



The force in torque management



Assembly Solutions from Crane Electronics

Delivering improved production efficiency and quality.

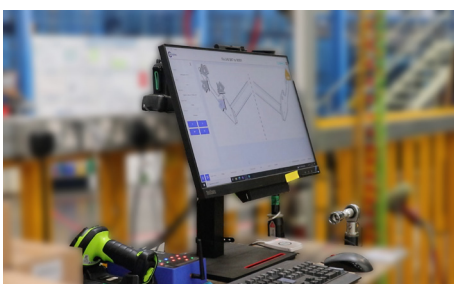
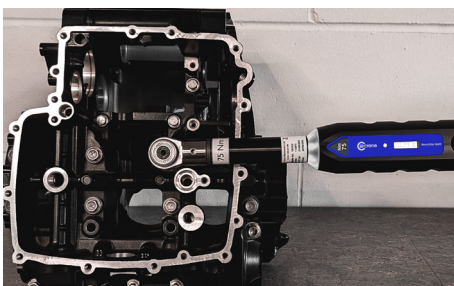
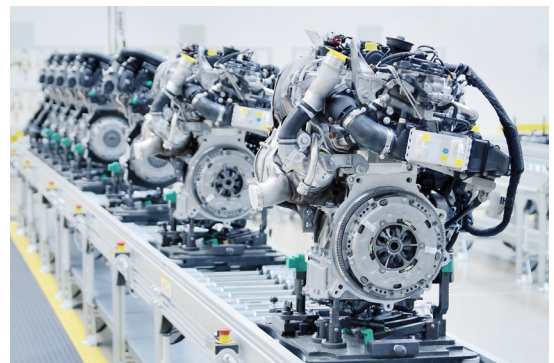
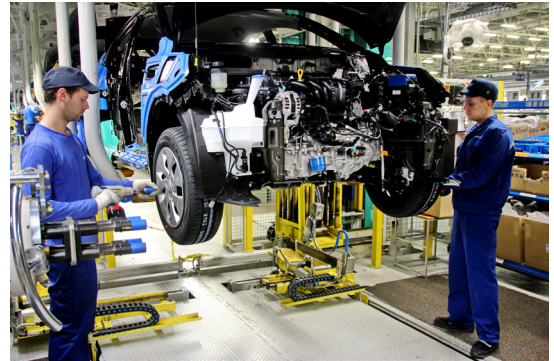
Torque solutions for the assembly process

At Crane, our torque measurement solutions enable users to seamlessly apply and verify the correct application of torque during the assembly of products, vehicles or components.

Our tools and equipment allow operators to complete simple assembly process steps safely in the knowledge that the correct torque is applied to critical fasteners in the assembly.

Fundamentally, our products allow for complete quality control during the assembly process by identifying any errors, defects and failures before production completion.

Verification is also an essential step in the production process, and critical to ensuring all components are assembled correctly, meet the required torque specifications, and are of maximum quality. Ultimately, this will help to prevent future issues, including loosening, over-tightening or under-tightening of components, which can result in equipment failure, safety hazards and unnecessary costs.



The benefits of Crane's assembly solutions

- **Overall production efficiency & quality**
Ensuring the correct torque is being applied to critical fasteners during the production process to deliver high quality, first-class products
- **Save on costs & time**
Reduction in operator errors and elimination of faults in the assembly process from going unnoticed, which in turn can save manufacturer time and money
- **Complete traceability**
Ensures that manufacturers can easily keep a record of critical assembly data, as required by manufacturers to comply with legislation*

Crane's torque measurement tools and software are used in assembly applications around the world. Not only do they help manufacturers to enhance overall product quality, performance and safety but the built-in traceability and auditing functions allow them to record and measure their data with ease.

This data allows manufacturers to effortlessly view and analyse their assembly processes on their systems, making it easier than ever for them to trace and isolate any potential issues or make significant improvements.

