



Proficiency™ Shop Floor SPC

Complete Shop Floor Quality Data Collection & Analysis Solution

Product quality can literally make or break your organization. Deliver quality and consistency and you'll keep regulatory organizations at bay, attract a loyal clientele and beat the competition time and time again. Fail to achieve quality within your manufacturing processes, however, and you'll face the financial impact of product recalls, the credibility setback of a damaged reputation or perhaps even fines and other punitive steps taken by governmental agencies. In short, get it right or get ready to pay the consequences.

GE Fanuc's Proficiency Shop Floor SPC Product Suite (formally VisualSPC) is your complete statistical process control solution for the collection, monitoring and analysis of plant floor quality data. Enabling you to collect real-time information

from virtually any source, the Shop Floor SPC Product Suite delivers a diverse array of powerful analysis and visualization tools – all designed to provide you with a clear and instantaneous understanding of what is happening with any given industrial process.

The Shop Floor SPC Product Suite serves all of your business' quality management efforts and serves as the primary resource for identifying areas of improvement and eliminating quality issues within your production environment. As a result, you can drive greater consistency within your manufacturing operations and enhance the productivity and profitability of your company.



Proficy Shop Floor SPC Product Suite Features and Benefits

Improve product quality and consistency

- Shop Floor SPC enables you to meet or exceed your vendor management policies through complete analysis and reporting capabilities
- By improving quality and consistency, you increase your ability to get it right the first time; enabling you to improve scheduling accuracy and meet the just in time delivery needs of your customers
- Enhanced product quality builds brand equity and reinforces the overall value and standing of your business to your customers

Decrease production costs through reduction of waste and rework

- Shop Floor SPC enables you to conduct real-time monitoring of processes to catch quality problems early in the process, allowing you to take corrective action sooner
- Using a suite of statistical process control techniques, you can stop poorly manufactured products before they leave your facility, dramatically reducing the impact of repairs, warranty issues and damage to your company's reputation
- Root-cause analysis helps you to not only catch faulty products before they leave the facility, but also to identify what caused the problem in the first place

Seamlessly integrate with business systems to improve product quality

- All information is stored in central database that provides robust performance and streamlines administration
- Full ODBC compliance means you can connect to a diverse array of database technologies – including SQL and Oracle – to enhance enterprise-wide information exchange
- Integration with business systems enables personnel to make more effective, fact-based decisions, yielding better quality improvement and capital expenditure investments

Reduce the cost of complying with stringent regulatory demands, including 21 CFR Part 11

- Shop Floor SPC provides robust electronic signature and electronic record capabilities designed specifically to be used within validated systems
- Full audit trail capabilities capture “who did what, where and when” during the manufacturing process

Make real-time product quality decisions through web-based analysis

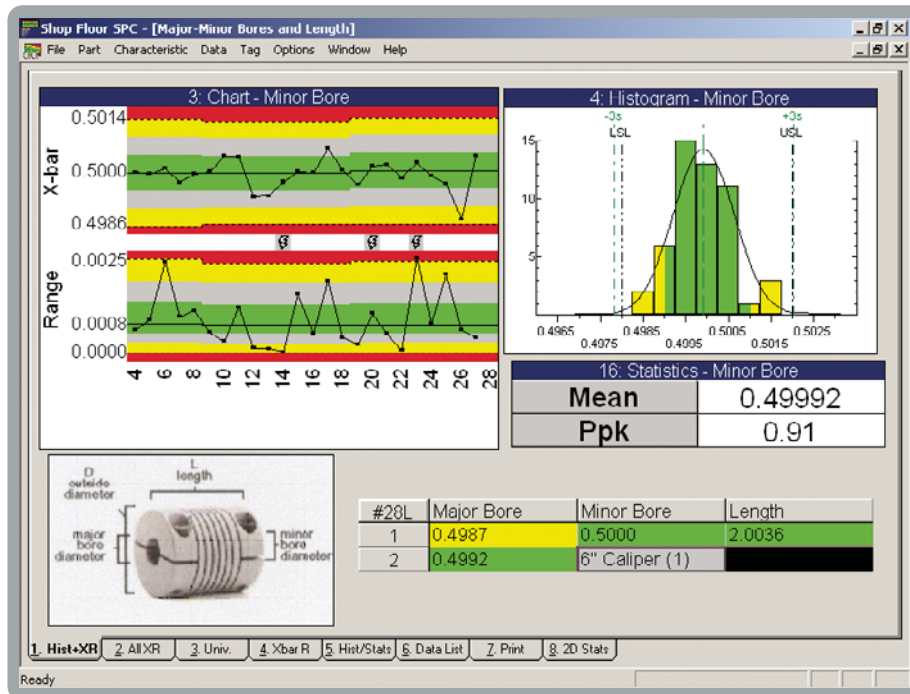
- Proficy Real-Time Information Portal's Quality Module provides internet-based quality and statistical information to all decision-makers throughout the organization, regardless of their location
- Extend the capability of your plant floor analysis by integrating Portal displays or standard web pages in your SPC data collection process
- Alerts and alarms can be conveyed to necessary personnel via multiple methods – including email – ensuring timely resolution of quality issues

