What does it do?
The primary purpose of SAS® Quality Lifecycle Analysis is to deliver a reporting, monitoring and alerting solution that provides manufacturers with a holistic view of quality across the enterprise through advanced analytic and reporting technologies. These include quality-centric modeling, automatic monitoring and alerts as well as an advanced analysis workbench and Web-based dashboards and reports.

Why is it important?
It combines the power of data integration, automation and analytics to create the most unbiased insight into large-scale manufacturing processes to help companies improve quality while better understanding and managing costs.

Who is it intended for?
The product is designed for the engineering community (quality, product engineering, process engineering etc.) and senior level managers who are all responsible for achieving and exceeding quality, productivity, utilization and cost targets throughout the supply chain.

Manufacturers today face a myriad of issues surrounding product quality, including the integration of data from disparate systems and isolated sources; obtaining visibility into and understanding of multiple operational processes; the cost of poor quality goods, rework and scrap; and the improvement of downstream product quality and overall manufacturing yields.

Disparate and isolated data sources limit a manufacturer’s ability to see quality issues across the entire operation. With a limited understanding of these processes, companies are often unable to solve underlying quality problems or implement effective improvement actions.

A lack of visibility into operational processes also hampers a manufacturer’s ability to react to changes in product quality. Without this information it is difficult to make fact-based business decisions, leaving the manufacturer to rely on employee intuition and guesswork. This can be very expensive if the decisions made are wrong or based on incomplete information.

In addition, poor-quality goods that result in high rework and scrap costs can devastate a company's bottom line. Without a clear understanding of quality effects on manufacturing and service costs, companies can be left with a broken business model, unexpected expenses and reduced yields.

Downstream quality issues can also lead to significantly reduced customer satisfaction rates. This is especially true when problems appear after the product has been manufactured and sold. Without the ability to integrate both manufacturing and post-sale quality data, companies are left in the dark as to where problems are occurring and how to fix them.

SAS Quality Lifecycle Analysis provides an analytics-based solution for integrating all data relevant to quality, productivity and utilization. It also assists in monitoring the health of processes and helps drive sustainable quality and yield improvements while containing costs.

Featuring the advanced analysis workbench, SAS Quality Lifecycle Analysis provides users with a rich set of interactive root cause analysis and quality improvement tools that can identify and respond to quality issues before they become serious problems. The solution’s integrated data mining capabilities allow organizations to gain true process understanding across their entire manufacturing operations.

Key benefits
Holistic view of the enterprise – The SAS enterprise data model captures large volumes of data regardless of format or source—from legacy to modern MES, ERP and other systems—then transforms, standardizes and cleanses the data to prepare it for analysis. While the SAS data model can handle practically any type of data, it can also be customized to incorporate any additional data types that an organization may require. In addition, state-of-the-art analytics and reporting technologies let manufacturers align strategies in order to reduce the gap between target and actual performance.
Quickly understand changes—World-class quality control delivers up-to-the-minute insight into the performance and quality of manufacturing operations, enabling tighter process control at every level. SAS software’s early warning analytics enable users to proactively address and take action to fix potential quality and performance issues before they become a customer problem.

Lower Cost of Quality—SAS software’s state-of-the-art analytics and predictive data mining capabilities drive continuous quality increases, improved reliability and higher yields. With tighter controls and more efficient processes, rework rates and scrap rates will decrease. This helps improve the overall manufacturing cost structure.

Increased Profitability—Predictive modeling allows optimal process setup, leading to improved asset utilization, optimized material consumption, reduced rework rates and reduced scrap expenses. And SAS software’s state-of-the-art analytics allow improvement of equipment performance and cycle times. The result is an improvement in the overall profitability of manufacturing operations.

Solution overview

Enterprise quality-centric data model

The SAS enterprise quality-centric data model captures large volumes of data regardless of format or source—from legacy to modern MES, ERP and other systems. This provides a manufacturer with both logical and physical storage capabilities to capture all aspects of the manufacturing process—starting with the suppliers and carrying through manufacturing. It also encompasses field performance and post-sale quality variables.

