

Go Digital. Transform.™

Ensure material validations, track ongoing quality audits, maintain regulatory compliance.

Elemica

Case Study



CLIENT PROFILE

Industry: Automotive

Employees: 64,000

Revenue: \$15.4 Billion

Elemica Solution: Elemica Quality



ELEMICA QUALITY COMPONENTS

Supplier Quality Management

Traceability and Compliance

e-CoA (Electronic Certificate of Analysis)

Manufacturing Quality Management

The Goodyear Tire & Rubber Company has experienced considerable cost savings by reducing corrective action requests and increasing supplier accountability.

EXECUTIVE SUMMARY

The Goodyear Tire & Rubber Company (Goodyear), one of the world's largest tire companies, strives to build the highest quality tires possible. The goal is a reflection of Goodyear's corporate values, embodied in the phrase, "Protect Our Good Name."

To ensure the highest quality product, the company isolates and mitigates its operational risk factors. When Goodyear determined the volume and costs of its supplier corrective action requests (CARs) were excessive, it turned to a program that provided supplier communication, material conformance, collaboration, and accountability -- Elemica Quality. Goodyear deployed Elemica Quality to suppliers globally, for both manufactured and outsourced products, across all inventory items, including vendor managed inventory (VMI).

With the business intelligence generated by Elemica Quality, Goodyear was able to reduce the rate of supplier CARs to less than 0.5% of all raw material shipments. Combining both direct and indirect cost benefits, Goodyear is realizing considerable cost savings every year across the enterprise.

In addition to the financial benefits, having simplified supplier management in an open, collaborative supplier environment has allowed Goodyear to improve reliability and operate more efficient factories.

CONTINUOUS IMPROVEMENT

Like all global manufacturers, Goodyear and its suppliers face ongoing challenges driven by cost objectives, manufacturing processes, customer requirements, and market trends. To help meet these challenges, four major opportunities

Goodyear's Savings with GSQA:

- Reduced corrective action request (CARs) by 41%
- Worldwide supplier audit compliance with a single system.
- Improved product reliability.
- Improved factory efficiency.

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for improvement in supplier management were identified:

- Reduce supplier corrective action requests
- Streamline material receiving and quality processes
- Automate customer documentation compliance
- Increase strategic agility

Reduce Supplier Corrective Action Requests

A key measurement used by Goodyear to track supply chain effectiveness was the number of corrective action requests, or CARs, per incoming shipment. A CAR represents a violation of conditions for any given supplier shipment, for instance:

- Out-of-specification raw materials
- Too much raw material variability
- Late incoming shipments
- Missing or out-dated supplier factory compliance documentation
- Shipping to the wrong specification
- Damaged packaging
- Failing incoming random material testing to specifications

Goodyear has averaged approximately 150,000 shipments per year across all of its factories. CARs were issued for approximately 1% of all shipments. While 1% may seem insignificant, Goodyear spends time and money on every CAR that is written.

The time to create the CAR, discuss it with the vendor, submit the paperwork, arrive at and implement a solution can be extremely costly depending on who needs to be involved and the complexity of the solution. This does not include the indirect costs of having to perform extra steps to re-qualify materials, losses due to production inefficiencies, and the higher risk of

not meeting customer documentation and product requirements.

Streamline Material Receiving and Quality Processes

Manufacturing processes associated with raw material receipts, traceability, and testing had been costly and inefficient:

- Incoming Raw Materials – What are the characteristics of the incoming raw material? Do they fall within Goodyear's comprehensive specification tolerances?
- Specification Traceability – Does the supplier have the latest specification revision? Is there a system to automatically ensure shipping to the Goodyear's current specification for the material involved?
- Material Testing – How do Goodyear and its suppliers ensure conformance to standardized material testing protocols?

In the past, the majority of these communications were handled with email, spreadsheets and phone calls. Testing regimens for incoming materials could not keep pace with Goodyear's production needs. Goodyear sought to reduce the overhead cost of these activities and also improve on the availability of information for supplier scorecard activities.

