Technology

White Paper: Integrated Wireless Handheld Gaging for the Shop Floor

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In the 1980s the concept of data collection for process control took a major leap forward. This was about the time that a combination of electronic technology and economics allowed gaging to become digital. With a digital signal available, it became possible to transfer information via cable directly from a gage or digital indicator to the data collector.

Electronic data collection also spurred a major improvement in data quality. Prior to this advancement, data was handwritten onto a sheet of paper and then logged into a computer, or it was logged into the computer directly at the point of gaging. Errors were virtually eliminated by having data transferred directly to the data analysis software. When electronic data collection strategies were first implemented, collection efficiencies and error reduction improved dramatically over manual collection methods.

In recent years, checking parts at a gaging station with a hand tool or a dedicated fixture gage connected to a computer via a cable for data collection was the norm. Many hand tools and digital indicators had data output built in, and collecting data was easy and highly cost effective. It was also inexpensive, fast, reliable, and provided a great solution for many process and quality control applications.

However, that methodology wasn't as helpful when the part couldn't be brought to the bench. Running a long cable from the gage to the computer was troublesome, and if multiple dimensions needed to be checked with different gaging, a collection of long cables quickly became a hazardous, snarled mess.

Case Study: Turning QC Time Into Productive Time

Operators at a New Jersey manufacturing firm wrote down measurements throughout each day and then spent at least 30 minutes at a computer terminal transferring the information into a database program at the end of each shift. By switching to MarConnect Integrated Wireless gages, the company was able to use that half hour for production instead. This paid for the system in only a week or two and even justified the installation of large screen monitors to provide real-time SPC feedback to the operators, further improving productivity.

Next in the evolution of technology, plug-in wireless radio transmitters were applied to gaging operations, which eliminated the cables and provided other benefits. However, that phase was rather short-lived. They were more costly than wired systems and ergonomically cumbersome when taking measurements in the machine tool's work area.

Recently, measurement technology in manufacturing environments has taken another leap. Just as cell phones and Integrated Wireless computer peripherals have become common, Integrated Wireless technology is moving out onto the shop floor. Small transmitters are being built into digital indicators

that allow them to transmit data to the gaging computer. Each integrated transmitter in the digital indicator uses slightly different signal coding that allows many gaging stations to communicate to a single computer simultaneously.

Today these integrated transmitters are not that much more expensive than data cable, making the cost more than justifiable when cabling alone won't get the job done. Now, with these minute transmitters, very large parts can be measured where they are housed, and parts can be measured in the machine tool without having cables get caught in the cutting tools and machine interior. Plus, many digital indicators provide feedback by generating a signal to the operator that the transmission was received and acknowledged by the computer. This is practically instantaneous so as not to slow the operator down, and most transmitters can be configured to provide a go or no-go signal to the user depending on whether the part is within tolerance.

To read this white paper in its entirety, including more case studies, download the PDF ***here***.

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