



Make faster, better business decisions by collecting and sharing critical production data across your enterprise.

iFIX Overview

As the level of competition increases in your market, so does the need to continually reduce operating costs and improve production processes wherever possible. Success depends greatly on your ability to access, understand and utilize the volumes of crucial automation information being generated throughout your operation every day.

Many of the largest and most successful manufacturers around the world rely on GE Fanuc's iFIX for the

comprehensive monitoring, control and distribution of their plant-wide data. With industry applications including pharmaceuticals, biotech, consumer packaged goods, food and beverage, oil and gas, utilities and more, iFIX is the complete HMI or SCADA solution for any manufacturing environment.

With the power of leading technologies and patented techniques, iFIX is the ultimate tool for making faster, more effective business and production decisions that can give your company a significant competitive advantage.

Intellution

imagination at work



iFIX: Technical Benefits

Powerful Distributed, Client/Server Architecture

- **iFIX servers** collect, process and distribute real-time data
- **Choice of clients**, including iClient™ and iClientTS™, for Terminal Server and iWebServer™
- **Real-time** client/server architecture allows unparalleled scalability

Faster System Development and Deployment

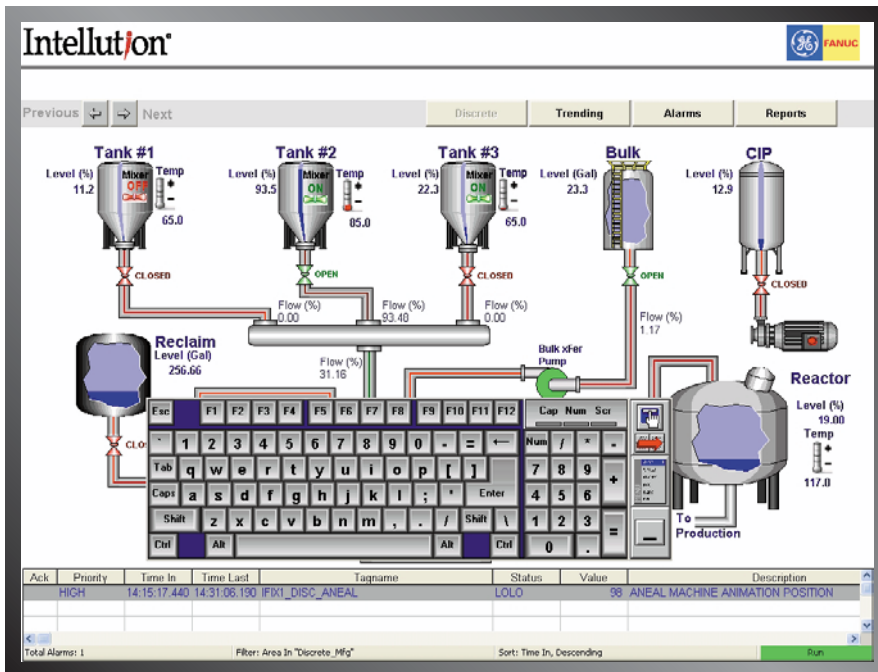
- **Build** your system intuitively in the Intellution WorkSpace – an easy-to-use, integrated development environment
- **Develop and deploy** applications quickly using powerful Wizards
- **Integrate** third-party functionality with GE Fanuc's unique Plug and Solve® technology
- **Develop and improve** your application online, without shutting down operations or rebooting
- **Key Macro Editor** provides powerful and diverse capabilities at the touch of a button
- **Animation Experts** drive internal and third party ActiveX controls without VBA programming
- **Tag Group Editor** saves development time
- **Event Scheduler** automates tasks running in the foreground or background

Application Integration

- **Leverage** the best container for third party applications available, enabling solutions tailored to your exact needs
- **Drop in ActiveX** controls bring them to life without programming
- **Ensure the reliability** of your application with our patent-pending Secure Containment™ technology
- **Combine** your plant floor systems with MES and ERP systems
- **Design a secure system** around iFIX security, electronic signature and record functionality

Extensive Functionality

- **Windows NT/2000/XP based**
- **SQL/ODBC API** for easy integration to relational databases
- **Process visualization** (HMI)
- **Supervisory control** (SCADA)
- **Individual user-based and node-based security**; configured and synchronized with Windows NT/2000/XP
- **Real-time historical trending**
- **Data collection** and data management
- **Integrated** report generation
- **Alarming** and alarm management
- **Distributed**, high performance networking
- **Graphical** development Wizards
- **Online** configuration
- **ActiveX** controls for database connectivity
- **ODBC** support
- **Time** and event scheduling
- **Historical** collection and display
- **Visual Basic** for Applications (VBA)
- **OLE** for Process Control (OPC) client and server support
- **Object-oriented** graphics
- **The Intellution WorkSpace** development environment
- **Support** for Microsoft SQL 2000 server database
- **Plug and Solve** extensible architecture



iFIX is the leading choice of manufacturing engineers, operators and system integrators because it delivers the best of both worlds: unmatched ease of use and unlimited flexibility.

iFIX: Business Benefits

Rapid ROI

iFIX delivers a rapid return on your investment because it enables you to:

- **Develop and deploy** powerful automation solutions faster and easier
- **Reduce your up-front engineering costs**
- **Achieve** faster time-to-market with new products
- **Increase productivity** and product quality
- **Protect** your investments in legacy hardware and software systems
- **Reduce your system maintenance** and expansion costs
- **Learn** the system faster by leveraging standard technologies

A Safe Investment for the Future

iFIX is an intelligent investment that is equally compatible with a wide range of established and emerging technologies. Because it is designed on open, industry-standard Microsoft technologies including COM/DCOM, ActiveX, VBA, Windows NT/2000/XP and OPC, iFIX is the most versatile solution that can protect your hardware and software investments, both now and in the future.

