



## **VisualSPC™**

### **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.

The VisualSPC™ Product Suite 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 VisualSPC 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 VisualSPC 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.

# Intelligent Production Management (IPM)

## Optimizing Operational Performance

Intelligent Production Management (IPM) is a growing category of technologies designed to manage – and ultimately improve – every aspect of the manufacturing production process. It includes a comprehensive group of solutions designed to help users at all levels of the organization perform critical production functions more efficiently and effectively.

IPM hardware and software applications span a broad spectrum of functionality to manage key areas of the production lifecycle – from controlling plant floor processes to analyzing and sharing performance data to managing equipment assets throughout the organization. Ultimately, IPM represents an opportunity for companies to reduce costs, increase productivity and improve quality by optimizing the performance of their production processes.

IPM solutions can be categorized into four core functional areas, which can be implemented separately or as part of a fully integrated plant-wide solution:

### Asset Management

Asset Management software solutions enable manufacturers to realize tremendous gains in equipment effectiveness through proactive and targeted equipment management. Asset Management solutions allow Production and Maintenance Managers to identify and track physical assets in order to perform scheduling and maintenance tasks with greater efficiency. Equipment usage, maintenance and repair operations, asset costs and more can be traced, viewed and controlled using these applications.

### Plant Intelligence

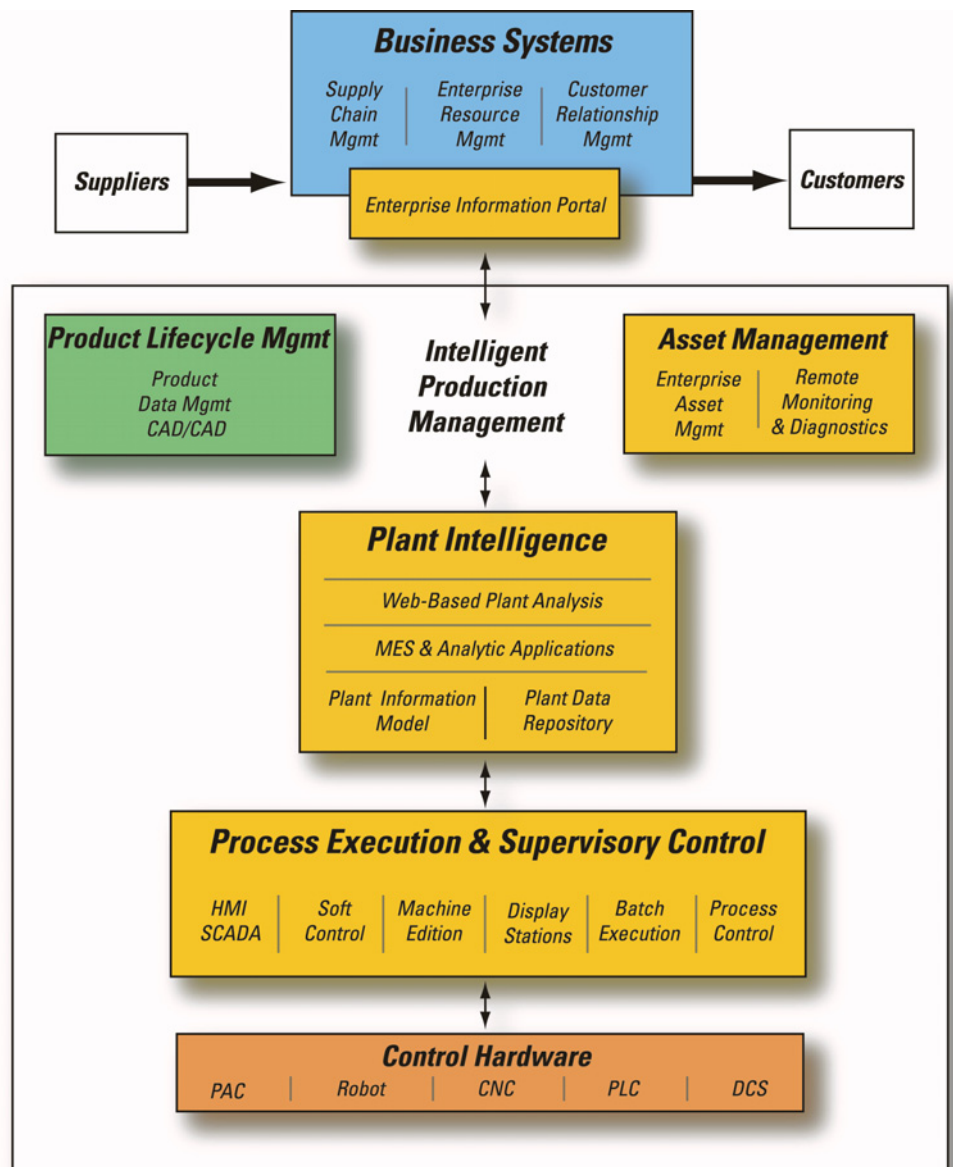
Plant Intelligence software applications are an integrated set of solutions that provide a new level of insight into operational performance, allowing decision makers to make business sense out of plant data in real time. These high-impact applications give Production Managers the information and analysis they need to make important real-time decisions that dramatically improve their performance. They are critical tools for companies seeking to gain a competitive edge through improved operations, collaborative production and corporate accountability.

