Optimize

5 Strategies to Optimize QC by Using Wireless Gages and Data Collection Systems

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With IoT and Industry 4.0 being the omnipresent new paradigm in manufacturing, increasing the speed, amount, and accuracy of data generation is a critical necessity. Precision measurement data acquisition/collection for quality control applications benefits significantly from wireless and mobile retrieval. Wireless Data Collection software systems working in conjunction with wireless electronic gages can increase productivity, reduce errors, provide full documentation and automate the acquisition process.

1. Accurate and consistent measurement data acquisition is key, including over long distances. Today's wireless measuring data collection systems should be complete, scalable, secure, and robust. That means offering foundational benefits through automation, ease of operation, streamlined scalability, robust data encryption and protection, and unrestricted distances and unencumbered use for transmission.

Operating on the latest wireless networking technology that uses short-wave radio frequencies to interconnect cell phones, computers, and wireless electronic devices, this enables much faster speed, greater bandwidth, and longer range for higher data throughput. Compatibility with a wide range of electronic precision tools and gage brands is also useful.

2. Wireless gages must be fully featured and reliable. Using gages with internal embedded wireless measurement capability is highly efficient. For those without the embedded capability, backpack radios which are unobtrusive and easily attached can expand functionality. It is efficient to use end nodes and wireless measuring tools that are rechargeable, eliminating battery replacement and associated costs.

And for use in harsh shop environments where machine coolant, water, oils, dirt, dust and mist are prevalent, wireless electronic measuring tools with IP67 level protection ensures that precision gage accuracy, performance and functionality will remain fully intact when subjected to these elements.

3. A new versatile network topology structure can be configured to many simple or complex situations and distributed remote gateways can also be utilized. The modular structure of today's systems makes it simple to expand or contract a quality control measurement data collection process without having to acquire a new data collection system. Data is transmitted from wireless gages, and is operable on both

Android or IOS mobile platforms and Windows®-based computers including laptops, desktop PCs, thin client PCs, and servers. Repeater and bridge components can also connect directly to PLCs and other high-speed serial automation equipment for real-time data collection or remote machine operation. The latest measuring data collection systems are adaptable to nearly every use case, such as 100% measurement of all parts/components in highly regulated industries such as aerospace and defense.
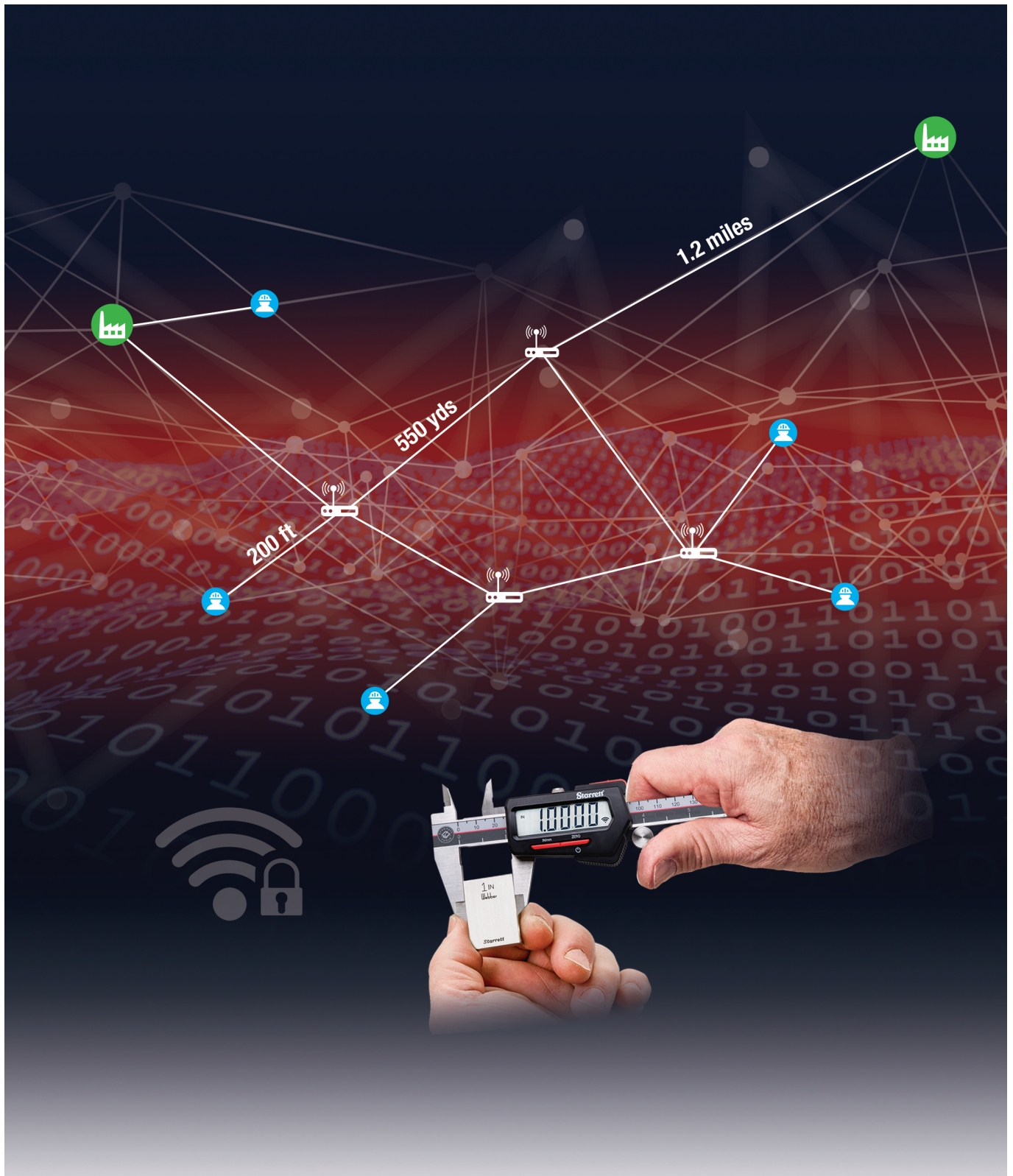
Figure 1

