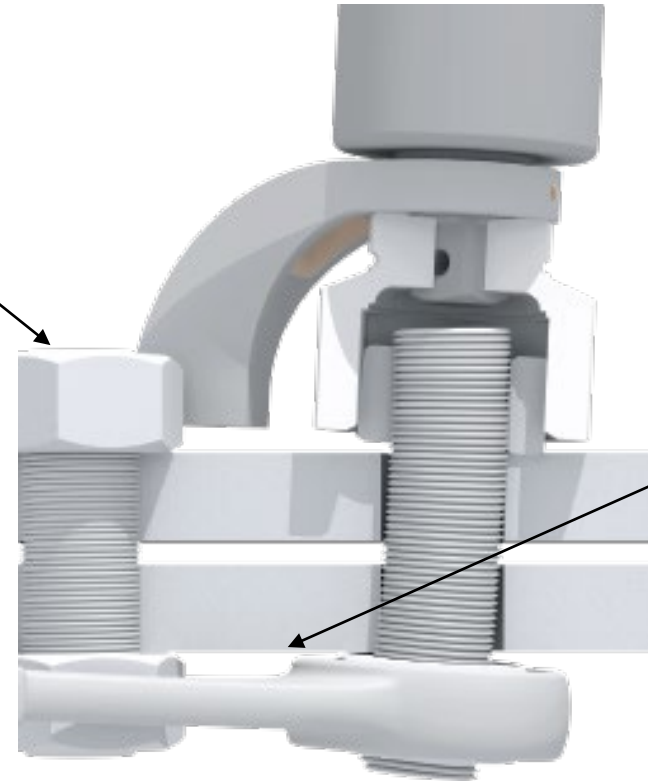
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HYTORC's
Discovery



Safety & Quality Benefits



- **ADDING HYTORC WASHERS REMOVES SIDE LOAD, WHICH IMPROVES THE DESIRED BEHAVIOUR OF THE WORKING THREADS**
- **REMOVING EXTERNAL REACTION POINTS ALSO REMOVES THE RISK OF CATASTROPHIC HAND INJURIES FROM REACTION ARMS AND BACKUP WRENCHES**