### Process Execution & Supervisory Control

These are the software applications which allow Operators and Process Engineers to better manage their production processes. Serving as a conduit for both communicating with the hardware and extracting real-time data from the industrial processes they control, Process Execution & Supervisory Control solutions help manufacturers visualize plant floor operations, perform supervisory automation and deliver the production data that feeds reliable, up to date information to the higher-level analytic applications. As a result, manufacturers can increase production, maximize quality and efficiency and improve regulatory compliance through user accountability.

### Control Hardware

From industrial-hardened PCs and CNC systems to PLCs and robotics, these are the durable assets that are used to physically manufacture products, maintain the flow of materials and protect the safety and quality of what is being produced.



Intelligent Production Management integrates all key areas of the production management lifecycle, giving you greater connectivity, analysis and control over your operation. **VisualSPC** is part of GE Fanuc's **Plant Intelligence** family of IPM solutions.

## VisualSPC™ Product Suite Features and Benefits

### Improved product quality and consistency

- VisualSPC 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

- VisualSPC 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

### Seamless integration with business systems improves product quality

- 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

- VisualSPC Secure Edition 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

- infoAgent™ 2.0 Quality Module provides internet-based quality and statistical information to all decision-makers throughout the organization, regardless of their location
- Alerts and alarms can be conveyed to necessary personnel via multiple methods – including email – ensuring timely resolution of quality issues

### Open device connectivity maximizes quality improvement efforts

- VisualSPC Product Suite includes a full line of data collection hardware – including GagePort™ interface modules and Zipper™ handheld data collectors, enabling 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
- VisualSPC 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

- VisualSPC 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
- VisualSPC 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

## VisualSPC Personalized Data Collection



# VisualSPC Product Suite – Complete Shop Floor Quality Data Collection & Analysis Solution

As part of GE Fanuc's Plant Intelligence Solution, the VisualSPC 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 VisualSPC 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:

**VisualSPC** – a Windows-based software application for the capture, monitoring, analysis and reporting of quality data. VisualSPC is available in both a **Quality Edition** and a **Secure Edition** and serves as the hub of the VisualSPC Product Suite.

**infoAgent 2.0 Quality** – the award-winning web-based software application that enables you to extend your VisualSPC 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.

**DuraTouch™ Industrial PC** – a self-contained and mountable PC in an industrial-hardened form factor that enables you to locate your VisualSPC solution anywhere you need it.

## VisualSPC – Quality Edition

VisualSPC Quality Edition is available in three basic module configurations:

### VisualSPC ShopFloor

VisualSPC ShopFloor 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.

### VisualSPC Monitor

VisualSPC 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.

### Admin Bundle

The Admin Bundle comes complete with five distinct modules:

### VisualSPC Analyst

Featuring a wide selection of charts, histograms and other visualization tools, VisualSPC Analyst 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 ( $\pm 3$ ,  $\pm 6$  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 VisualSPC Designer for data analysis.

One of the most powerful features of VisualSPC Analyst is “Group By,” which allows you to look at data grouped by a process category across a number of data fields. VisualSPC Analyst makes data analysis simpler by using the same user interface and concepts as VisualSPC ShopFloor, 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.

## Data Collection



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

## VisualSPC 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.

## VisualSPC Importer

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

## VisualSPC Reports

VisualSPC 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.

## VisualSPC 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 VisualSPC 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.

