Enterprise-wide Supplier Quality Management:

The Big Payoff for Global SPC

ZONTEC

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The convergence of a wide range of global influences is having a profound effect on current-day quality in manufacturing. Today's operational strategies must take into account business cycles, risk-based management, logistics, workflows, outsourcing, regulatory issues, product development, corporate mergers and acquisitions. In this ever-changing economy it is imperative that companies compete more effectively on two fronts: by reducing costs and emphasizing quality. Manufacturers with diverse supply chains must focus on broadening the scope of quality by implementing more standardized, flexible and responsive tools to measure and manage the business. Whether it's aerospace, automotive, chemicals, electronics, food processing, or packaging, no industry should consider themselves exempt from the effect of modern globalization on quality.

There was a time when most processes were site-driven. However, decentralized quality practices at individual production sites are no longer sufficient to support a globally oriented enterprise. Experts estimate that companies lose up to 20 percent of revenues due to inefficient processes. Today, economic growth depends upon the power of centralized management through collaborating, interconnected, and integrated processes. Customers must unite internal production staff, corporate personnel, OEMs, subcontractors, material vendors, alliance partners and even automated systems into a single and performance-driven improvement team.

Knowledge-sharing and communication is key
Customers need to take the lead in sharing knowledge and techniques that ensure uniform quality practices throughout the supply chain. If compliance standards and boundaries for acceptability aren't clearly communicated to suppliers, it is no wonder that the process fails to meet engineering requirements, profit targets and consumer expectations.

According to 2007 research published by Aberdeen Group, statistical process control (SPC) is still one of the most widely adopted techniques for ensuring product quality. SPC involves monitoring a process, detecting and addressing problems before they can be passed on to the next phase of the process. It can quickly change a corporate culture from an "inspect

and reject" mentality to a much more cost-effective "predict and prevent" strategy. By encouraging suppliers to build in quality during production, SPC increases yields, reduces spoilage, minimizes the negative impact of rework on productivity and promises more profitable brands.

During the late 1990s, some technology vendors jumped on the Web bandwagon and began converting their SPC software systems to browser-based architectures to take advantage of the remote connectivity opportunities of the Internet. Unfortunately, the Web had not sufficiently matured to support the complex requirements of real-time, interactive statistical process control. Thus, many "Web-enabled" quality systems to this day provide little more than a superficial viewing of data over static Web pages. Their programs simply do not take advantage of a cooperating and collaborating global software model.

Shortly thereafter, the advent of Microsoft's .NET™ application development platform ushered in a better foundation for building the next generation of software systems that gather information from and interact seamlessly with a wide variety of Web-based services, remote users, traditional Windows® networks and SQL databases. Therefore, the underlying technology to support cross-platform computing became a reality.

This superior type of SPC application is not just concerned with the reporting of process conditions. It becomes a complete collaboration tool, enabling any computer user, anywhere in the world to collect data, monitor process status, contribute to the quality function, exchange information with others, manage the process and make business decisions based on real-time production data within a secure, reliable computing environment. It is the cohesive element for implementing a results-oriented global quality initiative.

The first pure .NET SPC design

Zontec, which began developing SPC software for personal computers a quarter-century ago, seized the opportunity and became the first SPC software vendor to fully embrace the connectivity, performance and security features of .NET technology. To Zontec, .NET represents the long-term future of enterprise software development, and establishes the blueprint for functionally rich on-demand applications.

A highly scalable solution, Zontec's Synergy 3000™ SPC software gives customers the choice of establishing the most appropriate combination of Windows and Web users to address process consistency and cost containment. In doing so, customers maintain total control over both their internal processes and those of their suppliers. Central configuration

and on-going data management is carried out at the customer's own data center, minimizing IT involvement at each supplier facility and freeing suppliers of inconsistencies in data management, reporting and security. Because the centralized data warehouse serves as host to individual SQL databases for each supplier or specific process, the customer assumes responsibility for securing supplier data and protecting it from unauthorized access. At the same time, customers can draw comparative analyses or generate on-going performance assessments as the need arises. It delivers the consistent, global view of quality for a competitive advantage.

