



# SIMPLE SOLUTIONS FOR ADVANCED FASTENING NEEDS

When considering a new transducerized direct current (DC) tool system, don't overthink it. It's easier said than done considering today's tech-heavy environment. While it is imperative that manufacturers have tools and systems that ensure quality throughput and seamless processes, they don't necessarily have to invest in the most complex, premium solution to get a tool system that works for their assembly needs.



The Ingersoll Rand INSIGHTqc™ controller comes with plug-and-play hardware and software that works with a variety of industrial protocols.

100 years ago, manufacturers didn't need to think much about their assembly tools – the process was simple and straightforward. Fast-forward to today, Artificial Intelligence (AI) and the Industrial Internet of Things (IIoT) make things a lot more complicated for manufacturers. The process is overwhelming for engineers and leaves them wondering, "Do I need the most advanced system?"; "Do I need to purchase the most expensive system so that it is still relevant years from now?"; "What will benefit my facility the most?" Many tool suppliers seem to believe that with more complicated fastening needs, they need to create more complex tool solutions. Thus, manufacturers can get confused about their options and what they truly need.

Ingersoll Rand®, a global leader in reliable power tools, matches modern and traditional technologies with its customers' needs. Today's tools are more advanced, but they ultimately do the same thing that they did 100 years ago: tighten the fastener. The solutions are different for more complex manufacturing processes, but the goals remain the same. Most manufacturers' goals are to implement the simplest, easiest tool system they can find to meet their output requirements, while maintaining flexibility to make changes in the future. Ingersoll Rand has manufactured transducerized DC tool systems for more than two decades and draws on that experience to create tools and systems based on customer needs, not based on a race for complexity.

## | DC fastening systems don't have to be complicated

Not all DC tool systems require an expert to set up. With Ingersoll Rand, experts are not required and manufacturing engineers should be able to easily operate the system. Here are the top three things to consider when evaluating new tools for manufacturing operations:

- **Simple:** Time-intensive installations or training takes away from precious manufacturing time. Evaluate the amount of time required to properly install and set up different controller options and compare ease of use.



- **Flexible:** In a manufacturing environment, changes happen every day and flexibility is always required. Identify tool systems that can grow and expand with an operation and don't require third party involvement every time change is needed.
- **Capable:** Most manufacturing environments require at least the basic tightening of a fastener and may need to utilize advanced torque strategies on more complicated fasteners in order to achieve their goals. Look for solutions that have the standard capability to accomplish all modes of tightening effectively.

Transducerized DC Tool systems from Ingersoll Rand are not only simple, but also maintain high-quality output and deliver the capabilities that today's

manufacturers need. The tools are simple, easy-to-use and quick to set up. With an efficient DC tool system in place, manufacturers can drastically improve processes, increase data collection and minimize rework. This practically eliminates damaged parts caused by inaccurate torque or fastening techniques as is common with other types of tools.

## Flexibility to implement change whenever it's required

Manufacturers are no strangers to change. They should consider all of the potential changes that they're planning for or those that can unexpectedly happen

in the future, from new product introductions to rebalancing assembly lines. Whether it's adjusting torque, switching fasteners or growing operations, they need flexible solutions. A DC tool system that is complex and requires the OEM to configure it is time-intensive and expensive, adding to the initial investment manufacturers make. Systems that are "plug-and-play" are easier to configure for future changes. These solutions are complete, out-of-the-box systems that connect users and applications together to deliver flexibility.

## Capable solutions for a variety of fastening strategies

There are multiple torque strategies that manufacturers could employ in order to properly tighten the various types of fasteners manufacturers use. Systems with data feedback and validation ensure that fasteners are tightened correctly and accurately. However, tools that are not equipped with closed-loop transducer technology lack the data feedback capability. The Ingersoll Rand [INSIGHTqc™ controller](#), for example, integrates with transducerized tools and is capable of accomplishing the higher-level requirements manufacturers.



Ingersoll Rand DC Electric Fastening Tool systems are simple, easy-to-use and quick to set up.



With Ingersoll Rand DC tool systems, manufacturers can secure each fastener with the right amount of torque for safety and functional purposes.

- **Prevailing torque:** This requires the ability to overcome torque levels early in the tightening process that are higher than the final torque target, while still ensuring proper seating and accurate final torque. Mechanical clutch tools do not have this capability, whereas transducerized DC tool systems provide this level of control and are ideal for this type of application.
- **Re-torque:** When workers apply torque to a joint that is soft or experiences joint relaxation, a mechanical-controlled tool will stop at the set torque threshold. However, the applied force on the joints will cause them to creep and relax, thus lowering the effective clamping force applied. In some cases, if workers visit a bolt they fastened just 24 hours ago, the residual torque can be up to 40 percent lower than what they originally applied. The Ingersoll Rand INSIGHTqc has an available re-torque strategy, which repeatedly applies the desired level of torque, until it measures that the relaxation of the joint has been displaced so the final torque should remain consistent over time. The system dynamically senses if the joint has completely relaxed or not, which mitigates the need to retighten fasteners after the fact.



The high-capacity local storage of the INSIGHTqc™ controller offers a large data sample that manufacturers can evaluate to optimize performance and lower costs.

- **Yield override:** If oil or lubricant in the environment causes frictional changes to the fastener and a tool doesn't detect that the fastener is yielding, this could lead to snapping off the head of the fastener. This is a common issue for manufacturers utilizing lubricants in their process. In this situation, rework is required to remove the damaged fastener, repair any damages to the part and re-install another fastener. The ability to detect if a bolt stretches too far (yields) or not is priceless.
- manufacturers with the capability they need and the flexibility to future-proof their operations.

To learn more about Ingersoll Rand DC tool systems visit [www.ingersollrandproducts.com](http://www.ingersollrandproducts.com).

A DC tool system with an advanced controller that senses the intricate details of every fastener can help manufacturers streamline their processes and alleviate time spent on reworking or retightening components.

When manufacturers consider a new tool system, they first should evaluate their needs. In this case, a simple solution equips

By:  
Jeff Lowe, Global Product Manager,  
Advanced Assembly Tools,  
Ingersoll Rand® Assembly Power Tools