Because it is integrated throughout the manufacturing life cycle, the data model allows companies to overcome the barriers created by silos within operational systems. This enables true visibility into operations on the shop floor and allows comparisons between suppliers, plants and production lines.

Automated monitoring and alerting

SAS software’s large-scale, automatic monitoring engine continuously monitors the health of all processes to help monitor quality throughout manufacturing and operations. It can test new data against the Western Electric statistical process control rules or against unique rules that are defined by the customer. This level of customization lets users refine and integrate business rules, enabling continual process improvements.

Once tests have been flagged, indicating a variance, supporting control charts and other reports can be supplied that identify the source of the problem. This allows alerts to be published through a variety of different media (Portal, e-mail, pager, etc.).

Predictive modeling

SAS is a world leader in delivering unparalleled predictive modeling capabilities and techniques to companies around the world. For manufacturers, we provide tools to help optimize process and equipment setups that result in improved quality, yield, productivity and performance. This includes a complete spectrum of analytical tools—from explorative analysis to design of experiments with optimizers to cause-and-effect tools like Ishikawa diagrams.

Predictive models can be used to achieve advanced process control (APC). This allows manufacturers to set up downstream processes to...
compensate for quality issues that may not have been identified earlier in the operation or that were identified as a result of upstream analysis. The techniques for achieving this include neural networking, regression analysis and clustering.

**Advanced analysis workbench**

The advanced analysis workbench lets users analyze quality issues and explore areas of improvement in a highly interactive and visual environment. It serves a broad variety of users ranging from the casual user to the high-end statistician. Designed with this range of users in mind, the advanced analysis workbench gives users an interactive graphical interface that provides a level of operational visibility never before experienced.

**Reporting and KPI dashboards with drillable alerts**

SAS Quality Lifecycle Analysis delivers customizable reports and graphs enabling information sharing among those who need it at all levels of the organization. This includes standard and ad hoc reports, KPI scorecards, drillable views, snapshots and trend analysis from across the manufacturing operation.

Critical for many companies, the integrated executive dashboard enables reporting on current quality performance at all levels and across geographies. Reports, dashboards and other analysis can be delivered through Web-based clients that allow users and executives to access them anywhere and at any time.

The advanced analysis workbench enables interactive visual data exploration for in-depth root cause analysis.

The Executive Dashboard provides a clear picture where the organization stands in relation to their goals.
**Technical Requirements:**
**SAS® Quality Lifecycle Analysis**

**Client environment**
- SAS Service Intelligence Architecture Clients
  - Windows 32-bit workstations

**Server environment**
- SAS Service Intelligence Architecture Clients
  - AIX, HP PA-RISC, HP IPF, Linux 32-bit, Linux 64-bit for IPF, Solaris SPARC, Windows 32-bit

**Required/optional software**
- Web Application Server (e.g. Tomcat, IBM Websphere)
- Web File Server (e.g. Xythos WebFile Server)

**Key Features**

**Integration of all relevant data in an enterprise quality-centric data model**
- Parts-movement data
- Measurement data
  - continuous measures
  - categorical measures
- Equipment data
- Physical failure analysis data
- Field failure data
- Supplier quality data
- Engineering process data
- Environmental data
- Cost attributes
- Organizational data

**Automated monitoring and alerting**
- Parts-movement data
- Measurement data

**Predictive modeling**
- Decision tree
- Neural network
- Regression analysis
- Clustering

**Advanced analysis workbench**
- Pareto charts
- Control charts
- Histograms
- Distribution analysis
- Design of experiments
- Regression and curve fitting

**Reporting and KPI dashboards with drillable alerts**
- KPI dashboard
- Web-based reports
- Web-based graphs

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**SAS – A World Leader in Business Intelligence**

SAS is the leader in business intelligence and analytical software and services. Customers at 44,000 sites use SAS software to improve performance through insight from data, resulting in faster, more accurate business decisions; more profitable relationships with customers and suppliers; compliance with governmental regulations; research breakthroughs; and better products and processes. Only SAS offers leading data integration, storage, analytics and business intelligence applications within a comprehensive enterprise intelligence platform. Since 1976, SAS has been giving customers around the world THE POWER TO KNOW®.