## VisualSPC – Secure Edition

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, VisualSPC Secure Edition brings all the benefits of VisualSPC Quality Edition 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 VisualSPC Secure Edition, 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.

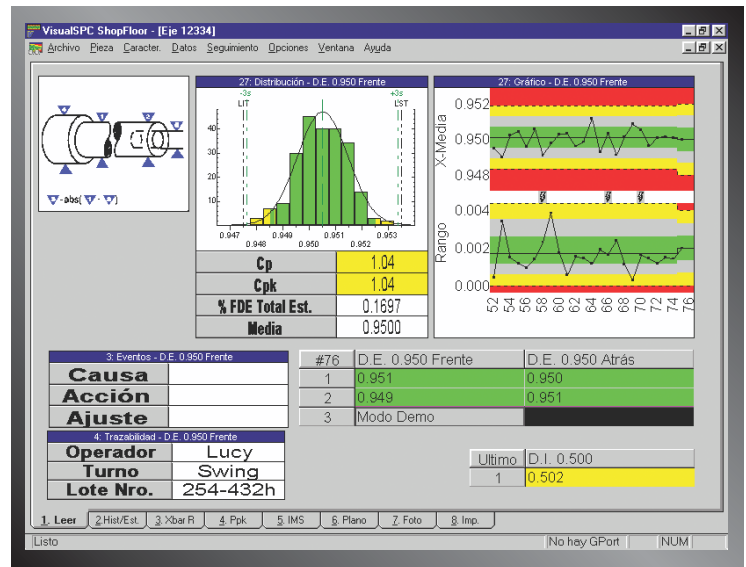
### Secure log-in and eSignature capture

Meeting the FDA's requirements for user identification, VisualSPC Secure Edition's 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

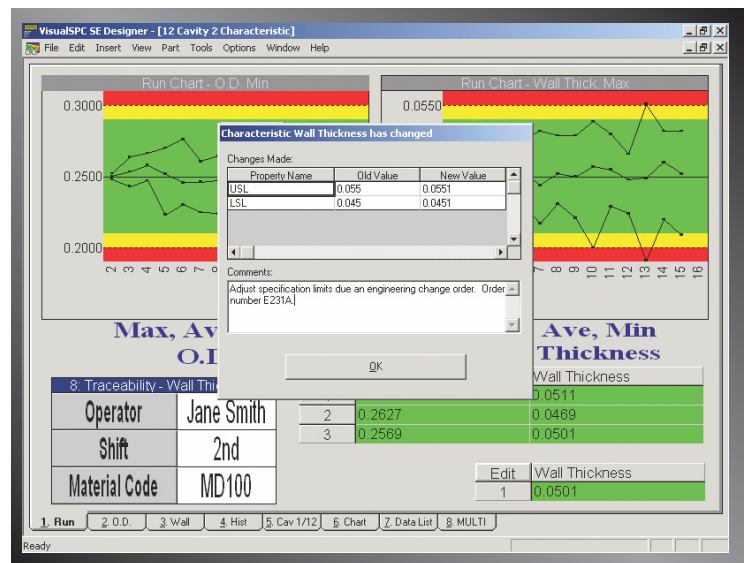
Part of meeting the FDA's requirements is having the ability to produce activity and access reports at their request. VisualSPC's reporting tools provide all of the resources you need to deliver precisely what is requested in a timely, efficient and complete manner using one of the included reports,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

## VisualSPC Designer



VisualSPC provides complete control over the information presentation.

## Audit Trail Prompt



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

## Additional VisualSPC Modules

In addition to the multiple configurations detailed previously, GE Fanuc also delivers multiple modules for enhancing the functionality of the application and creating a truly tailored solution. Other modules include:

