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MAKING QUALITY A COMPETITIVE ADVANTAGE

Whitepaper

DASSAULT SYSTEMES

MAKING QUALITY A COMPETITIVE ADVANTAGE

Product quality reflects who a manufacturer is and what they value most. Delivering quality products on time earns repeat business and a reputation for quality that is a fast track to winning new business. Making quality a competitive advantage is an enterprise-wide effort involving workplace culture, operational systems, and controls. It's the best marketing strategy any manufacturer can have.

Consider the benefits that manufacturers are achieving today by building quality into their operations:

- ***Product quality drives more revenue.*** Better product quality translates into better chances for repeat orders from existing customers, especially in price-competitive markets.

- ***Compelling, reliable products earn manufacturers a stronger reputation.*** By far, the most powerful communication strategy any manufacturer can have comes from satisfied customers recommending your products to another company.

- ***Compliance with customer and regulatory standards alleviates the high costs of fines and lost business.*** While particularly true for more regulated industries, compliance with customer standards is also critical to ensuring satisfaction and loyalty.

- ***Quality measures help control of the cost of goods sold (COGS), turning financial strength into a competitive advantage.*** Quality advances can improve the cost components that comprise COGS, leading to significant cost savings that maximize margins.

This white paper serves to provide a framework for transforming quality into a competitive advantage. It looks at how to create a quality-centric culture, set baselines for measuring quality, and use the software running your manufacturing business to close the quality gaps that impact you and your customers.

Create a Quality-Centric Culture

One of the most effective ways to make quality a competitive edge and create an environment where it can flourish is by enabling all employees to see why their contributions matter. Everyone needs to own quality. Following are six best practices that successful manufacturers are adopting to build a culture of continual improvement and ingrain quality into the DNA of their organizations:

- ***Prioritize product quality over cost.*** Senior executives need to go beyond communicating cost control objectives to also promote quality goals and targets.

- ***Assign a C-level executive to own quality.*** This is a must-have since a C-level executive can remove barriers and circumvent processes and procedures that may be working against improved quality.

- ***Define cross-functional leaders by area and give them authority to improve quality.*** Production scheduling, quality management, accounting, finance, sales, service, and support leads each need to own quality from their departments' perspective. To be successful, these cross-functional leaders must have the authority to act and get work done.

- ***Define governance from a quality management standpoint first.*** Governance needs to redefine how quality decisions are made and who makes them. This often requires new roles, such as a C-level executive whose only job is quality.

- ***Overcome resistance to change by ending procedures that don't deliver value.*** Too often, manufacturers tolerate mediocrity, making quality goals unachievable. It is important to take a fresh look and remove or reshape processes and procedures that are sustaining this mediocrity.

- ***Communicate quality wins often and celebrate individual achievements.*** One of the best ways is to engage all employees is to post quality metrics and display dashboards shown on flat panel screens in work areas. Another is to form a formal Quality Champions program. Such approaches create momentum that leads to even greater results.

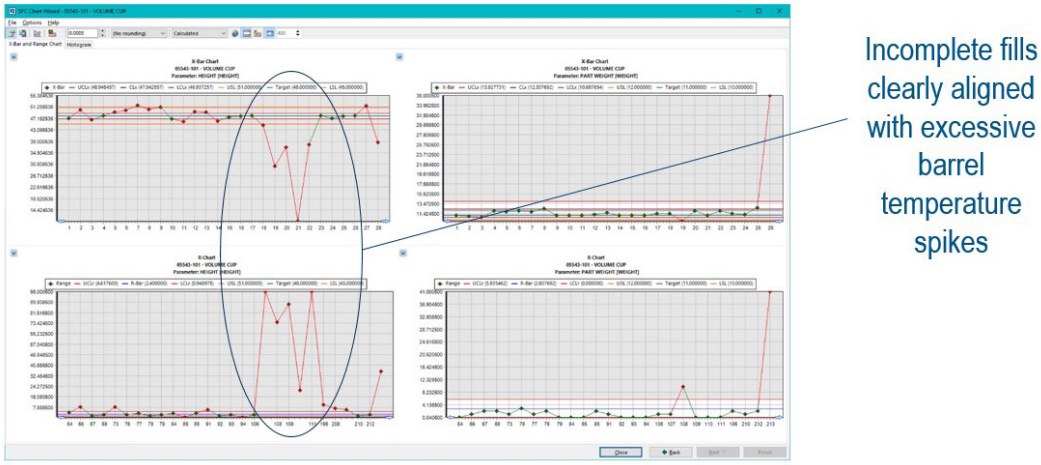
Establish and Measure Against Quality Baselines

Core to sharpening the competitive edge every manufacturer needs today is the ability to size process and product quality gaps and quickly identify strategies for closing them. Quality management teams rely on various techniques to find the root cause of quality problems. One of the most effective is statistical process control (SPC), which is based on statistical random sampling techniques that can identify product and production quality variations.