4. Scalability can range from Simple to Extended Enterprise Schemes. In its simplest application, a "Portable Scheme" features a wireless app running on a mobile device. This straightforward setup can have one wireless measuring tool with an embedded radio transmitting data up to 30 feet (10 meters) to a mobile device. Or, dependent on the mobile device, a Portable Scheme may have 5-8 measuring tools that connect to the mobile app for data transmission up to 30 feet (10 meters). Also, users can easily transmit measurement data up to 30 feet (10 meters) from one (or more) wireless measuring tool(s) to a laptop or PC that has a USB gateway (Figure 1).

In a "Typical Scheme," the manufacturer could have a computer or laptop running the measuring data

collection system to support 20 measuring tools in the data collection process over a distance of up to 200 feet. In a "Large Factory Scheme" example, 20 measuring tools can use a bridge and remote gateway to expand the total data transmission range to hundreds of feet or yards. And in an "Enterprise Scheme," measurement data transmission can be increased from hundreds of yards to over a mile. By using remote gateways, bridges and perhaps adding in repeaters, over 100 measuring tools can be incorporated.

5. Robust data encryption and protection is critical. Data security is top-of-mind for all manufacturers including military. And while quality control measurement data by itself might not be particularly valuable to hackers, cybercriminals can still spoof the networks used to transmit quality control data to gain more general access to digital infrastructure. Measuring data collection systems address this issue through a variety of measures, including security efforts which feature a highly secure wireless platform. Transported data is encrypted using a multi-layered approach that absolutely prevents any outside access to the data, whether passive or active.

In addition, the mobile app doesn't connect to the OS of a smartphone or tablet, restricting unintended access at a critical point. Maintaining good security also includes addressing emerging vulnerabilities in radio transmission on a frequent basis to keep systems secure going forward, with which your measuring data collection systems supplier should be dedicated to keeping pace.

Suppler knowledge, service, and support are key when choosing a measuring wireless data collection system. A deep level of experience combined with expertise in quality control will go far in establishing a successful implementation.

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