Maximize quality improvement efforts with open device connectivity

- Shop Floor SPC Product Suite includes a full line of data collection hardware – including GagePort™ interface modules enable you to collect all your quality data from every caliper, scale or other measurement device used in your facilities
- GagePort supports standards such as OPC and RS232 to ensure data collection from hundreds of other hardware sources
- Shop Floor SPC supports keyboard entry and file import options – such as data collection directly from CMMs and other smart devices – further enhancing “soft input” flexibility

Enhance application agility by leveraging industry standards

- Shop Floor SPC was developed using C++, Visual Basic, and Microsoft's Data Access Objects (DAO) for fast access to our database. DAO, in turn, uses ODBC to store your SPC data in other databases such as SQL Server and Oracle
- Shop Floor SPC takes advantage of OLE technology, so you can easily embed graphics and text information into your data collection program. OLE linking enables applications to access master documents every time they are run, so changes are automatically reflected at run time, guaranteeing that operators always use the most current version
- Using OLE Automation, Visual Basic developers can create custom setup Wizards and real-time analysis procedures without compromising the integrity of the main program



Proficy™ Intelligent Production Solutions

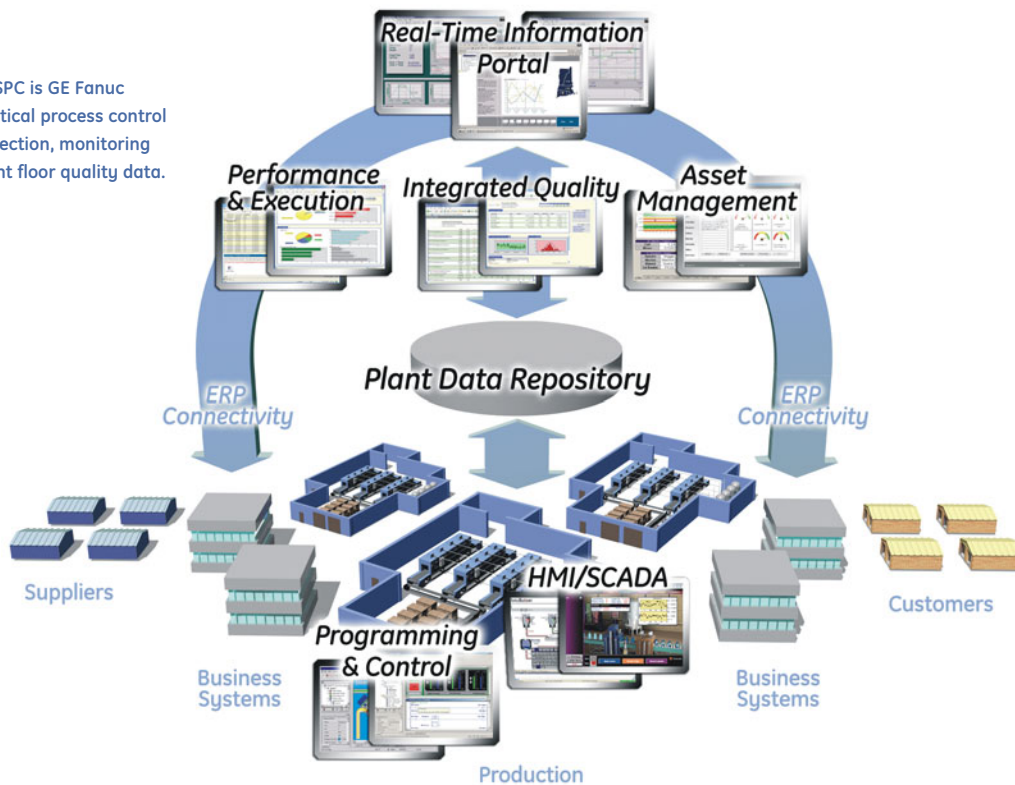
For years, manufacturers throughout the world have recognized the critical link between production efficiency and profitability. But as new competitive pressures emerge, even the most successful companies are being forced to continually streamline their operations.

