RORA SRL

PASSION FOR MOULDING

REAL-TIME QUALITY CONTROL

Zero Defect Manufacturing in the Era of Industry 4.0

ZERO DEFECT MANUFACTURING APPROACH

Traditional quality improvement (QI) methods such as Lean Manufacturing (LM), Six Sigma (SS), Theory of Constraints (TOC), Total Quality Management (TQM), and Lean Six Sigma (L6S) are well-established production systems that have the goal of improving product quality.

Traditional QI methods, however, cannot autonomously learn from defects, as they simply trace and remove them. Also, they do not take full advantage of recent & innovative data-driven technologies. Finally, the notion of prediction and its impact is absent from the core of those methods. Therefore, these methods can only provide a limited response and support to the new scenarios that need to be addressed to implement an effective digital and green transition.

At RORA SRL, a new ZDM approach (Zero Defect Manufacturing) is implementing, exploiting I4.0 technologies to address the limitations of the more traditional QI methods. It builds on the ability to incorporate digital technologies such as big industrial data into QI control loops which predict and prevent defects at both the product and process levels, ultimately increasing their autonomy. The ZDM is not one method but rather a toolbox for decreasing and mitigating failures within manufacturing processes.

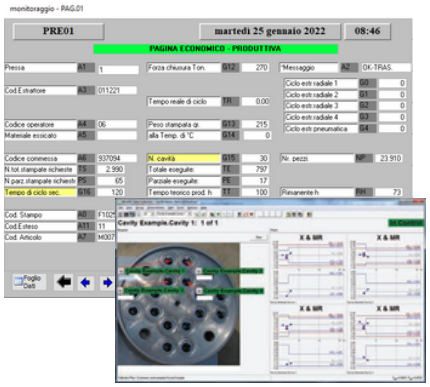
...MANY MANUFACTURERS BELIEVE THAT THEY UNDERSTAND THEIR PERFORMANCE UNTIL CONFRONTED WITH REAL DATA.

HELU & HEDBERG, NIST

PERFORM REAL-TIME PROCESS CONTROL

CAPTURE

Capturing data begins it all. Without data, there can't be real-time control or any kind of process improvement. With it, processes become understandable and new realms of stability can be attained.



At RORA SRL, shop-floor data are collected in real-time from virtually any source — gauges, devices, machines, and other data sources.

MONITOR

Monitoring refers to keeping an eye on displays–charts, dashboards, stat summaries, and other visualizations–that update in real-time.

At RORA SRL, processes are monitored through live on-screen updates. As data is captured, charts and visualizations are generated in real-time to show performance, identify violations, and summarize process health.

REAL-TIME ALARMING

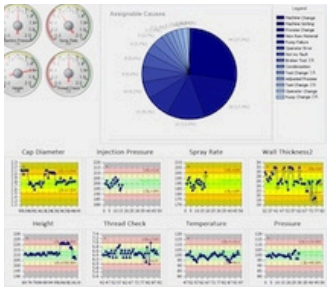
The Alarm system is the core to eliminate guesswork: it tells shop-floor operators and supervisors when to take action and, equally important, when not to.

The moment a control limit, spec limit, SPC rule, or other condition is violated, an alarm triggers and prompts shop-floor personnel to spring into action, correcting the condition that caused the violation, often before it results in scrap or rework–a direct contribution to the bottom line.

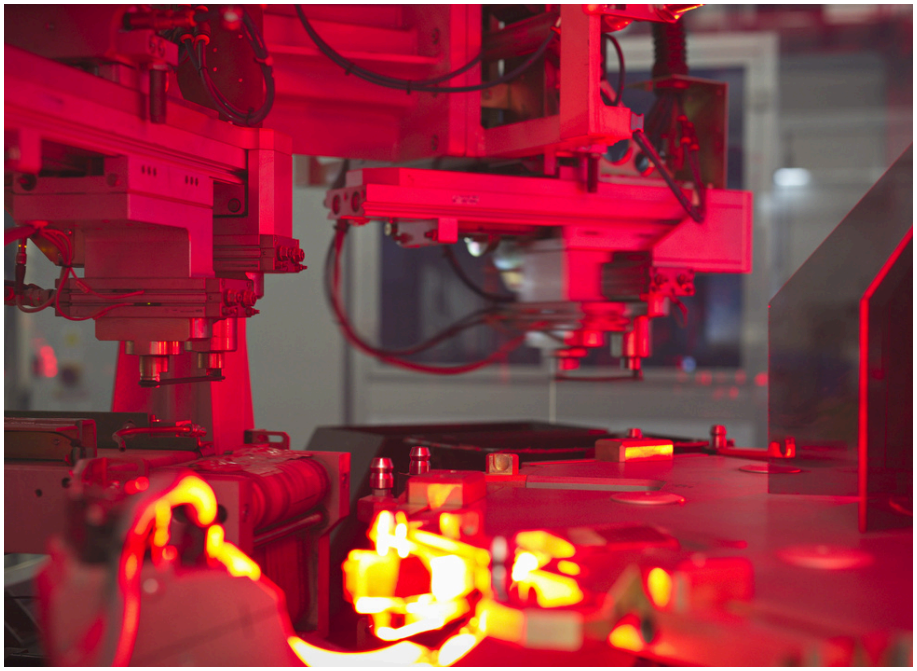
Some alarms do more than just indicate when to take action. They indicate what action to take with on-screen messages or direct email with details, ensuring that even a minor step doesn't get overlooked.