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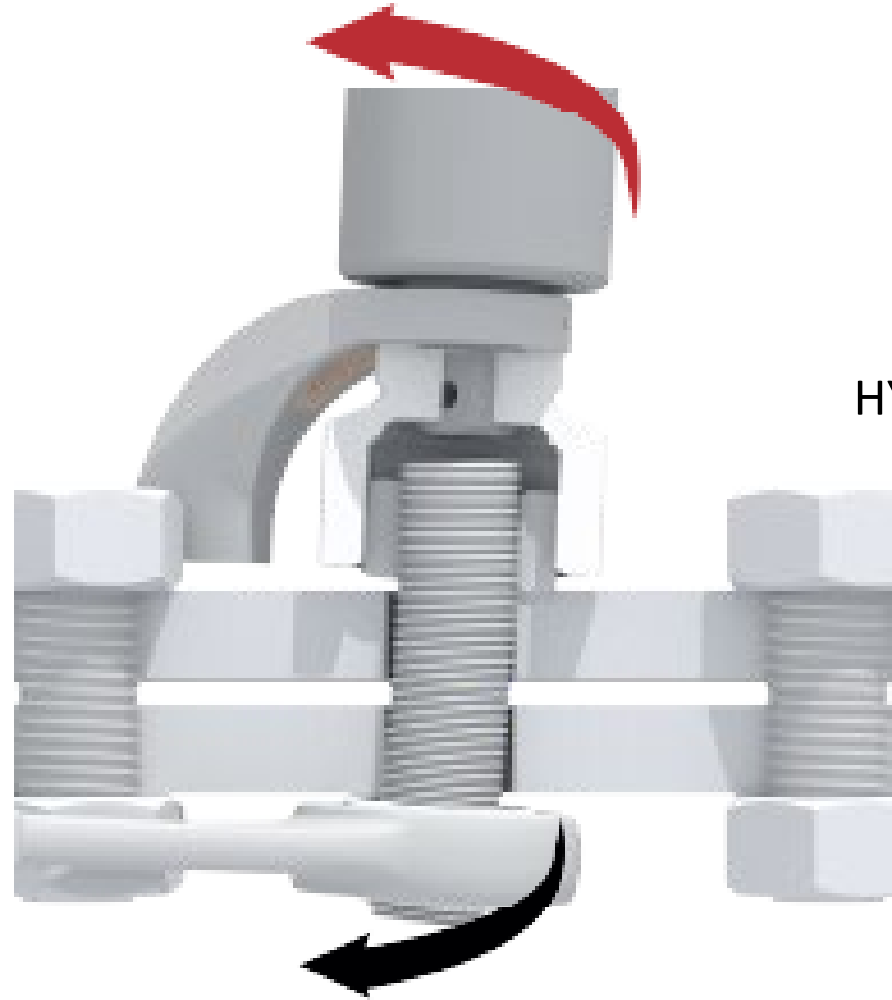
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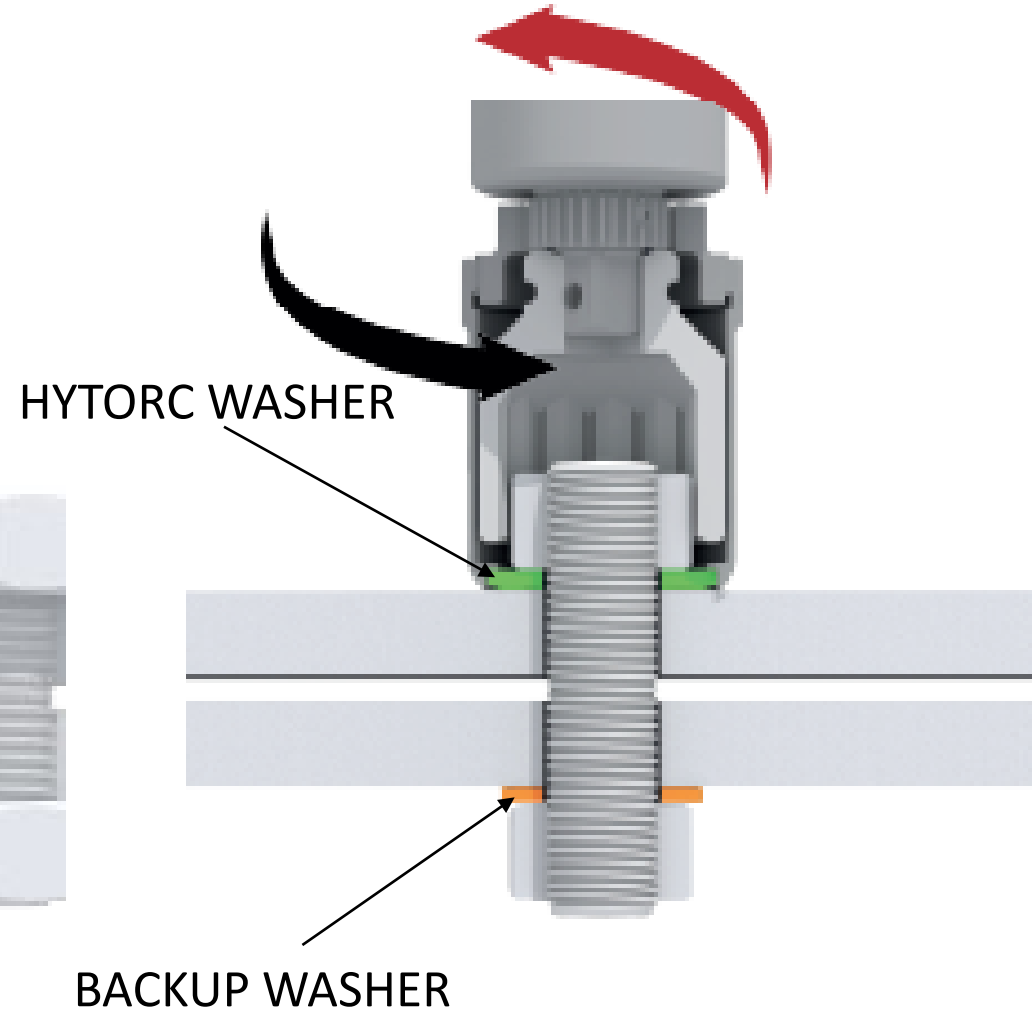


