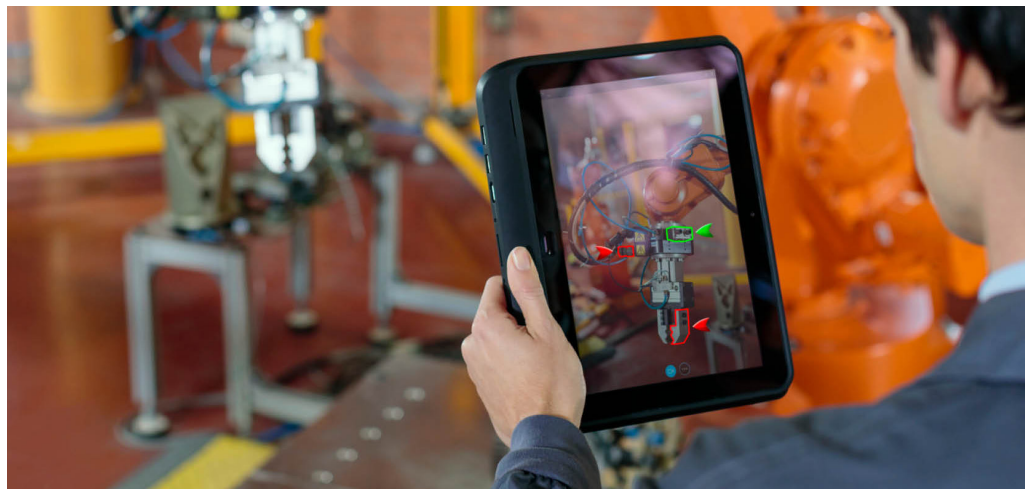


OPTIMIZE PRODUCT QUALITY WITH VIDEO ANALYTICS QUALITY ASSURANCE

Improve both productivity and quality



Manufacturers face challenges across multiple fronts. The operational imperative to approach zero downtime, zero defects, zero environmental impact, and zero safety incidents continue to require investment and innovation. But manufacturers now also face an increased demand to deliver operational agility to address challenges brought on by the pandemic. These challenges range from the ability to quickly pivot to new products to supply-chain constraints, to scaling production to meet fluctuating demand, to ensuring business and operational continuity.

All these challenges are exacerbated by the broader market evolution toward increasing customization, which results in increasingly high production variability. In addition, modern consumer demand for smart, networked products and their associated after-market support requires manufacturers to maintain regular connectivity to their customers and products. This is commonly done in the form of new smartphone applications that control, monitor, and maintain the product. This after-market connectivity and as-a-service model

introduce new failure modes on both the product and its support equipment.

In the face of these converging forces, manufacturers must ensure that product quality remains uniformly high without allowing quality assurance (QA) processes to become a bottleneck. Traditional QA solutions, however, fall short. Miniaturization makes products ever smaller, requiring more precision in production while simultaneously reducing tolerances. As a result, human visual inspection times for QA become longer and more complex. Legacy industrial vision systems, moreover, often lack accuracy, cannot adapt rapidly to high production variability, and generate data that is siloed from other manufacturing data—such as enterprise resource planning (ERP) and manufacturing execution systems (MES).

Addressing these issues requires the ability to perform AI-based video analytics at the edge—for near real-time image processing and a full stack solution that integrates hardware, processors, and software designed specifically to overcome quality assurance challenges.

Solution brief

HPE IT systems, 3rd Gen Intel® Xeon® Scalable processors, and Relimetrics software combine to deliver tested and proven QA solutions that enable you to improve the quality of manufacturing by digitizing and improving quality inspections. Relimetrics software automates and digitizes visual inspections in-line, creating full traceability of quality in all stages of production.

Relimetrics and Intel® are working together to bring you the Relimetrics AI-Based QA Automation System for Electronics Assembly. Powered by Intel architecture, the solution analyzes an assembled product as it comes through a conveyor belt for detection of production anomalies. And Relimetrics software can be rapidly integrated with existing infrastructure on the factory floor while enhancing existing QA solutions with advanced machine learning.

The solution is faster and can detect anomalies more accurately than the human eye, leveraging images and video to gain vital insights. Because HPE systems provide the power to execute deep analytics and AI right at the manufacturing floor, customers realize improved response and time to insight. Network connectivity removes the constraints of place and time, allowing remote access and monitoring by quality engineers and management.

¹ HPE, "Making zero defects a reality—Relimetrics case study," March 2021.

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HPE and Relimetrics solutions for quality assurance offer:

- The ability to process images or video streams from diverse sources, such as X-ray and infrared
- A feedback loop into MES and other software deployed on the factory floor or in the data center
- A post-deployment probability of detection > 99.9%
- Inspection that is near real-time, < 0.5 seconds
- Both cloud- and GPU-enabled edge implementation options
- Full traceability of quality using a distributed ledger or blockchain system
- Full-stack AI-based video and data analytics software to close the loop in production, which:
 - Is tested and proven with HPE systems and self-implementable, driving faster time to value
 - Is significantly more accurate than smart cameras and can adapt to high production variability
 - Uses digitized quality data to reduce process drifts to optimize process efficiency

HPE and Relimetrics video analytics-based QA solutions use computer vision and machine learning to digitize quality inspections and leverage digitized quality data to improve process efficiency and reduce product defects. Relimetrics software is easy to deploy, with a training module that enables the customer to be self-sufficient in training the system for new configurations.

The Relimetrics quality audit module sustains 99.9%+ accuracy with automated in-line training. And the Relimetrics data analytics module prevents quality drifts by linking process and quality data. The combination of HPE systems purpose-built for the edge, 3rd Gen Intel Xeon Scalable processors, and Relimetrics software ensures that even in environments with high production variability, you will:

- Improve first-pass yield rates
- Significantly increase the accuracy of quality assessment in production
- Utilize automation effectively even with high levels of customization
- Optimize throughput time by eliminating unnecessary rework
- Detect issues on increasingly complex products with increasingly smaller components
- Remove bottlenecks resulting from long visual inspection times
- Monitor production drift in real time to determine when to recalibrate or continue production

Moreover, empirically measured results from a major global manufacturer included a 25% reduction in the number of defective products that reach customers, an expansion of test coverage by 20% for a savings of 96 seconds of inspection time per server, and an improvement in overall production performance from sigma 2.1 to sigma 4.2.¹

Manufacturers are facing a range of longstanding and new, pandemic-induced challenges that make it increasingly difficult—and increasingly important—to maintain the highest levels of quality in the products they produce. Traditional quality assurance processes fall short, but the combination of HPE systems, 3rd Gen Intel Xeon Scalable processors, and Relimetrics software deliver video analytics-based quality assurance solutions that can keep up with the demanding needs of today's manufacturing environments. Getting started, from assessment to deployment to production phases, is greatly simplified with advisory services from HPE Pointnext Services and HPE GreenLake. And Relimetrics provides an easy-to-use software development environment with customized machine learning and training.

LEARN MORE AT
hpe.com/info/manufacturing

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