*legislation varies by region but specific examples include the General Product Safety Directive (EU Directive 2001/95/EC) and General Product Safety Regulations 2005 (UK Regulations) that reference the traceability of assembly data for the purpose of managing safety defects and recalls.

WrenchStar Multi

The WrenchStar Multi digital torque wrench is perfect for assembly applications and for manufacturers that require torque and angle data to be recorded by a reliable, versatile and robust torque wrench.

The wrenches have a clear OLED display screen combined with a 360° light ring and vibration alert for a completely visible indication of torque status and results.

The WrenchStar Multi works in combination with our TCI-2 lineside controllers, via RF or Wi-Fi, to deliver a perfect solution to accurately measure and tighten critical fasteners to your pre-set torque specifications.

For versatility, if the wrench goes out of range of the TCI-2, it continues to collect data with storage for up to 200 readings for offline work. Once back in range it then automatically connects and communicates the critical data.

The WrenchStar Multi comes in a range of sizes to measure torque from 1Nm to 1500Nm, with a wide variety of interchangeable wrench heads and adapters for multiple job use.



- Available in ranges from 10Nm up to 1500Nm
- 360° light ring for colour status of the readings
- Vibration & buzzer alert for additional feedback
- Quick change battery for extended shift use
- Interchangeable wrench heads for multiple job use. Auto-ID heads for automatic length compensation
- Records up to 200 readings offline / out of range
- Compatible with TCI-2 lineside controllers (and TorqueStar Plus & Pro data collectors)
- 'Short-shaft' versions available for applications in enclosed or confined spaces
- Insulated and electrically-safe WrenchStar Multi-e developed especially for EV and Battery assembly
- FOD (Foreign Object Debris) Compliant for use in the Aerospace & Automotive industries



The insulated WrenchStar Multi-e and short-shaft versions of the WrenchStar Multi are also available for applicable assembly applications.



TCI-2

The TCI-2 lineside tool controller connects and manages up to 5 digital torque wrenches for use in assembly and production applications.

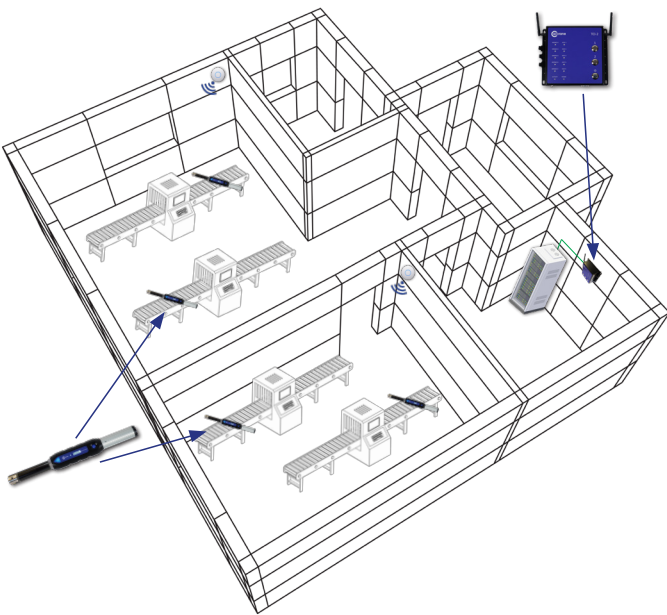
Unlike traditional tool controllers, the TCI-2 does not need to be located close to the tools it is managing when connected via Wi-Fi. The TCI-2 also acts as a guaranteed communication point for the users MES (Manufacturing Execution System) software.

The TCI-2 can be connected anywhere on a network and if a connected wrench should go offline or out of range, the controller ensures that the MES will always have an end point to communicate with.