REMOVAL OF SIDE LOAD AND BACKUP WRENCHES

CONVENTIONAL SETUP



HYTORC WASHER SETUP



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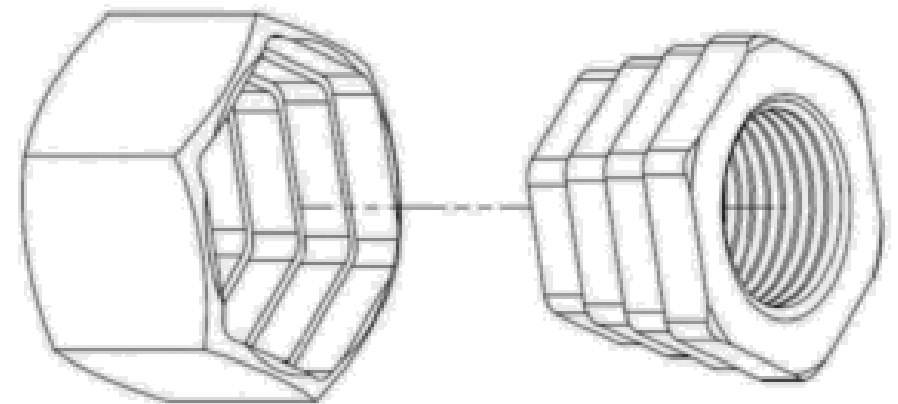


Gall Free Nut

- *Eliminates thread failure and seizing, allowing bolted joints to be safely removed and reused without damaging the threads.*



Two Piece Geometry, can be used over and over without damaging the Studs, thus making multiple make-up and break out operations such as faster and more efficient.



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HYTORC Nut

- For critical applications requiring the highest level of bolt load control



This three-piece fastener applies pure tension to the bolt to prevent thread damage and ensure bolt load accuracy. The HYTORC Nut is available in a variety of materials to suit all applications from extreme temperatures to harsh climates.



Eliminate Damage to Test Components

- *Reaction Washers, Gall Free Nuts and HYTORC Nuts eliminate damage to flange, dollar plate, housings and other bolted joint surfaces. A CRITICAL component of joint, and sealing integrity is ensuring the specified load is applied. The joint “Clamp Force” is extremely important for successful testing, qualification and operations for a leak-free environment.*



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APPLICATION IMAGES

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Digital Data Collection

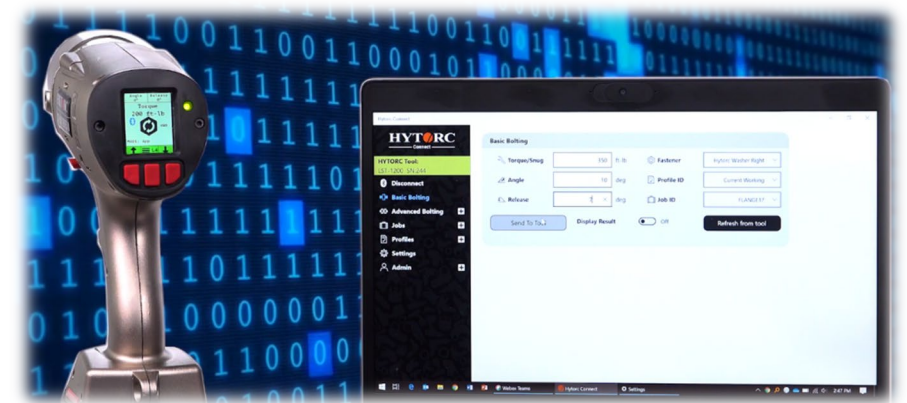
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- Digital Data Collection has come a long way in the bolting industry.
- Several methods of collecting bolting data are available.
- Traceability and Transparency is much easier.
- Real-time retrieval of reports is easier.
- Sharing reports and data is more accessible.
- Cloud based storage and security is of the highest priority.