The demand for speed, agility and responsiveness in your production operations has never been greater – transforming not only how you manage production assets, but how you do business. As a result, real-time production management is now a cornerstone of any profitable company. And Proficy is the cornerstone of real-time production management.

Proficy is an open, powerful Intelligent Production Solution that provides the plant automation, analysis and execution capabilities that every manufacturer needs, along with the connectivity to the business environment that every company craves. And whether you implement an entire group of applications or simply install an individual module to meet a specific production need, Proficy enables you to incorporate the right solution for your business at any time – regardless of your current automation infrastructure.

Imagine a seamless, cohesive and entirely modular infrastructure that brings the worlds of business and manufacturing together as one – from GE, the company that has set the worldwide standard of excellence for both. The implications for your success are endless.

Proficy Shop Floor SPC is GE Fanuc Automation's statistical process control solution for the collection, monitoring and analysis of plant floor quality data.



Performance and Agility for the Real-Time Enterprise

GE understands that businesses today are under continuous pressure to increase productivity and improve profitability.

The Proficy solution integrates a full range of easy-to-use applications and services to continuously improve your level of productivity. It has been developed to build intelligence into your processes – gathering, analyzing, and transforming data into information and enabling you to act in real-time to optimize results.

Proficy connects the equipment on your floor, business systems and decision-makers. This closed-loop experience ensures that production runs smoothly, efficiently and with greater profitability.

With Proficy, you'll have the resources to meet your greatest manufacturing challenges, through a combined set of capabilities including:

- **Plant Intelligence** – Making business sense out of plant data in real time
- **Asset Management** – Optimizing profitability by managing equipment and other plant assets
- **HMI/SCADA** – Improving production performance with plant floor visualization and control
- **Programming and Control** - Allowing you to develop Motion, PLC and PC Control and visualization applications in a single integrated environment
- **Software Services** – Maximizing your software investment through GE support, training, and professional services

Proficy Shop Floor SPC Product Suite

Complete Shop Floor Quality Data Collection & Analysis Solution

The Shop Floor SPC Product Suite plays a critical role in helping you to improve product quality and is an invaluable solution for reducing waste, streamlining operations and, ultimately, making your business more productive and more profitable.

The Shop Floor SPC Product Suite is a comprehensive shop floor quality solution that delivers a diverse array of benefits for companies of all sizes, serving all industries, in both process and discrete environments. It includes all the software and hardware components required to enhance the quality and consistency of your products. The Suite includes:

Shop Floor SPC – a Windows-based software application for the capture, monitoring, analysis and reporting of quality data.

Real-Time Information Portal – the award-winning web-based software application that enables you to extend your Shop Floor SPC quality data analysis – in real-time – throughout your organization.

GagePort Family of Interfacing Modules – a simple yet powerful universal gage interface device for collecting data from virtually any type of sensor, micrometer, caliper or other device.

Shop Floor SPC – Data Collection

Data Collection modules:

Variables Analysis

Data Collection enables users to input and capture data from the plant floor in a simple, familiar, easy-to-use notebook-style format. Data entered via this module can be tagged and associated with multiple forms of process information – such as lot number, machine or operator – providing a powerful and flexible resource for ascribing rich contextual information for any piece of data. Furthermore, multiple “live column” display options reflect data analysis conditions in real-time, triggering alarms and providing clear status information for any data reading.

