Metrology

Whitepaper: Integrating QC Measurement Data Into Manufacturing Systems

Brought To You by Starrett | Sep 01, 2023

Why traditional approaches to quality control measurement data leave too much room for error

There are many reasons why manufacturers need to collect accurate, timely and complete measurement and inspection data. OEE, Lean and Six Sigma initiatives require trustworthy data to support the best quality control practices. Manufacturers, especially those in industries such as medical, biomedical, aerospace and defense, must often meet regulatory requirements and provide traceable, reliable documentation for critical part manufacture.

Data collection systems of the past share common limitations, including:

POTENTIAL FOR HUMAN ERROR AND DELAY

Systems that ask workers to manually track key measurements require extremely precise attention to detail, exercised many dozens or even hundreds of times in a single shift – all which is often difficult and unrealistic to consistently do, even if it is being done in the first place. Education is another issue — employees may not have the background needed to fully understand and accurately collect and transcribe data. Transposed digits, misplaced decimal points and similar issues can commonly occur. Additionally, an employee may need to halt production work to capture and record measurements, reducing overall productivity.

DIGITAL SECURITY ISSUES

Unsecured networks that are used to transmit measurement data can provide inroads for hackers to gain more general access to a company's data. When measurement data is transmitted without the proper digital security measures, it presents a potentially serious security risk.

New Starrett Wireless Gages have built-in radio transmitters to transmit measurement data.

The Internet of Things (IoT)

The Internet of Things (IoT) and, in a broader sense, the Fourth Industrial Revolution (Industry 4.0) is the omnipresent new paradigm in manufacturing today, profoundly affecting the way manufacturers are operating or are planning to operate. Improving Overall Equipment Effectiveness (OEE) is a key new IoT requirement, and optimizing OEE necessitates accurate, up-to-date data across the entire organization, including measurement and test data collected from both quality labs and directly from the manufacturing floor.

Increasing the speed, volume and accuracy of measurement and inspection data collection is critical, as it provides powerful insights vital to improving efficiency and consistently manufacturing quality parts. In terms of acquiring/collecting precision measurement data for quality control purposes, the clearest path to these advantages comes from wireless and mobile retrieval technology.

Wireless data collection systems should be mobile as well as robustly encrypted and secured, and be suitable for multiple needs ranging from unrestricted distances and gage compatibility, to ease of use and practical integration into automated manufacturing operations. The best wireless data collection systems can dramatically increase productivity, remove the potential for errors, provide complete documentation and automate the data acquisition process. Systems should include all of these benefits whether used by a single employee or across an entire company with an integrated quality control system.

LACK OF SCALABILITY

Business growth and diversification can necessitate more quality control processes which may be spread out over one facility or multiple locations. At best, if a data collection system is not scalable,

setting up separate data collection processes is time consuming, cumbersome and may lead to confusion, inaccuracies and delayed communication. Or even worse, product rejections, failures and legal implications with customers may result.

INCOMPLETE ANALYSIS THROUGH A SAMPLING STRATEGY

A sampling strategy simply cannot provide the complete picture offered by 100% measurement of each component produced. This structure, common with some traditional QC processes, may lead to an inability to predict and identify drifting production tolerances. In addition, this strategy is not even an option for industries such as medical or military that require 100% part inspection and traceable documentation.

INCREASED POSSIBILITY OF REJECTS

Every rejected part represents money, time and resources lost. Without the full insight provided by 100% measurement, manufacturers risk incurring additional expenses as well as potentially harming relationships with customers. If a would-be rejected part makes its way to a customer, especially one that requires strict standards compliance, the results can have serious implications, if not catastrophic.

How DataSure® 4.0 improves, modernizes and streamlines the collection of quality control measurement data

The underlying principle of DataSure 4.0 is to enable manufacturers to accurately and consistently acquire large amounts of measurement data for meeting Industry 4.0 requirements. DataSure 4.0 is the most complete, scalable, secure and robust measurement data acquisition solution for Industry 4.0.

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. The result is increased productivity, reduced errors, provision of full documentation and a reliable data acquisition process driven by automation.

Continue reading this **whitepaper** *in its entirety to take a closer look at the transformative advantages offered by DataSure 4.0.*

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