Digital Data Collection

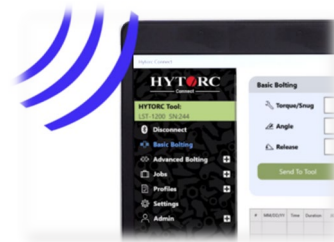
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- Tool & Pump Based:
 - Data can be captured and stored on Battery Guns, Hydraulic Pumps and Clicker Wrenches.
- Tablet Based:
 - Data can be captured via Tablet connected by Bluetooth and processed with Software for seamless and immediate review of results.
 - Bluetooth and Wi-Fi Connectivity of Battery Guns, Hydraulic Pumps and Clicker Wrenches is available
- Digital Twin:
 - Data can be introduced into a Digital Twin of a process plant, unit or virtually any application.
- Data collected can be used for multitude of different functions and reports.



Digital Data Collection

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Connect App

Wireless Connection

The Connect App synchronizes with the **LITHIUM SERIES II Electric Torque Tool** using Bluetooth Wireless Technology saving time and effort, enabling seamless data exchange with a PC or table.

Tool Configuration

The Connect App provides a simplified graphical interface to configure bolting profiles, jobs IDs and administrative setup. With a push of a button, the App sends the information to the tool for improved accuracy and setup time.

Job Data Management

The App receives of all bolting results from the Tool, enabling complete and detailed job documentation. Bolting results can be displayed in real-time to monitor progress to improve overall job quality. Job data recorded on the tool can be downloaded wirelessly at any time from the tool for processing and archiving.



Digital Data Collection

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Smart Torque System™



**Real-time quality assurance and progress tracking for
bolted joint assembly and maintenance**

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Digital Data Collection

THE CUMULUS PLATFORM COMMON ARCHITECTURE FOR ALL MISSION-CRITICAL WORK

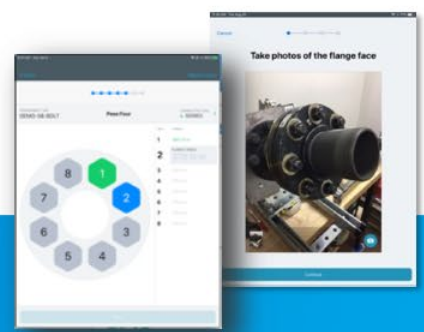
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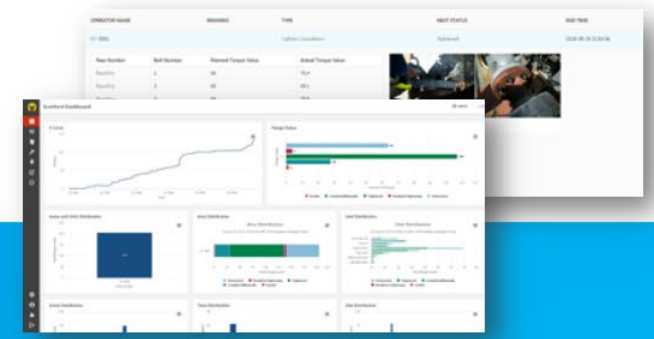
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Connect:
Commercially Available
Digital Tools