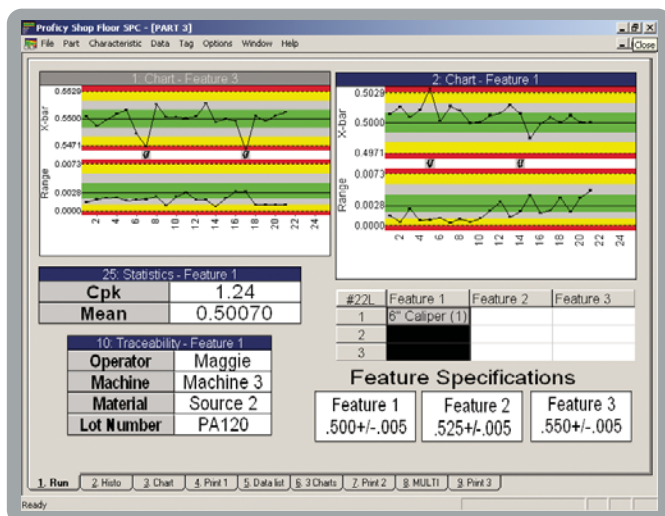
Attributes Analysis

With this module, Data Collection allows you to quickly and easily track multiple categories of defects, mixing variable and attribute data within the same visualization. You can define multiple levels of categories, assign different levels of importance to different types of defects (reflecting the importance of the defect involved – surface scratches versus structural issues, for example) and display the results as Pareto or control charts for easy reference.

Measurement System Analysis

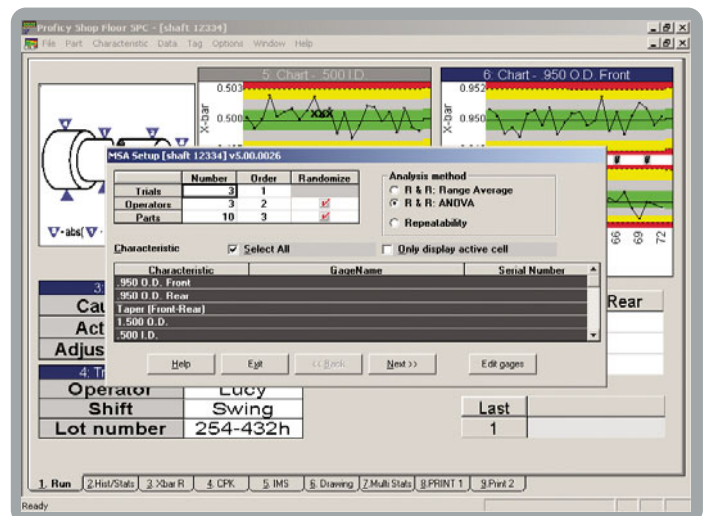
This Data Collection feature lets you evaluate variations in your measuring system before or during data collection. It is AIAG-compliant and satisfies ISO-9000 requirements. Available studies include simple Repeatability; Range and Average, which analyzes both Repeatability and Reproducibility (R&R); and Analysis of Variance (ANOVA).

Setup is easy via the built-in Wizard and data collection is fast and error-free with direct input of readings from electronic gages, randomization of parts, and automatic sequencing. The structured studies prevent omissions by prompting for trials, operators, parts, and characteristics. All statistics are calculated automatically, saving you hours of manual calculation time.



Data Collection

The data collection screen allows you to integrate user instructions and process data.



Measurement Systems Analysis

Gage R&R studies are integrated with data collection.

Shop Floor SPC – Monitor

Shop Floor SPC Monitor is an online reporting tool that monitors all active processes and provides an enterprise wide, automatically-updated summary picture of everything that's happening on the production floor. You can customize your view by selecting the products you wish to use, how you want the information grouped, even the colors you would like assigned in the statistical reporting, enabling you to easily identify those areas that are performing smoothly and those which require attention.

Shop Floor SPC – Administration

Administration includes the following modules:

Shop Floor SPC Analysis

Featuring a wide selection of charts, histograms and other visualization tools, Shop Floor SPC Analysis makes ascertaining the results of a statistical analysis session quick and easy. Histograms show the frequency distribution relative to the upper and lower tolerance and sigma (± 3 , ± 6 or both) limits, while control charts help you monitor your process using Xbar-R and Xbar-S statistics. Other charts include Individual X and Moving R, Pareto, p, np, c and u-Charts. The Query feature allows you to precisely select the data you want to analyze. You can select data by time/date range (relative dates such as last 30 days, for example) or select particular characteristics (the five most critical characteristics in an area, for example). You can also save queries and run repetitive reports, or use templates you've created in Shop Floor SPC Designer for data analysis.