Synergy 3000 System Architecture
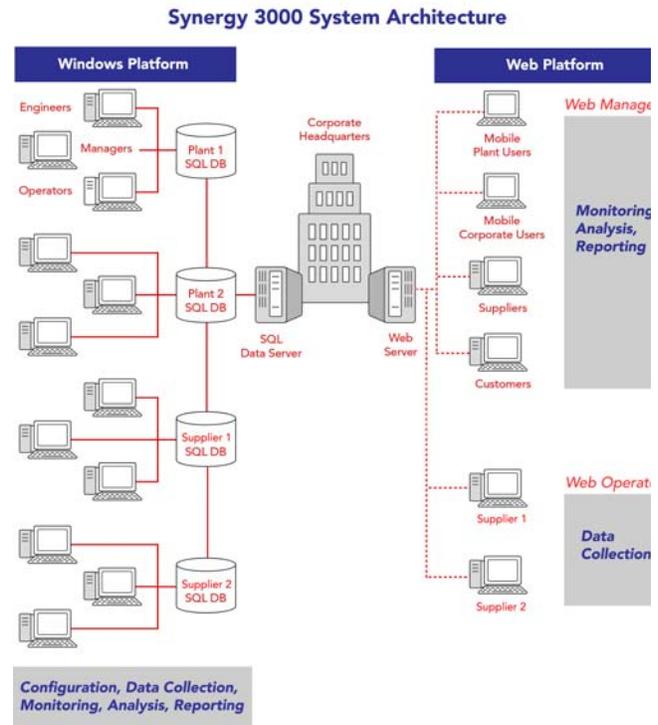
The Synergy 3000 Web platform far surpasses existing SPC systems that limit themselves to mere process monitoring and publishing data to the Web. The Synergy 3000 Web Operator application enables customers to manage remote processes and maintain audit trails as effectively as they would for their on-site production. It provides a universal framework for customers to convey specifications and requirements to their suppliers, implement consistent data collection procedures, help them to spot trends and quickly identify quality issues before defective products are manufactured and shipped.

Another first: SPC data collection via the Web

For the first time in any SPC program, suppliers can log onto the customer's Web server and perform data collection via powerfully secure, bi-directional, high-speed Internet connections. There can be no question regarding conformance and acceptability as Web Operators receive process feedback via intuitive, traffic light-inspired status flags and data points on


Web Operator Data Collection Screen

control charts and pre-control (run) charts. Notes documenting causes and corrective actions are incorporated into the data collection process to ensure full accountability. Furthermore, the system can be configured to automatically trigger e-mail alerts and cell-phone text messages to designated customer and supplier contacts when out-of-control conditions occur, enhancing the system as a worldwide troubleshooting resource.

Users often need access to standard operating procedures, instructional guides engineering drawings and contract specifications during production runs. The Zontec global quality management system accommodates ready reference to documents directly within the application, eliminating paper records and version conflicts. Most importantly, the information is maintained and controlled by the customer within the centralized database.
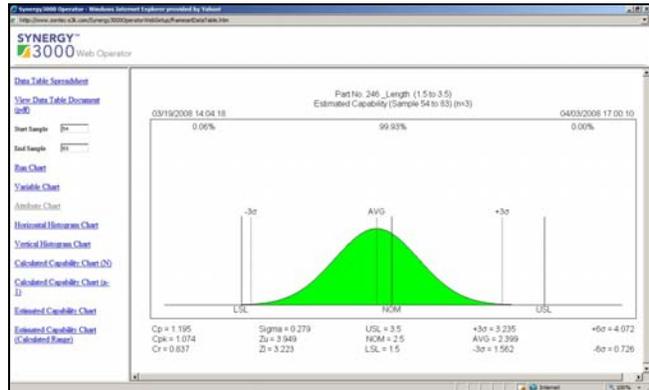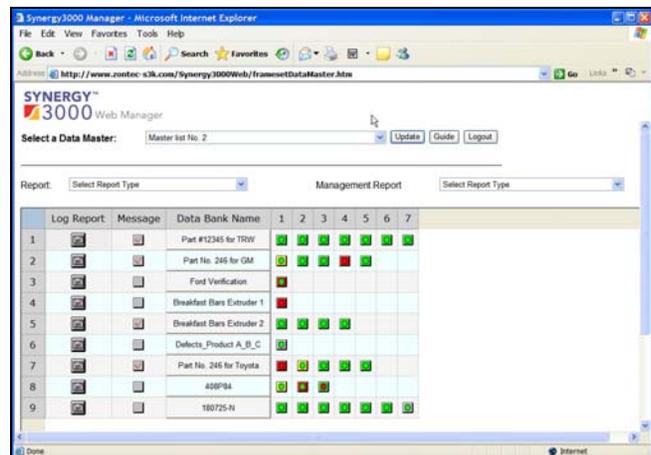

Web Operator Charting Option

In the end, the Web Operator application serves as an essential technology for strengthening customer-supplier relationships and building the globally based continuous improvement team.