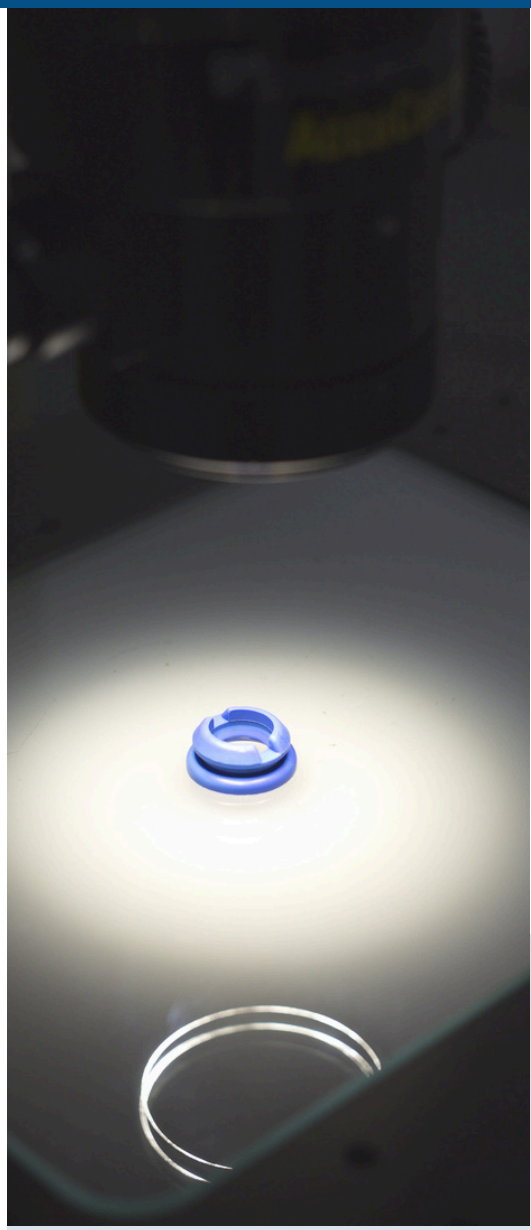
IDENTIFY, PRIORITIZE & SOLVE QUALITY ISSUES

Analysis and reporting are critical activities for Quality teams. At RORA SRL, processes and product data can be probed in depth, minining them for answers to why things are the way they are, reinforce strengths, and remedy weaknesses.



Using data sets, the RORA SRL quality team can identify, prevent, and prioritize quality issues at a macro level. Unlike the traditional microscopic nature of SPC, which focuses on a specific variable, data sets give to the RORA SRL team a broad view of the data, enabling to proactively monitor and uncover high priority issues.



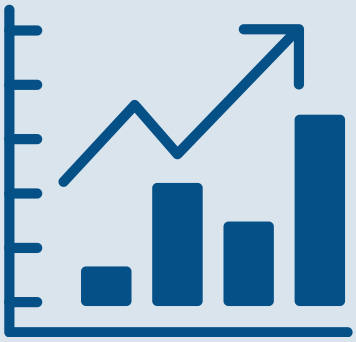


ANSWER QUESTIONS, DETECT CHANGES AND DISCOVER TRENDS

100% MONITORING FOR RELIABLE PRODUCTION

MANUFACTURING EXECUTION SYSTEM (MES)

The MES system will provide effective monitoring and synchronisation throughout the factory to achieve high productivity and ensure responsiveness to market demand.



SPC REAL-TIME MONITORING

Processes are monitored through live on-screen updates. As data is captured automatically from MES and ERP, the SPC software generates charts and visualizations in real-time to show performance, identify violations, and summarize process health.

REAL-TIME ALARMING

Real-time alarms eliminate guesswork. The moment a control limit, spec limit, SPC rule, or other condition is violated, an alarm triggers and prompts to spring into action, correcting the condition that caused the violation.

100% PRODUCTION UNDER CONTROL

Less human discretion, Reduced waste, Decreased downtime, Standardised operations and enforced best practice.

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