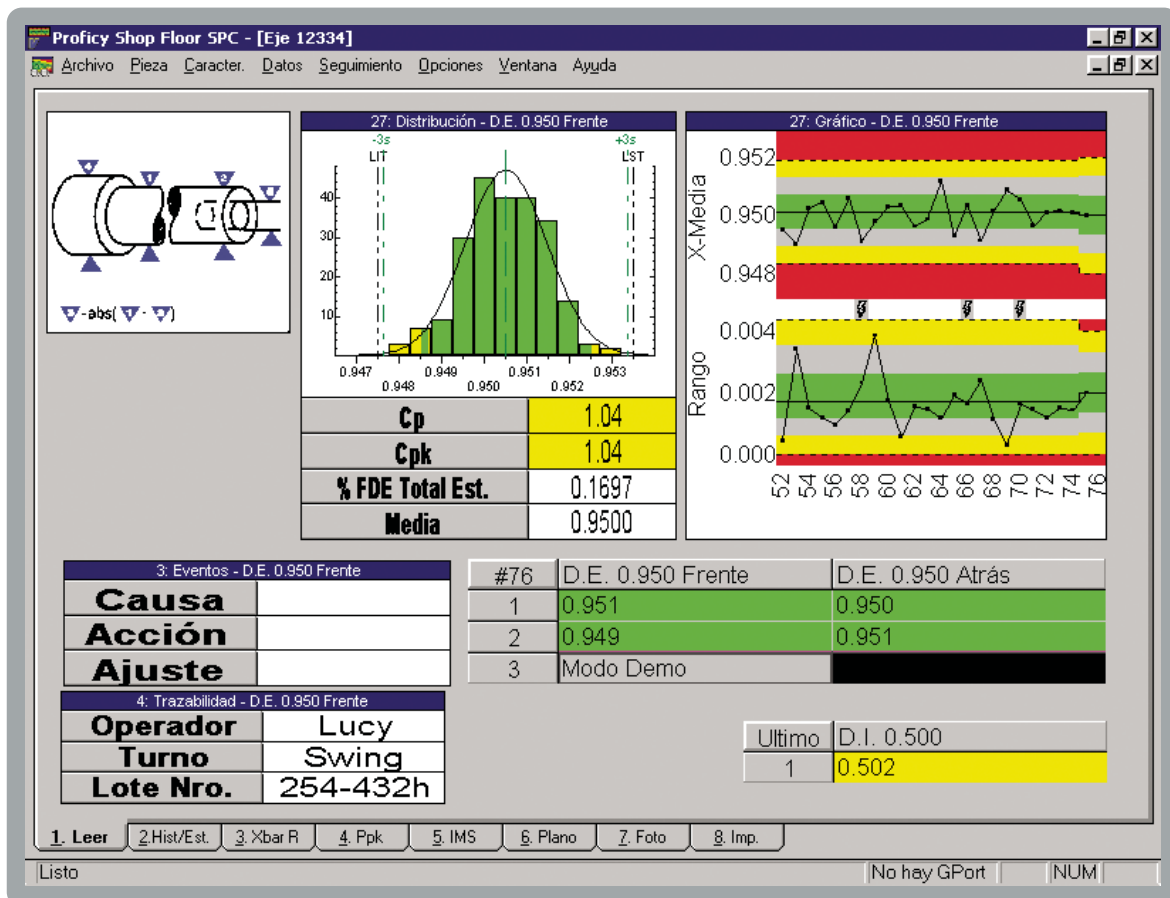
One of the most powerful features of Shop Floor SPC Analysis is "Group By," which allows you to look at data grouped by a process category across a number of data fields. Shop Floor SPC Analysis makes data analysis simpler by using the same user interface and concepts as Shop Floor SPC Data Collection, so no extra training is necessary. With the built-in templates, you can control the design of the report to give you the customized reporting you need. This open approach allows you to design a different template for each management group so Production Managers, for example, can access different information than Quality Control Managers.

Shop Floor SPC Designer

Using the built-in power of OLE technology and tabbed, notebook-style pages, you can make your own unique views instantly accessible to each operator. These views could include photos of the setup, inspection method sheets, part drawings, flow diagrams, routing sheets, acceptable workmanship standards or troubleshooting guides. Integrate word processing documents, scanned images, CAD drawings, and input from digital cameras or video clips into your data collection setup. And best of all, it's as simple as cut-and-paste. Also with Designer you can integrate Real-Time Information Portal displays or standard web pages into your standard data collection process. Embedding Real-Time Information Portal displays allows you to extend the analysis capabilities available to the user on the plant floor by leveraging the extensive capabilities of the Portal.

Shop Floor SPC Importer

In addition to the data you can collect directly with Shop Floor SPC, flat ASCII files generated by CMMs and other measuring systems can be imported directly into our standard Shop Floor SPC database. Shop Floor SPC Importer paired with Shop Floor SPC Analysis and Shop Floor SPC Reports gives you an integrated and complete solution to analyzing data from multiple sources in multiple formats.