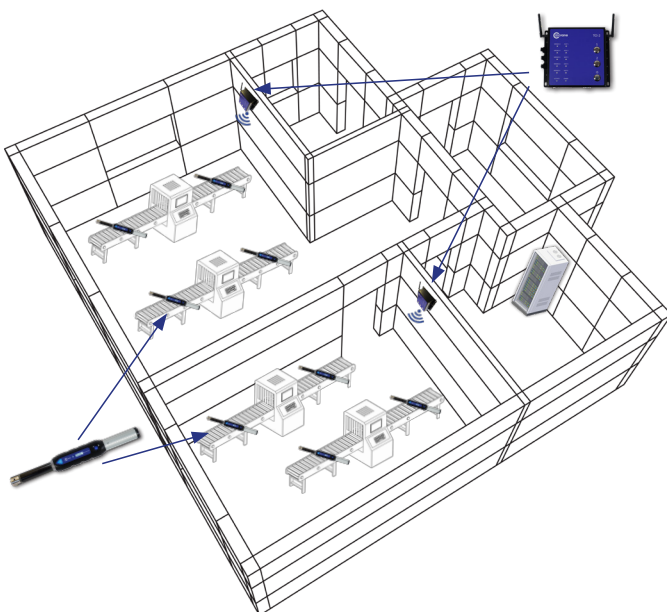
Setting up wrenches with jobs is simple. Torque results are communicated back to and stored on the TCI-2, which can be viewed on a PC or web browser. The TCI-2 also has a web status page that allows the user to monitor all wrench connections and operations currently underway.

Combined Barcode Scanning for VIN/Serial Number & Job

The TCI-2 also offers the option to scan both the product's serial barcode (such as a VIN) and the Job barcode in a single scan. This ensures that the product's serial number is automatically recorded alongside the torque and angle data, for improved traceability.



Using the TCI-2 to connect to torque wrenches on the assembly line via the Wi-Fi network.



Using TCI-2 to connect to torque wrenches on the assembly line via RF connection.

- Controls all WrenchStar Multi and WrenchStar Multi-e digital torque wrenches from Crane
- TCI-2 enables communication with user's system, database or MES
- Communication methods include: Open Protocol, MQTTS, XML, CIFS file transfer and many other protocols facilitating Industry 4.0 compliance
- Commands sent to the network via Ethernet or via selectable Wi-Fi; 5Ghz or 2.4Ghz
- PSK and Enterprise security, encrypted communication and MITM attack prevention
- Easy Job/Pset configured via a Web Browser
- Real-time IOT dashboard showing the current state of all devices connected and disconnected from the TCI-2
- If a wrench goes offline, the TCI-2 has access to data such as when it was last online, battery level, RSSI and the last 10,000 results and 1000 traces recorded for each wrench
- Utilised with Curatas Wrench Control software for simple operator guidance in assembly applications.

curatas Wrench Control

Curatas Wrench Control provides a visual guidance system for assembly operators and quality auditing personnel who are using Crane torque measurement equipment.

The program allows manufacturers to setup a simple visual sequence of actions that an operator can follow to complete the assembly of a part or component. The module uses clear images and indicators to make the process as simple as possible.

Curatas Wrench Control will improve the overall speed and efficiency of the assembly process, as well as simplify the production process, meaning less training time is required. The ultimate aim is to reduce or remove the risk of defects and errors with a clear and easy process to follow.

Curatas Wrench Control can be set up on single or multiple product assembly stations and works in combination with Crane's WrenchStar Multi torque wrenches which communicate via our TCI-2 lineside controllers.



- Easy-to-use operator guidance tool for users & operators using Crane equipment
- Visualisation of assembly process steps
- Assembly/Part image guidance & arrowed annotation
- Barcode or Job reference sequence selection
- Data input and OK/NOK on-screen status acknowledgement
- Simple operator login; Standard, RFID & barcode capability
- Works in combination with our TCI controllers and our series of WrenchStar Multi digital torque wrenches
- Results viewable by complete build or individual installations, with critical time and status data
- Compatible with either a local database or you can store data on an SQL Server
- Curatas Wrench Control can be set up on single or multiple product assembly stations

The above diagram shows a simplified step-by-step process that can be created in Curatas Wrench Control for the assembly of a component, part or product.

