

Secret to manufacturing quality: Better process control

High-performance materials maker improved quality by synchronizing inspection data across separate production systems and automating collection of that data

Industry: Manufacturing
Country: United States
Website: gtweed.com



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Girish Hegde, SAP Technical Manager, Greene, Tweed & Co.

Business need

Manual recording of inspection data impeded Greene, Tweed & Co., from setting a quality baseline to analyze trends of the production processes of its highly engineered materials.

Solution

The company, assisted by NTT DATA Services, formerly Dell Services deployed an SAP MII solution to improve statistical process control with real-time quality data recording and analysis on the shop floor.

Benefits

- Greater production efficiency reduces inspection requirements
- Improved visibility helps address conditions proactively
- Accuracy improved by eliminating manual entry of quality control data

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Quality and precision are critical in manufacturing highly engineered materials and components for such demanding industries as aerospace, energy, chemicals and semiconductors. Many of these industries' product applications operate in extremely harsh conditions and depend on consistent and reliable performance. Complex system failures due to faulty components can result in huge costs and sometimes grave consequences.

When industries need durable, high-performance materials and components, they turn to Greene, Tweed & Co., one of the world's leading manufacturers, headquartered in Kulpville, Pennsylvania, north of Philadelphia. From plants in the U.S., the U.K., Taiwan, and Switzerland, it produces hundreds of advanced elastomers and composite components, plus a growing number of highly engineered thermoplastics.

Importance of process control

Quality and continuous process improvement are a top priority at Greene, Tweed. It has used Lean and Six Sigma tools and techniques for decades to ensure the performance and dependability of the many products in its broad portfolio. Yet, according to SAP Technical Manager Girish Hegde, the company saw an opportunity to make its quality control systems even more effective and efficient by shifting from a focus

on inspection control to one that emphasizes process control.

"In making discrete products like ours, it's important to have the processes under control. That's the only way we can be confident of producing good quality parts," he explains. "But if we don't know the status of our processes, we may have to do full inspections to ensure the quality of all our products. Otherwise we face defect issues, the need for additional inspections, customer returns and so on. And, by monitoring our processes in real time, we can make production decisions much more quickly — at the point of impact, before quality or production is affected."

Automation transforms data collection

Hegde realized that such a fundamental shift in production strategy would require an overhaul of the company's mostly manual system of recording quality inspection data. "We were largely using paper, along with spreadsheets and some databases, which made data accessibility an issue," he says. "This approach, of course, was inefficient and hard to analyze. For example, we couldn't develop a quality baseline that we could use for analyzing trends over time."

As Greene, Tweed's technical lead for all its SAP deployments, Hegde knew a solution existed: SAP® Manufacturing Integration and Intelligence (SAP MII). He

successfully made the case to management, with NTT DATA Services, formerly Dell Services' support that if the company would deploy SAP MII in its production processes — integrated with the existing SAP enterprise resource planning system — it could address the issues caused by its legacy

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recordkeeping systems.

For implementation help, Hegde called on Application Services, SAP Practice. "After considering many partners," he says, "we chose NTT DATA Services, formerly Dell Services

because of the breadth and depth of its team's SAP technical skills, their collaborative approach and their effective communications, which helped keep me and all my other stakeholders fully informed at all times.”

Inclusive, phased approach reduces deployment risk

To reduce the SAP MII deployment risk, Hegde used a phased approach, at first deploying across just 5 of 18 key production processes in the U.S. and U.K. plants only. He also was sure to fully engage all members of the manufacturing and quality management teams. “We kept them in the loop constantly — bouncing ideas off them, showing them the systems, showing them the application, getting their feedback and making sure that it supported all their needs,” he says.

The SAP Shop Floor team provided the SAP technical skills that Hegde needed to start realizing his architectural vision of a completely automated factory. “At the same time,” he says, “Their agile project management model helped cut our SAP deployment time frame from a forecasted 18 weeks to just 16.”

Real-time data visibility leads to greater efficiency and customer trust

Hegde says that with the new SAP MII system in place on Phase 1's

targeted production processes, their real-time data indicate they are running at 1.33 Cpk or better, a statistical measure of process capability that puts their outputs well within Greene, Tweed's quality parameters. “When our production data indicates that a process is operating inside our control baseline, we know quality follows,” he says. “But if data shows a process operating out of control, we can find and address the cause proactively and much sooner, before it affects production — and, most importantly, before a customer calls.”

With a baseline of process control data, Hegde says the company can show customers subsequent historical data of 1.33 Cpk or better to raise their trust in Greene, Tweed's component quality. Those assurances can help customers agree to reduce or eliminate inspection requirements, boosting production efficiency. “When we eliminate inspection time, we can process that many more parts per hour,” he says.

Other benefits are fewer data-entry errors and increased worker productivity via better access to real-time data. Previously the mostly paper-based data collection systems required time-consuming data entry. Now, Hegde says, operators, supervisors and management can quickly access and analyze production data from across the systems and processes where SAP

MI has been deployed. “With better quality data available in real time, our people can make better, more informed business decisions.”

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