Shop Floor SPC Designer

Shop Floor SPC provides complete control over the information presentation.

Shop Floor SPC Reports

Shop Floor SPC Reports provides a full set of the standard reports you need for weekly tracking of production performance. Process Events by Category, Graphical Ppk, Percent in Spec by part and characteristic, and Process Events by part and characteristic, are just a few of these standard reports. Of course, you also have the flexibility to develop your own reports or leverage the resources of any other third-party organization to develop custom reports on your behalf.

Shop Floor SPC Wizard

Utilizing a simple, step-by-step tool, system managers can now enter a few pertinent facts about a particular part or line and the Shop Floor SPC Wizard will automatically handle setup and configuration within the application. As a result, new setups can be created as needed or previously used templates can be quickly and easily accessed and implemented.

Shop Floor SPC – eSignature Option

Designed for users who operate under the guidance of regulatory organizations (specifically the Food and Drug Administration), or for users who simply wish to gain a better understanding of who is accessing their systems and what they're doing while they're at the controls, Shop Floor SPC with the eSignature Option leverages all the features of the base product plus delivers a host of "Designed for 21 CFR Part 11" functionality. These features, when implemented according to cGMP practices, deliver a degree of security, accountability and accessibility that is simply unmatched in the industry today – helping you to move swiftly and confidently toward validation and compliance. "Designed for 21 CFR Part 11" functionality includes:

Audit Trail

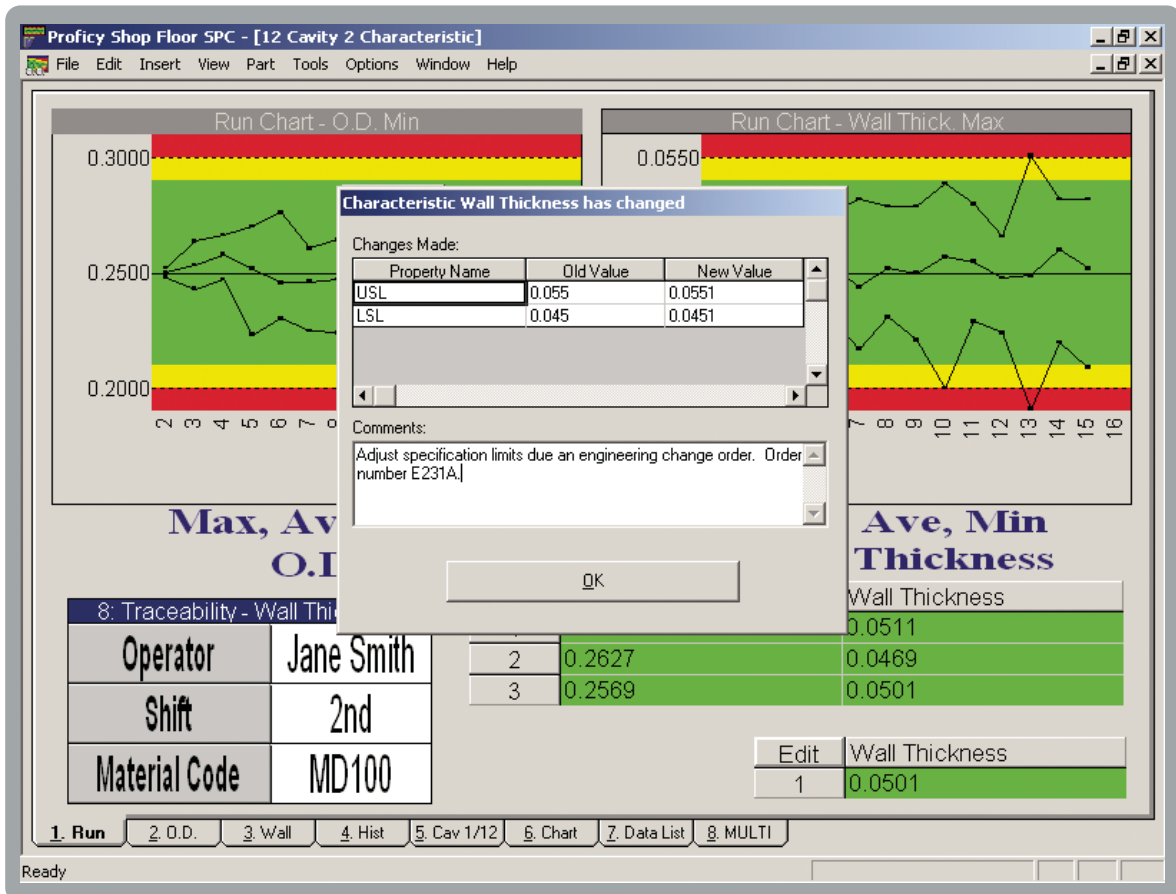
An audit trail establishes an unalterable record of "who did what, where and when" within your industrial process. With Shop Floor SPC's eSignature Option, you'll have precise information on the activities of each user who logs-in to the system, capturing every action in as great or as little detail as you deem necessary according to the needs of your industry and your company's standard operating procedures.