Delivering process improvement and complete peace of mind.

■ Improved Performance and Control

Increased speed and efficiency of the part or component assembly process. Critical time data is recorded for targets and performance measurement.

■ Save Costs & Time - Increase Efficiency

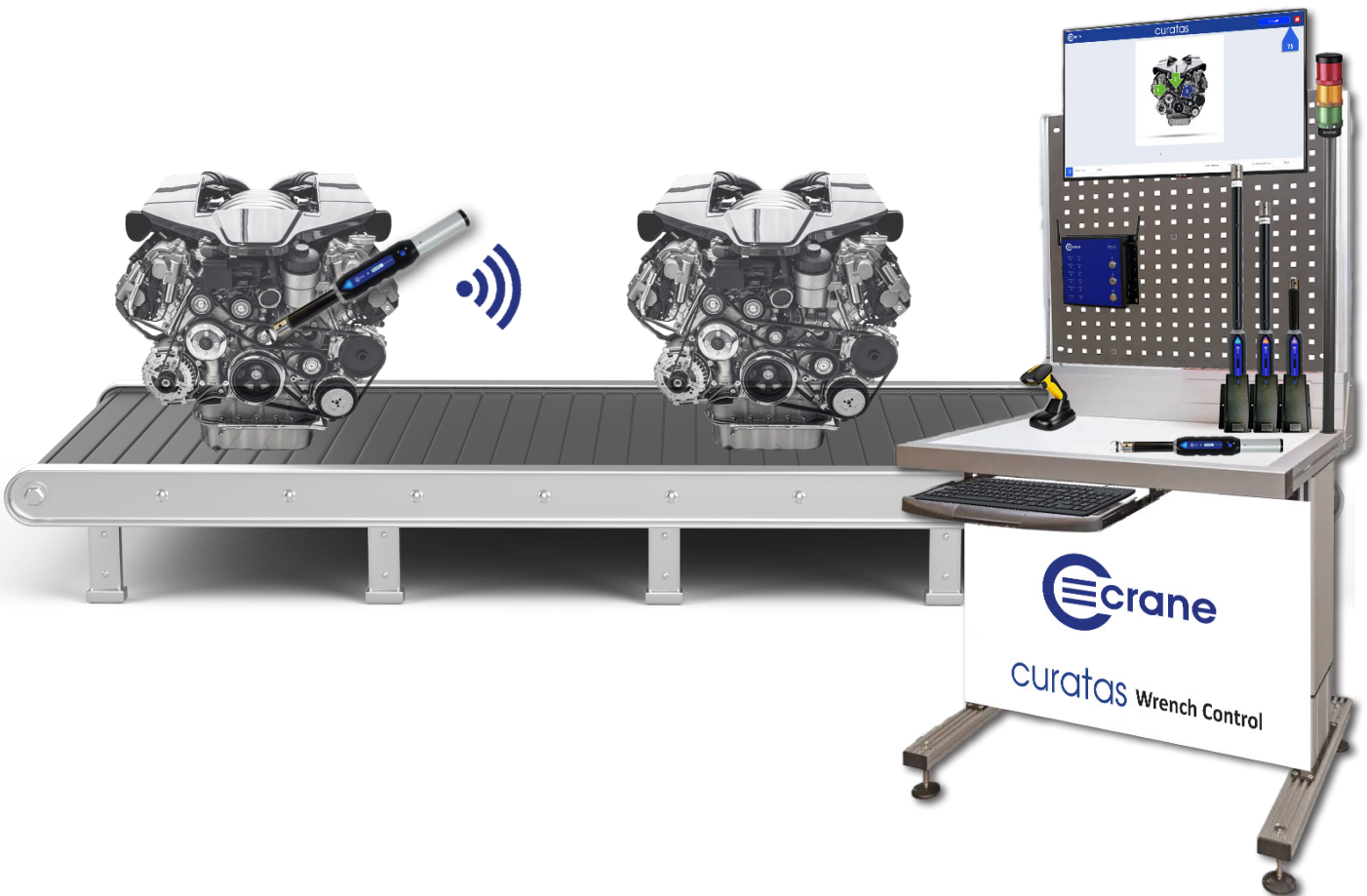
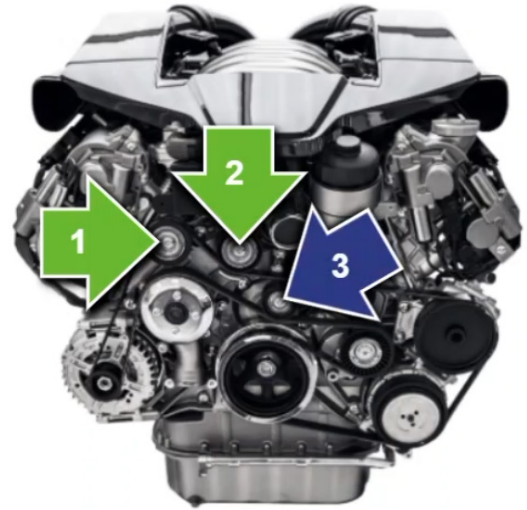
Operator error and part defect reduction due to a simplified assembly process, broken down into easily manageable sequences.