Ensure Supplier Certification Compliance

Goodyear's industry compliance activities require the tracking of a significant amount of supplier compliance information.

For example:

- U.S. Auto Manufacturing (TS-16949) – Auto manufacturers require that Goodyear maintain certification documentation for each of its suppliers.

Supplier CAR Challenges

Goodyear's supplier CARs fell into these three broad categories:

- Raw material management
- Supplier certification
- New manufacturing strategy implementation

Supplier CAR Cost Factors

- Higher inbound shipping costs for expedited materials
- Lower daily production
- Higher supplier inventory
- More time spent in supplier meetings resolving issues
- Higher outbound shipping costs for finished goods because of lower production
- Excessive time spent looking for documentation

- Federal Aviation Administration (FAA) – Airplane tire manufacturing requires a high level of immediately accessible supplier certification documentation.
- European Auto Manufacturing (ISO 9001) – Goodyear’s European automotive customers require Goodyear to maintain and track ongoing supplier certifications.

Maintaining a consistent set of documentation at each facility globally presented a huge challenge. Maintaining these certifications and keeping audits current was a very time-consuming endeavour. Ongoing activities in preparation for annual supplier quality audits started six months in advance of the actual audit. Missing or incomplete documentation could cause incoming raw material shipments to be rejected.

“By maintaining all certification and audit information within GSQA, we can quickly and efficiently show the auditors that our suppliers are compliant to regulatory and customer requirements.”

– Nancy Verde, Supplier Quality
The Goodyear Tire & Rubber Co.

Increase Strategic Agility

As with any highly competitive market, new strategies in supply chain and manufacturing management provided significant challenges pertaining to inbound material quality and traceability.

- Third-Party Manufacturing Facilities – Third-party manufacturers must have the same level of ISO certification as Goodyear facilities. Goodyear must be able to track third party finished goods testing as well as it tracks its own manufactured products testing.

Furthermore, lower cost manufacturing in emerging markets adds a new dimension: How can Goodyear maintain consistent, high quality standards at manufacturing facilities that it does not directly manage?

SOLUTION

To resolve its operational and strategic challenges, Goodyear needed a system that enabled the company to:

- Cost-effectively manage inbound raw material quality so that its factories could run efficiently.
- Provide an effective means to track ongoing supplier certifications to meet ever-changing customer demands.
- Support strategic sourcing and innovative manufacturing strategies surrounding Goodyear’s brand quality and market competitiveness.

After careful evaluation, Goodyear chose to implement the Elemica Quality solution from Elemica across its global manufacturing operations.

Global Supplier Quality Assurance

Elemica Quality collects, stores, and manages essential supplier material and process information. Goodyear research, purchasing, quality and production personnel use Elemica Quality to improve productivity. The collected information includes everything from lot-level quality to ongoing supplier scorecarding. Having immediate access to information creates a consistent platform for Goodyear and its suppliers to share information. Using Elemica Quality results in a more efficient and cost-effective supply chain. Goodyear’s suppliers respond quickly to issues, improving productivity while maintaining high quality.

With Elemica Quality, Goodyear was able to realize direct cost benefits by reducing both in-house testing of incoming raw materials and excessive supplier CARs. This helps Goodyear overcome manufacturing, customer, and market challenges by improving supplier accountability.

CAR Cost Reductions

The Elemica Quality system helped Goodyear significantly reduce CARs, saving the company in supplier costs:

- Elemica Quality rejects out-of-specification raw materials before they reach Goodyear’s factories, eliminating any out-of-specification CARs. This assures that the materials received meet their manufacturing requirements.
- Elemica Quality eliminates excessive raw material variability CARs. Elemica Quality provides ongoing, instant raw material quality control charts to both Goodyear and the supplier, indicating any raw material variability across any specification.
- Elemica Quality helps to manage late shipments. If a shipment is late, Goodyear can issue a CAR and can quickly identify if this is part of a

trend and work with the supplier to identify the root cause of the delay. Goodyear more effectively manages its suppliers by sharing information and managing expectations.