Secure log-in and eSignature capture

Meeting the FDA's requirements for user identification with Shop Floor SPC's eSignature Option secure log-in and electronic signature capture capabilities make it easy for you to define which users should have access to what systems and with what levels of authority. You can also define when and how often the prompts for username and password should appear and when the inputs should be recorded.

Reporting tools

Part of meeting the FDA's requirements is having the ability to produce activity and access reports at their request. Shop Floor SPC's reporting tools provide all of the resources you need to deliver precisely what is requested in a timely, efficient and complete manner using one of the included reports, or create one of your own.



Audit Trail Prompt

An audit trail prompt appears when changing specs on the shop floor.

Proficy Real-Time Information Portal – Quality Module

Proficy Real-Time Information Portal is a breakthrough plant-wide analysis and visualization application that enables companies to gain business insight from all their plant data – in real-time. Providing a single system for integrating all your product-based and process-based production data with a robust set of analytic and visualization components, the Real-Time Information Portal presents an overall view of Key Performance Indicators and other metrics necessary to run processes in a more efficient manner. All of this is accomplished via the web, making your critical plant information accessible from anywhere – around the building or around the world.

The Quality Module is an optional module within the Real-Time Information Portal that provides real-time, web-based quality analysis and reporting. Through a native, data-aware connector to Shop Floor SPC, Real-Time Information Portal's Quality Module provides the Shop Floor SPC user with an easy-to-use way of analyzing shop floor quality data over the web. With a complete set of quality charts and components including Xbar, Range, Sigma, Histogram, Moving Xbar, X-Individual, Pareto, p, np, c, u and correlation charts, Real-Time Information Portal's Quality Module can help identify problems before they occur. And you can seamlessly integrate your Shop Floor SPC quality data with other plant and IT applications, making it possible to finally make sense of all your plant information in one integrated system.

Through the Real-Time Information Portal's Quality Module, you can clearly understand and control product and process variation. The simple yet powerful quality analysis module, combined with the flexibility and versatility of the module's web-based delivery, make it an ideal solution for the analysis, proliferation and visualization of a diverse array of SPC data.

GagePort

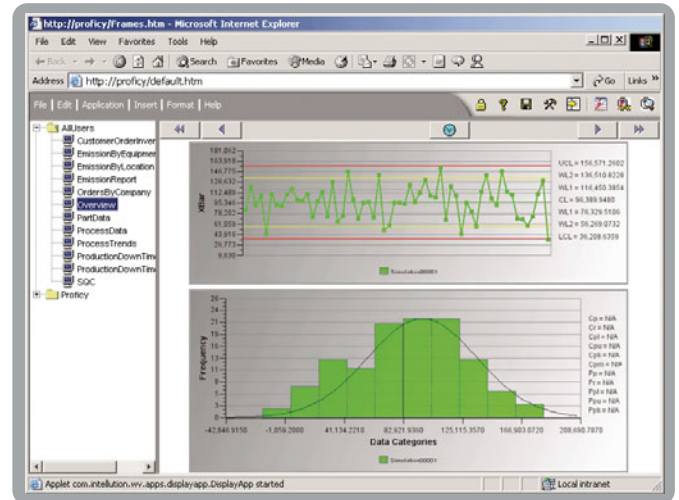
Central to your quality efforts is having the ability to collect and retain information from all your measurement devices. That's why GE Fanuc has developed the GagePort, a simple yet powerful universal gage interface device that allows you to automatically collect data from virtually any type of digital, RS232 or analog measurement device and have that data imported directly into Shop Floor SPC. Furthermore, GagePort can also be integrated into your existing control system using OPC, thereby providing a cost-effective solution for connecting low-voltage or digital devices to your control applications.