Collect:
Mobile App (iOS & Android)
Connect with tools via Bluetooth



Manage:
Cloud-hosted Control Center
Real-time monitoring & analytics



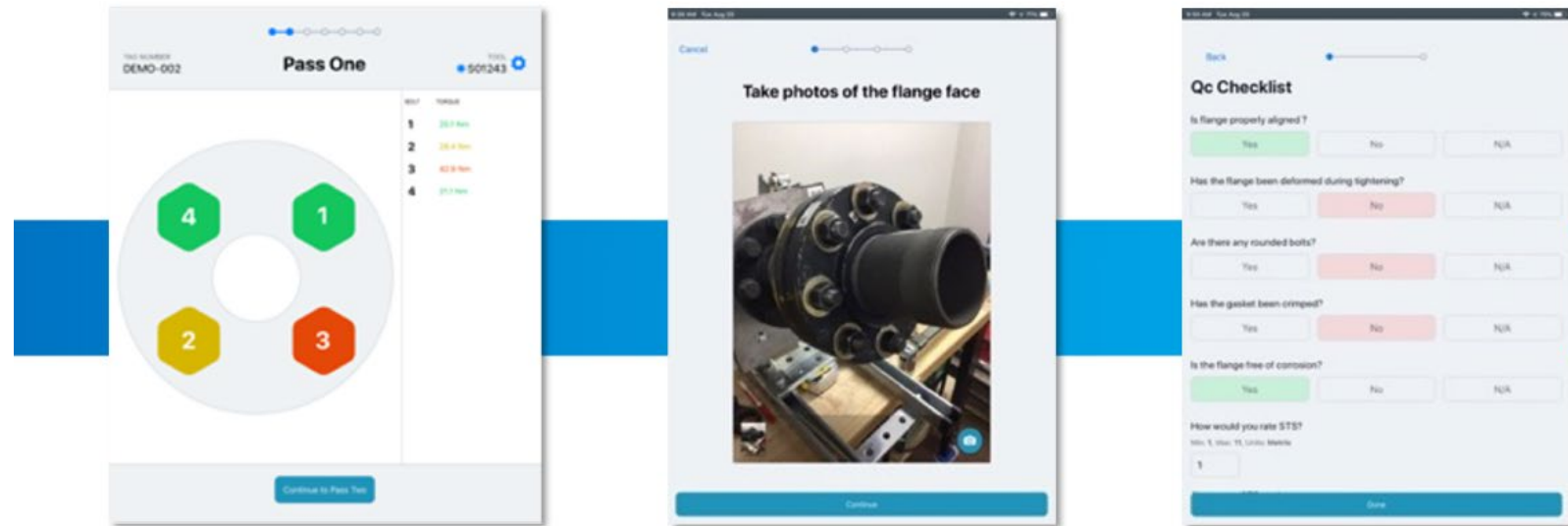
Digital Data Collection

STS MOBILE APP GUIDES WORKERS AND COLLECTS DATA

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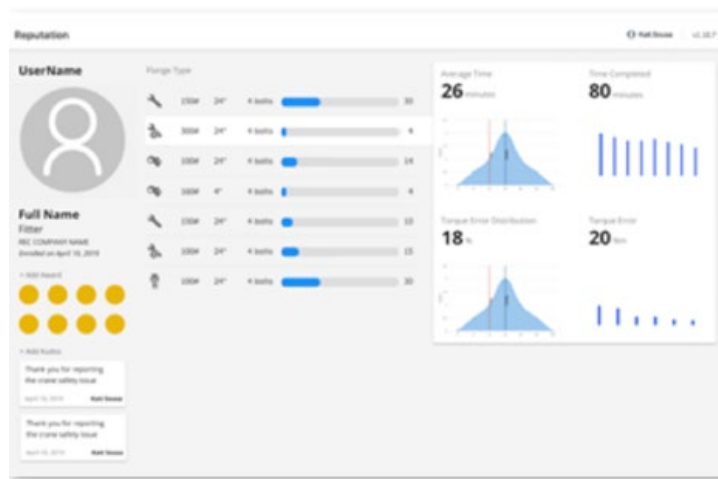
- Modular, configurable workflows can manage any mission-critical task
- iOS and Android