### VisualSPC Attributes

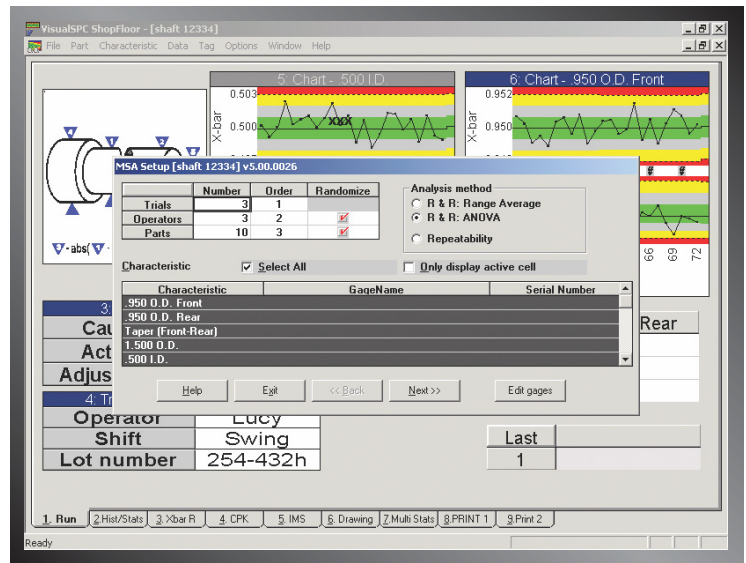
With this module, VisualSPC allows you to quickly and easily track multiple categories of defects, mixing variable and attribute data within the same visualization. You can define multiple levels of categories, assign different levels of importance to different types of defects (reflecting the importance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

### VisualSPC Measurement System Analysis

This VisualSPC option 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.

## Measurement Systems Analysis



Gage R&R studies are integrated with data collection.

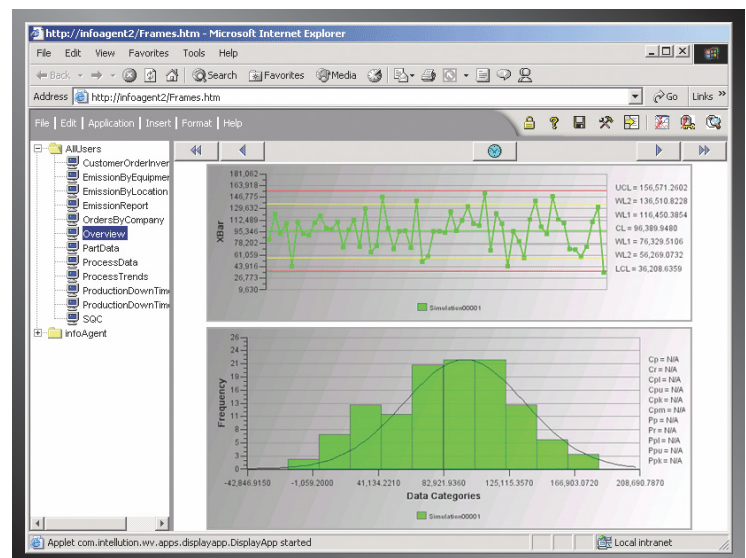
## infoAgent 2.0 – Quality Module

infoAgent is 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, infoAgent 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 infoAgent 2.0 Quality Module is an optional module within the infoAgent product that provides real-time, web-based quality analysis and reporting. Through a custom, data-aware connector to VisualSPC, infoAgent Quality provides the VisualSPC 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, infoAgent Quality can help identify problems before they occur. And you can seamlessly integrate your VisualSPC 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 infoAgent 2.0 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.

## infoAgent 2.0 Quality Module



VisualSPC users can achieve real-time web-based quality analysis and reporting with the infoAgent 2.0 Quality Module.

## **GagePort**

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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 VisualSPC. 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.

Using our FlashCable™ technology, the GagePort automatically identifies the gage type and configures the system so readings can be taken immediately... without the need to reconfigure every time a gage is changed. Add the GagePort Multiplexer and you can also interface as many as 32 gages on a single RS232 line. Leveraging the GagePort Multiplexer's unique protocol, it can separate and label individual characteristics, allowing simultaneous readings from multiple gages.

In addition to collecting raw data in real-time, the GagePort can automatically gather basic statistical "roll-up" information from any device – such as minimum, maximum and Total Indicator Runout (TIR). An operator can take single readings using either a foot switch or the "send data" button on the gage. A built-in address and sequential counter label the readings for easy identification.

The Zipper is a portable data collection device that lets you collect, display and analyze data in real time, on the spot. It is capable of withstanding a three-foot (one-meter) drop onto concrete and has an IP54 rating. GagePort technology integrated into the Zipper, enables both analog and digital gages to be connected to the Zipper for effortless, direct gage entry, thereby eliminating the errors of manual data input.

## **DuraTouch Industrial PCs**

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The DuraTouch industrial PC is designed to deliver all the functionality of your typical desktop personal computer in an industrial-hardened form factor. DuraTouch PCs are virtually impervious to airborne contaminants, harsh temperatures and other conditions that would cause ordinary computers to fail. DuraTouch PCs are also fully self-contained and mountable, delivering the ability to place your VisualSPC solution precisely where you need it most – as close as possible to the process you're measuring.