Over a seven-year period, Goodyear has seen the number of CARs it has issued drop 41%.

- Missing or out-dated supplier factory compliance documentation is eliminated. Elemica Quality tracks supplier certifications, and automatically issues notifications to both the supplier and Goodyear to update the documentation. This allows both Goodyear and the supplier to be more proactive in managing these critical compliance requirements.
- Elemica Quality eliminates the risk of shipping to the wrong specification. Elemica Quality notifies the supplier of the change in the specification and prevents the supplier from sending shipments that do not meet the new specification as of the changeover date.
- Packaging damage CARs are resolved much more expeditiously with Elemica Quality. Damaged goods non-conformities are communicated electronically with the supplier, automatically and in real time.
- Elemica Quality minimizes the cost of material not meeting specifications. With documentation such as certificates of analysis shared electronically, back office response time is expedited.

With Elemica Quality, over a seven-year period, the number of CARs Goodyear issued has dropped 41%.

Goodyear estimates that reducing CARs is saving the company each year in direct costs. In addition to the savings, fewer CARs translate to higher plant efficiency, more effective labor deployment, and better supplier management.

Improved Supplier Accountability

Goodyear improved supplier accountability associated with raw material quality, customer documentation, and strategic agility by streamlining and automating supplier communications with Elemica Quality.

Incoming Raw Materials

Elemica Quality electronically collects certificate of analysis (COA) data for each shipment across all of its manufacturing facilities. With this information, Goodyear objectively determines how well each supplier's material conforms to specifications, and can stop out-of-specification raw materials from contaminating its manufacturing processes. This information is available to both Goodyear and the supplier, making problem resolution quick and effective.

Specification Traceability

Goodyear uses Elemica Quality to communicate the latest specification to its supplier community. Having this information updated electronically for each material for each supplier across all manufacturing plants significantly simplifies supplier communications. Tying this information to the electronic COA virtually eliminates the risk of a supplier shipping materials to an older specification.

“Several of our R&D folks compare GSQA with their previous supplier quality systems and feel GSQA is much easier to use.”

*– Kathy Bowley, Principal QA Engineer
The Goodyear Tire & Rubber Company*

Material Testing

All testing procedures are listed with the material, so both Goodyear and the supplier understand how Goodyear wants its suppliers to test their raw materials.

Supplier Certifications

Ongoing supplier certification is simple and straightforward with Elemica Quality. Elemica Quality not only tracks which suppliers have met certification, it provides automatic notification when certifications are soon to expire. If a supplier does not have its certification, then Elemica Quality allows Goodyear to block the supplier from shipping material or products to its facilities. Elemica Quality helps Goodyear stay in compliance with all of its customers' supplier documentation requirements.

Third-Party Manufacturing

Elemica Quality's capabilities are extended to a limited number of Goodyear's third-party manufacturers worldwide. Elemica Quality's capabilities enable Goodyear to manage and track these finished product suppliers in the same way that it manages and tracks the raw material suppliers to its own manufacturing facilities. Elemica Quality provides a consistent means to keep track of incoming material, whether it is a tire or a batch of rubber.

Vendor-Managed Inventory

Goodyear worked with its suppliers to improve supply chain material availability by implementing VMI. Elemica Quality shares shipment and other information about VMI, which allows Goodyear suppliers to ship to Goodyear plants based on inventory needs instead of standing purchase orders.

CONCLUSION

The implementation of Elemica Quality is allowing Goodyear notable savings in supplier management costs each year. With the Elemica Quality solution, Goodyear's factories run more efficiently, remain in compliance, and can more easily and efficiently adapt to changing market conditions. Goodyear is delivering on its goal of delivering higher quality tires, and, at the same time, enhancing supplier and customer satisfaction.

About Elemica

Elemica is the leading Digital Supply Network for the process manufacturing industries. Elemica accelerates digital transformation by connecting, automating, anticipating, and then transforming inter-business supply chain processes for the products they buy, sell, move, and comply. Launched in 2000, customers process over \$500B in commerce annually on the network. For more information, visit www.elemica.com.