- Communicates directly with tools via Bluetooth to acquire data in real-time
- Online and offline modes

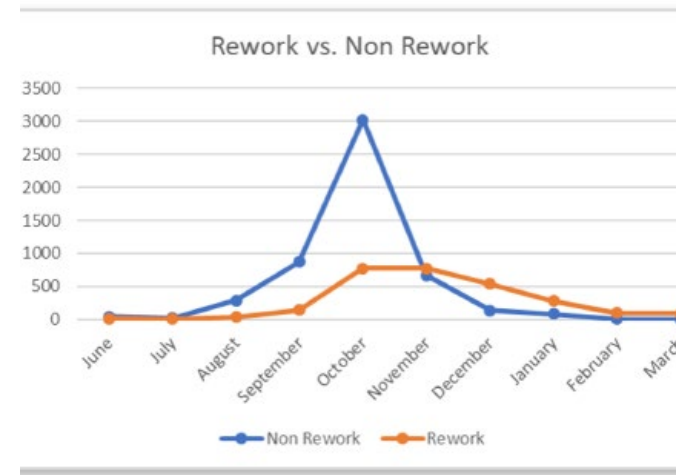


Digital Data Collection

LEVERAGE **DATA** NEVER COLLECTED BEFORE NOW



Performance dashboards
Work quality benchmarking



Rework analysis

Smart Torque System™

Real-time quality assurance and progress tracking for bolted joint assembly and maintenance

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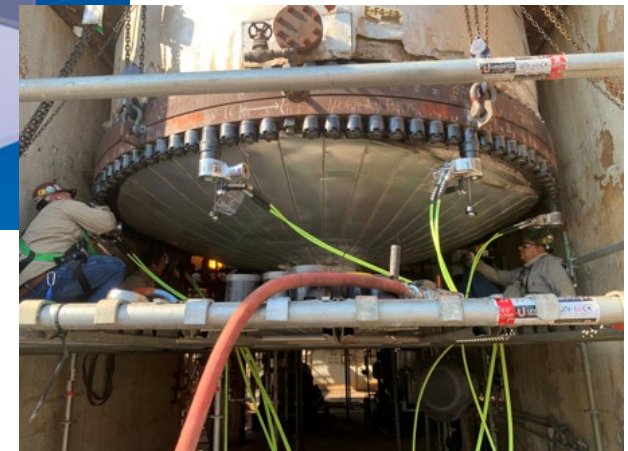
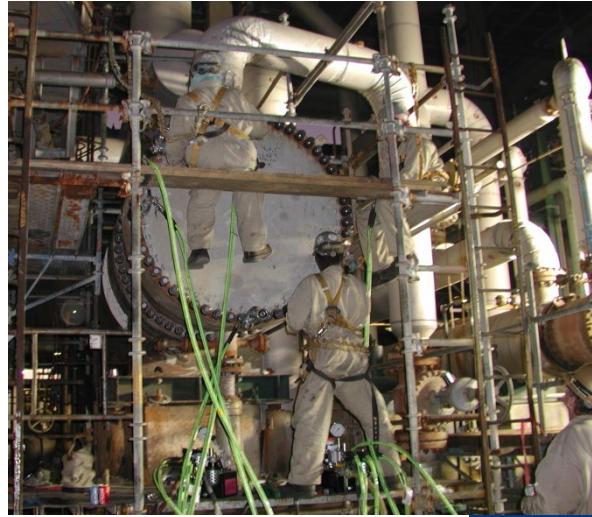


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Thank You



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