SPC provides a highly reliable approach to establishing quality baselines by machine, production area, and process. Then insights into quality gaps can be identified by applying real-time production and process monitoring data captured from the shop floor to SPC to determine why scrap, process inefficiencies, and quality problems keep happening. Armed with these insights, quality management teams can then troubleshoot and close those quality gaps.

However, insights need to be shared beyond the quality management team. The largest quality gaps that prevent manufacturers from gaining a greater competitive edge happen when cross-functional teams don't have the information and insights they need to collaborate in real time. Therefore, benchmarking SPC performance across departments is critical for enabling the collaboration often needed to find and close quality gaps across the organization.

Historian Data Makes SPC and Root Cause Analysis Possible



Here are just a few examples of how cross-functional quality insights impact a manufacturing team.

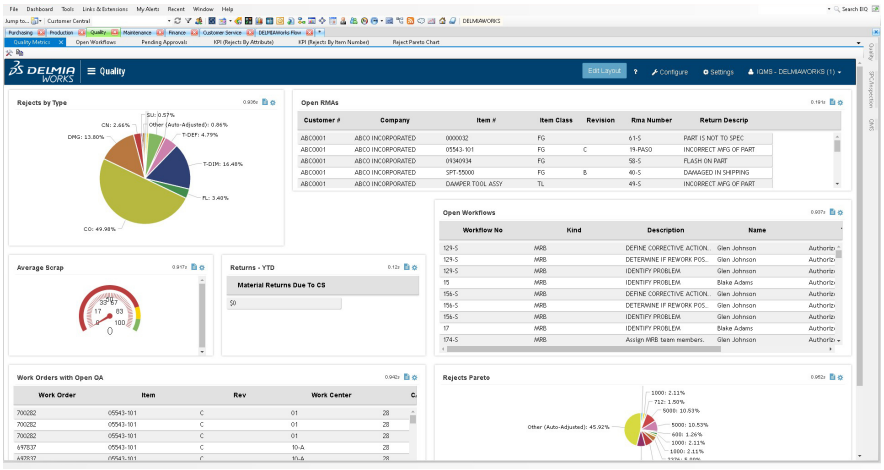
- ***For the CEO and senior management***, product quality levels can make or break volume shipment, revenue, margin, and cost targets.
- ***Finance*** relies on cross-functional knowledge of actual costs to create accurate financial statements.
- ***Engineering*** needs feedback on how easy or difficult their designs are to produce in volume and if any cost tradeoffs need to be made to improve quality.
- ***Purchasing*** needs to know inbound quality levels by the supplier, as well as whether there are gaps in finished goods quality due to defective materials.
- ***Production*** needs to manage scheduling and keep standard costs under control while running production at as high an efficiency level as possible.
- ***Maintenance*** needs to know quality levels by machine to keep them maintained and ready for every production run.
- ***The IT team*** needs to know what's happening with product and process quality to determine how best to support other departments in improving quality.

Integrate Quality with Business and Manufacturing Software

Because quality impacts nearly every department within the organization, manufacturers need to ensure that quality management is integrated with other software driving the business. Typically, this will include enterprise resource planning (ERP), manufacturing execution system (MES), accounting and finance, warehouse management system (WMS), supply chain management (SCM), and procurement solutions, among others. By combining these systems with real-time production and process monitoring and quality management, teams can gain a 360-degree view of quality strengths and weaknesses—and how they are impacting manufacturing operations.

Whether seeking to optimize existing systems or add new capabilities, manufacturers should ensure that the following capabilities are in place to embed quality practices into critical business processes.

- ***Integrate real-time production and process monitoring data into ERP, MES, and quality management systems.*** Manufacturers need to track performance and cost variances that can impact production schedules in real time in order to address them before they become issues. Having ERP, MES and quality management functionality in place helps explain why there are variations in production run rates and yield rates by machines, as well as see how yield variations and wide swings in SPC charts impact the financials.



- ***Use ECO and RMA metrics to understand quality variances.*** Software should support engineering change order (ECO) tracking and audits, including the ability to tie them back to specific raw material lots and production runs. Similar analysis should be applied to any return material authorization (RMA).

- ***Support EDI for accurate exchanges of information.*** Communications via Electronic Data Interchange (EDI) can potentially save thousands of hours and dollars a year by reducing errors linked to manual entry. Look for ERP and quality management solutions capable of automatically translating incoming EDI files and updating all related records. The same holds true for outgoing files that need to be automatically transferred back to customers and suppliers.

- ***Provide traceability to manage financial risk.*** Track and report variability reduction, cycle time reduction, and risk mitigation across every shop floor and then aggregate the data together to quantify risk financially.

- ***Customize CAPA to workflows.*** The ability to tailor corrective action/preventative action (CAPA) to a manufacturer's workflows is a must-have for continually improving compliance and quality management.

- ***Support tooling and machinery audits.*** Knowing which tools and molds have been the most and least problematic and what's being done to keep them working correctly is essential.