How Elemica Quality Works....

Elemica Quality fills the void left by most enterprise applications. Elemica Quality collects, stores and analyzes material parameters and production settings to improve manufacturing yield. Elemica Quality's knowledgebase of raw material characteristics and process variables allows manufacturers to correlate input cause to output effect. This correlation allows manufacturers to proactively prevent disruptions, resulting in improved yield by reducing waste.

At the same time, Elemica Quality improves the relationship between the licensing company and its supply base. The supply base is managed via easy-to-access web-based portal technology for regulatory and industry certifications. Procurement professionals gain data-driven insights into supplier performance for more effective sourcing. Plant operations management exerts more control over material variability, increasing yields and return on assets.

Research and Development personnel gain visibility to supply chain compliance with material specifications (raw, WIP, finished products) and can adjust interactively as internal or market conditions dictate. Instead of focusing on interruptive issues that reduce supply chain effectiveness and profitability, quality professionals using Elemica Quality have a system resource for proactively driving process improvement that supports operational excellence.

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A System of Savings

PLANT-LEVEL SAVINGS

Reduced Testing - Reduced costs associated with testing of incoming raw materials based on supplier confidence from online Elemica Quality compliance knowledge with automatic SPC and time trends analysis. Includes reduction in test equipment and consumable savings.

Reduced Non-Conforming Material - Online shipment validation of material specification prior to materials being shipped by the supplier reduces wasted time and money dealing with out-of-spec materials.

Reduced Waste - Reduced manufacturing waste caused by supplier material quality variability. Automatic SPC, PPK and time trends analysis on incoming materials reduce unexpected results in the manufacturing process reducing defects, unusable lots and wasted materials and associated disposal and reclamation costs.

Reduced Regulatory Documentation - On-Line CAR/CAP, Supplier Development, Audit, and Statistical Analysis data reduce the manual generation, tracking, management, storage and archival of quality records required for Regulatory Compliance. Also realize a reduction in CAR/CAP, audit and quality record storage and archival.

Simplified Cost Recovery - Online Cost Recovery automation simplifies the ability to track and analyze the costs incurred due to a supplier's non-conformance and quality issues. These charges may be passed back to the supplier.

Simplified Recordkeeping - On-Line supplier-entered COA data eliminates a plant's need to manually enter, file and store COA data. Simplified record keeping and accessibility supports supplier shipment tracking and material traceability. Also realize a reduction in COA storage and archival costs.

Efficient Inventory Management - On-Line Advance Shipment Notification with On-The-Way, Shipment Received or Released Status with date produced supports first-in first-out material management increasing production efficiency.

Efficient Production Scheduling - On-Line Advance Shipment Notification provides material delivery dates supporting more accurate production scheduling; reducing line down time waiting on needed materials, providing increased production efficiency.

Reduced Specification Costs - On-Line management of supplier viewable material specifications and test procedures reduces costs associated with supplier communications and specification management.

CORPORATE QUALITY-LEVEL SAVINGS

Reduced Supplier Oversight - Corporate-wide, on-line, real time view of all suppliers, CAR/CAP summaries, supplier performance reports and audit status simplify the management of suppliers worldwide. Also results in a reduction in documentation storage and archival costs.

Simplified Supplier Ratings - Simplified supplier rating and ranking through on-line supplier quality performance summaries.

Reduced Manual Entry - On-line management of CAR/CAP, Supplier Development, Audit, and Statistical Analysis data reduce the manual generation, tracking, management, reporting, storage and archival of quality records required for ISO/QS/AS and TS-16949 compliance. Also results in a reduction in documentation storage and archival costs.

Simplified Vendor Communications - On-line message of the day and automated supplier notification of CAR, Audit and Quality Manual events reduces mailings, faxes and e-mail to suppliers.

Elemica Quality saves the Goodyear Tire and Rubber Company \$26 Million (USD) annually across 80 plants with an average of \$325K per plant