■ Reduced Operator Training

Less operator training required and easy recognition of the process due to a simplified, visually-led work station.

■ Complete Traceability

All assembly and quality audit data results can be filtered and viewed in simple reports for complete traceability.



Curatas Wrench Control is highly scalable, allowing for setup on either single stand-alone stations or multiple interconnected workstations within the same facility. Data can be stored on a local database or an SQL Server. Additionally, the TCI-2's compatibility with Industry 4.0 provides a wide range of communication options.

Our assembly solutions are continually evolving and improving to meet the latest industry standards. To discuss assembly and torque measurement solutions tailored to your specific manufacturing process, please contact Crane Electronics for more information via email at sales@crane-electronics.com or visit www.crane-electronics.com.

Quality Control & Tool Testing Solutions

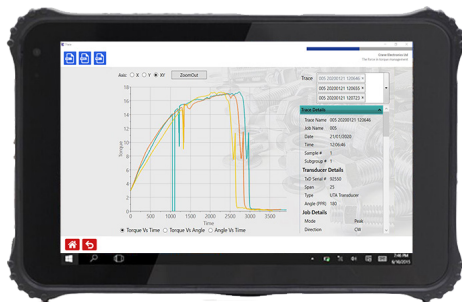
We understand that every product leaving the assembly line must meet strict quality standards to ensure optimal performance, customer satisfaction and safety.

We specialize in providing manufacturers with solutions designed especially for quality control and inspection of their final product, as well as the testing and auditing of the assembly tools used throughout the manufacturing process.



Torque Test Benches

Our range of joint simulators & torque test benches help ensure compliance, safety and traceability for manufacturers. They provide a reliable platform and surface to test and audit all manner of assembly power and hand tools.



OMS Software

Our OMS and OMS Lite torque software programs feature a fully encompassing range of functions to provide a complete company-wide solution to all torque measurement and management activity.

Data Collectors

Measuring and collecting torque data is a crucial step in quality control. Our range provide various measurement modes, graphical reading analysis and advanced statistics.



Rotary & Static Transducers

Repeatable torque, speed and angle measurement for all aspects of quality control, and auditing of products and tooling. We have standard ranges from 0.1Nm up to 5000Nm.



IQWrench3

The IQWrench3 is an advanced torque wrench for audit and quality control applications, offering various measurement modes to over-check the torque applied to fasteners e.g. residual torque.

The force in torque management

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