The DuraTouch PC is rugged and durable, meeting IP-65 (front) and IP-54 (overall) standards, and enabling it to withstand high temperatures, dust, oil, steam, vibration, shock and liquid spray. It is also resistant to static loading and overvoltages, as well delivering full splash protection on all plug-in connections. As a result, the DuraTouch can withstand virtually any hazard that comes its way.

## **The VisualSPC Product Suite – A powerful solution for shop floor quality data collection and analysis**

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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. VisualSPC 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. VisualSPC 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.

### **GagePort Protocol Converter**

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

Because DuraTouch can be mounted on any flat surface, it can literally go anywhere you need to have access to a PC. Further enhancing the versatility of this powerful computing resource, DuraTouch can accept direct input via the touch screen or the optional full QWERTY keyboard. You can connect to any Ethernet LAN via the built-in Ethernet connection. There are also four serial ports, two USB ports, a parallel port, an external VGA connector and optional internal floppy and CD-ROM drives. And, of course, the DuraTouch is fully compatible with the GagePort universal gage interface drive.

For more information on the VisualSPC Product Suite or any of GE Fanuc's IPM solutions, contact your local sales representative or visit us online at [www.gefanucautomation.com](http://www.gefanucautomation.com).

## VisualSPC Secure Edition System Requirements

The recommended system configuration to use VisualSPC Secure Edition is Microsoft Windows® 2000 Professional on a computer with a 333 MHz processor and 128 megabytes (MB) of RAM. Below are the minimum requirements your computer needs to run VisualSPC Secure Edition.

### Minimum Requirements

#### Computer/Processor

Computer with a 266-megahertz (MHz) or higher processor

#### Memory

RAM requirements depend on the operating system used:

- **Windows 95 OSR2** – 32 MB of RAM plus an additional 8 MB of RAM for each VisualSPC SE program (such as VisualSPC Importer) running simultaneously
- **Windows 98, or Windows 98 Second Edition** – 32 MB of RAM plus an additional 8 MB of RAM for each VisualSPC SE program (such as VisualSPC Importer) running simultaneously
- **Windows Me, or Microsoft Windows NT® 4.0** – 32 MB of RAM plus an additional 8 MB of RAM for each VisualSPC SE program (such as VisualSPC Importer) running simultaneously
- **Windows 2000 Professional** – 64 MB of RAM plus an additional 8 MB of RAM for each VisualSPC SE program (such as VisualSPC Importer) running simultaneously

#### 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:

- **VisualSPC SE ShopFloor** – 100 MB of available hard disk space
- **VisualSPC SE Administration Bundle** – 200 MB of available hard disk space
- **VisualSPC SE Database Server** – 2 GB of available hard disk space

#### Operating System

**Client Support\*** – Windows 95 OSR2, Windows 98, Windows 98 Second Edition, Windows Millennium Edition (Windows Me), Windows NT 4.0 with Service Pack 5 (SP5) or later or Windows 2000.

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

**Network Support** – Windows Peer to Peer, Windows NT Server or Windows 2000 Server.

#### Drive

CD-ROM drive (optional)

#### Display

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

#### Serial Port

Minimum of 1 available RS-232 Port

#### Peripherals

Mouse, or compatible pointing device

#### VisualSPC Database Server

Microsoft SQL Server 7.0 or 2000

Visit [www.microsoft.com/sql](http://www.microsoft.com/sql) for server system requirements.

## VisualSPC

- **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**

## The GE Fanuc Family of Software Solutions Includes:

### Asset Management

**Enterprise Asset Management  
Remote Monitoring & Diagnostics**

### Process Execution & Supervisory Control

**Bundled O/I  
CIMPLICITY. HMI  
DataViews.  
FIX.  
I/O Drivers  
Batch.  
ClientTS.  
FIX.  
WorkInstruction.  
Manager  
OpenProcess.**

### Plant Intelligence

**Advantage  
Digital Cockpit  
DownTime.  
Historian.  
InfoAgent.  
Proficiency for Manufacturing.  
Tracker  
VisualSPC.**

### Control Hardware

**CNC & Machine Tools  
Communications  
& Networking  
Embedded Computers  
Industrial Computers  
Motion Control  
PLC, Controllers & I/O**

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