- ***Provide integrated financial reporting.*** Activity on the production floor needs to be translated into financial results, making integrated financial reporting one of the most important features in a manufacturing ERP system. Manufacturers should be able to track how quality improvements impacting production planning, scheduling, and workflows translate into costs savings and additional revenue.

- ***Manage supplier relationships on the basis of quality.***
  - Produce supplier audits and publish the data on a secured corporate Intranet site, with a series of analytics and metrics included to track trends in their performance over time.

- Manage suppliers to consistent, high-quality standards on a global basis and audit their inbound deliveries, posting and sharing quality results individually and company-wide.

- Use product quality metrics with suppliers to gain access to more materials. As suppliers are constrained for materials, define shared quality goals that, when met, lead to more purchases.

- Tune non-compliance/corrective action (NC/CA) programs used to evaluate a supplier's inbound orders to provide insights into new ways to reduce defective raw materials shipments, avoid wrong orders, and minimize late deliveries.

How R.E. Darling Makes Quality Part of its DNA

Excelling at quality and compliance in the aerospace and defense manufacturing industry takes a focused intensity and intelligence that drives continual improvement.

One of the best examples is R.E. Darling, a specialty plastics manufacturer founded in 1948 that produces aviators' breathing oxygen tubes. The company's strong reputation for quality has enabled R.E. Darling to expand and offer specialty rubber and composite products purpose-built for the aerospace and defense industry.

Notably, R.E. Darling was selected by NASA to provide life support hoses for the Mercury, Gemini, Apollo, and Space Shuttle flights. The hoses are visible in the FREEDOM 7 (Mercury-Redstone 3) and Gemini 4 spacecraft displayed in the Smithsonian National Air and Space Museum.

R.E. Darling's success in enabling quality and compliance to be a core part of its DNA is predicated on four strategies:

- Schedule periodic quality audits, complete with documentation. R.E. Darling performs complete quality audits at least every 90 days to see what quality management areas need improvement.

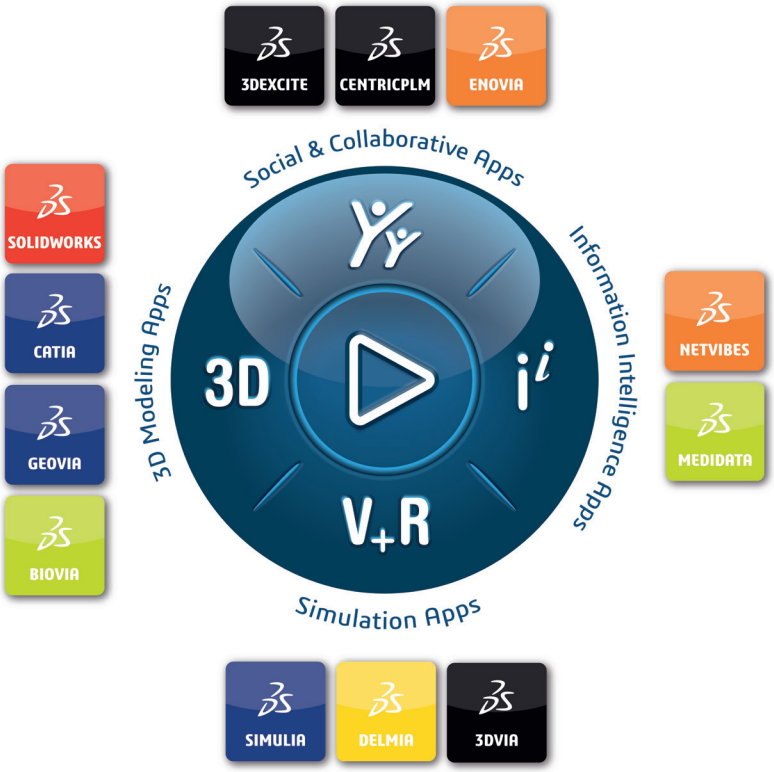
- Tie the quality metrics that matter most to customer outcomes. R.E. Darling has built its entire quality management and compliance strategy around customer-facing metrics that often measure product outcomes. Top metrics are measured as real time as possible. They include customer satisfaction, on-time delivery performance, customer returns, and RMAs.

- Integrate compliance with quality management. R.E. Darling centralizes all contracts and export compliance in its integrated quality management and compliance systems to maintain compliance with the Federal Acquisition Regulation (FAR), Defense Federal Acquisition Regulation (DFAR), and similar international regulations.

- Always seek ways to improve supplier quality. R.E. Darling benchmarks supplier quality on every shipment and expects a 97% quality rating or better from everyone the company works with.

Conclusion

The time to take on the challenge of creating a solid quality mindset in your organization is now. Quality management integrated into an ERP and MES platform delivers the real-time data manufacturers need to compete and win on what matters most. Consider how an integrated quality management system's many advantages can help increase control over costs and turn quality into the most effective competitive advantage a manufacturer has.



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