The GagePort has been used successfully with several thousand different sensors, providing fast and reliable data transfer for error-free, real-time quality control. Micrometers, calipers and indicators of all kinds interface with plug-and-play simplicity. The Probe GagePort model enables you to achieve instantaneous links to LVDT and half-bridge probes, while the Combo GagePort accommodates the full range of digital, RS232, analog, torque, strain and gap and flushness gages.

Shop Floor SPC

The quality of your products speaks volumes about the quality of your company. Consistently deliver a product that meets or exceeds the expectations of your customers and you'll be viewed as an industry leader with a reputation for excellence. Shop Floor SPC from GE Fanuc – and the associated hardware solutions designed to work flawlessly with this application – will help you to achieve this esteemed position and, more importantly, will help you stay there. Shop Floor SPC helps to keep your plant efficient, your products flawless and your business profitable... and we can get your facility started with a full solution today.

For more information on the Shop Floor SPC Product Suite or any of GE Fanuc's Proficy solutions, contact your local sales representative or visit us online at www.gefanuc.com.



Real-Time Information Portal Quality Module

Shop Floor SPC users can achieve real-time web-based quality analysis and reporting with the Real-Time Information Portal Quality Module.



GagePort Protocol Converter

Digital GagePort and FlashCables can be connected to common hand tools.

Shop Floor SPC v5.5 System Requirements

The recommended system configuration to use Shop Floor SPC is Microsoft Windows® XP Professional on a computer with a 500 MHz processor and 256 megabytes (MB) of RAM. Below are the minimum requirements your computer needs to run Shop Floor SPC.

Minimum Requirements

Computer/Processor

Computer with a 266-megahertz (MHz) or higher processor (500 MHz with Proficy Portal integration)

Memory

RAM requirements depend on the operating system used:

- Microsoft Windows XP Pro – 128MB RAM (256MB with Proficy Portal integration)
- Windows 2000 Professional – 128MB RAM (256MB with Proficy Portal integration)

Hard Disk

Hard disk space requirements will vary depending on configuration; custom installation choices may require more or less. Listed below are the minimum hard disk requirements:

- Shop Floor SPC Data Collection – 100 MB of available hard disk space
- Shop Floor SPC Administration – 200 MB of available hard disk space
- Shop Floor SPC Database Server – 10 GB of available hard disk space

Operating System

Client Support* – Windows 2000 or Windows XP Pro

*Microsoft Internet Explorer 5.0 or greater is required on each client.

Network Support – Windows 2000 Server or Windows 2003 Server

Drive

CD-ROM drive (optional)

Display

Super VGA (800 x 600) or higher-resolution monitor with 256 colors

Ports

USB or parallel, for hardware license key
Minimum of 1 available RS-232 Port

Peripherals

Mouse, or compatible pointing device

Proficy Shop Floor SPC v5.5

- Improved product quality and consistency
- Decrease production costs through reduction of waste and rework
- Seamless integration with business systems improves product quality
- Reduce the cost of complying with stringent regulatory demands, including 21 CFR Part 11
- Make real-time product quality decisions through web-based analysis
- Open device connectivity maximizes quality improvement efforts
- Enhance application agility by leveraging industry standards

Proficy Software Modules:

Real-Time Information Portal
Proficy Real-Time Information Portal

Plant Performance and Execution
Proficy Batch Analysis
Proficy Batch Execution
Proficy Efficiency
Proficy Production
Proficy Tracker
Proficy Machine Tool Efficiency

Integrated Quality
Proficy Quality
Proficy Non Conformance Reporting
Proficy Shop Floor SPC

Plant Data Repository
Proficy Historian

Asset Management
Proficy Enterprise Asset Management
Proficy Remote Monitoring & Diagnostic
Proficy Change Management

HMI / SCADA
Proficy HMI/SCADA – iFIX®
Proficy HMI/SCADA – SIMPLICITY®
Proficy View – Machine Edition

Programming & Control
Proficy Logic Developer – Machine Edition
Proficy Motion Developer – Machine Edition

GE Fanuc Support & Services:

Proficy GlobalCare Support
Proficy Professional Services
Proficy Training

GE Fanuc Automation Information Centers

Americas:
1 800 GE FANUC or 434 978 5100

Asia Pacific:
86 21 3222 4555

Europe, Middle East and Africa:
800 1 GEFANUC or 800 1 4332682
or 1 780 401 7717

Europe, Middle East and Africa (CNC):
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Additional Resources

For more information, please visit the GE Fanuc web site at:

www.gefanuc.com