Transcending conventional technological boundaries

A second, complementary browser application, the Synergy 3000 Web Manager has been designed for remote users, mobile employees and telecommuters. Synergy 3000 Web Manager users can help themselves to the data they require for analysis or reporting without supplier intervention. Information is presented in dashboard view for at-a-glance comprehension of every process condition anywhere in the world despite international boundaries, cultural

Web Manager Monitoring Dashboard

differences and time zones. If more detailed data is desired, Web Managers can call up the

actual data spreadsheets or the event log to zoom in on individual observations, samples, traceability tags or adjustments made during production. Charting capabilities are available to quickly convert the tabular data into a graphic representation of process progression. A full array of summary, reject, Cp/Cpk reports, as well as a Certificate of Analysis can be generated within the Web Manager application.
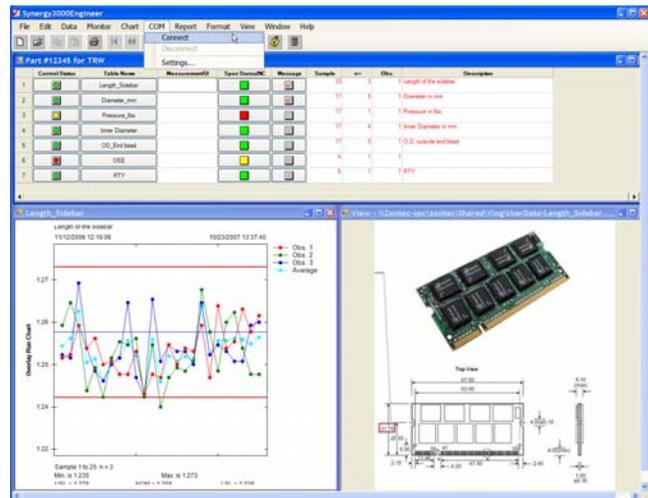
The Web Manager application empowers organizations to confirm the adherence to procedures and the quality of shipments prior to delivery. In most cases, when the product arrives at the customer location, incoming inspections can be reduced or even eliminated using the dynamic monitoring and reporting capabilities in Synergy 3000. And for companies committed to Six Sigma initiatives,

Web Manager Control Chart View

Synergy 3000 becomes a strategic decision support tool for blending together the desired objectives relating to product quality, cost reduction, continuous improvement and consumer satisfaction.

Where does Windows fit in?

Not all SPC activities are conducive to Web deployment, however. It is on traditional Windows networks where the real high performance, industrial automation and advanced quality improvement techniques lie. Consequently, Windows will continue to be the "workhorse" technology behind corporate production-floor networks and assembly operations for the foreseeable future. And Windows servers will still connect to plant-side SQL databases for transaction processing. Synergy 3000 tightly integrates both Windows plant-side

Synergy 3000 Engineer Level in Windows

users and remote Web-connected users to support the concept of cooperative quality teams. On the Windows platform, Synergy 3000 takes a more extended four-level

delineation of its users: Operators, Engineers, Managers and IT Administrators. Operators are obviously concerned with data collection, utilizing electronic measurement equipment and responding to process violations. Engineers take charge of process definition, establishing sampling plans and analytical queries. Managers want a "helicopter" view of all processes plus the ability to generate executive-level reports. IT Administrators control access and configure the system. Data flows seamlessly from user to user regardless of whether connected to Windows or the Web.

Quality data can originate virtually anywhere within the enterprise—not necessarily at the point of production: for example, in Excel® spreadsheets, ERP, LIMS and SCADA systems, plant floor hardware, OPC servers, instrumentation and legacy applications. Integrating this isolated information into the SPC system should be a simple procedure that requires no additional programming or software customization. A Synergy 3000 Multi-function Toolbox has been designed with these objectives in mind. Once incorporated into the SPC database, the external data is immediately available to all users for charting, analysis and reporting.

Tomorrow's technology today

To flourish in this highly competitive marketplace, global businesses must focus their quality efforts on process collaboration and cooperation up and down the supply chain. The World Wide Web opens up tremendous possibilities for interconnectivity, but viewing production data through a Web browser is yesterday's solution, and the Web is rapidly evolving into an operating system in and of itself. Synergy 3000 permits customers to re-engineer their processes to take advantage of the best of both Windows and the Web. Unlike complex enterprise business systems that involve lengthy IT implementation timetables and extended time-to-benefit, a global Synergy 3000 SPC rollout can occur within days, and manufacturers can begin measuring improvements and reducing costs immediately. Not a vision of computing capabilities to come, Synergy 3000 is SPC technology for the future that you can have today.