E-Signature/E-Record Capability

iFIX is now equipped with Electronic Signature and Electronic Record functionality. This offers a variety of tremendous benefits for the end-user:

- **Increased data integrity**
- **Greater operator accountability**
- **Higher efficiency**
- **Ideal functionality** to help meet FDA 21 CFR Part 11 requirements
- **Creates the foundation** of a paperless records system

Part of an Integrated Enterprise

With iFIX, you have the power to:

- **Integrate real-time data** from the plant floor with your business systems
- **Exchange real-time information** with users and applications throughout the enterprise
- **Seamlessly integrate** best-in-class software applications with the highest reliability
- **Make faster, more effective, more intelligent decisions**

Intelligent Production Management (IPM): Plant Intelligence and More

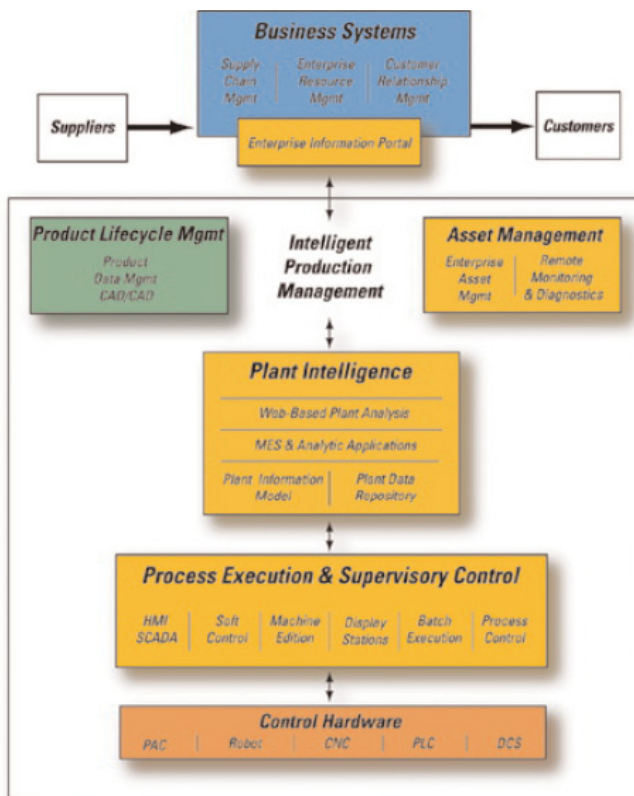
GE Fanuc Automation has combined two of the industry's most powerful and versatile product families to create an even more robust set of solutions. We have effectively bridged the gap between all key areas of the production management lifecycle to offer unparalleled levels of connectivity, analysis and control over your operation.

We call this digitized lifecycle Intelligent Production Management, and it defines what each of our solutions can bring to your production process.

Intelligent Production Management – support for every level of your operation:

- **Control Hardware** – Providing the physical assets that run your operation (CNC, PLC, PAC, DCS, etc.)
- **Process Execution & Supervisory Control** – Connecting control hardware and managing the process (HMI/SCADA, soft control, batch, process control)
- **Plant Intelligence** – Providing an intelligent window into your product production (Web-based plant analysis, MES, SPC, historian)
- **Asset Management** – Proactively maintaining the operation (remote monitoring & diagnostics, EAM)
- **Services** – Supporting your technology investment and helping you get the most from our domain expertise.

Intelligent Production Management



Intelligent Production Management integrates all key areas of the production management lifecycle, giving you greater connectivity, analysis and control over your operation.

iFIX: Comprehensive Monitoring and Control

GE Fanuc's iFIX is a robust HMI/SCADA solution, providing process visualization, data acquisition and supervisory control of your plant floor operations. iFIX gives you the power and security to precisely monitor and control every aspect of your manufacturing process, as well as your equipment and resources, resulting in faster response to production issues, less waste, improved quality, faster time-to-market with new products, and increased profitability.

Part of our Process Execution and Supervisory Control Solutions

iFIX is a key component of GE Fanuc's Process Execution and Supervisory Control products – a full suite of solutions that provide accurate, open and secure data acquisition and control of plant floor processes.

iFIX is an extremely well-suited application for process environments, with functionality to excel in water/wastewater, oil and gas, and regulated industries, particularly those under the FDA's 21 CFR Part 11 rule.

iFIX Features

Ease and Flexibility

With its extensive library of intuitive graphical tools, iFIX enables users to be "up and running" quickly and easily, building a powerful window into their manufacturing operations.

Whether you're implementing a single, stand-alone Human Machine Interface (HMI), or a highly complex, multi-node, multi-site Supervisory Control and Data Acquisition (SCADA) system, iFIX offers the functionality you need to quickly develop an application of any type and size. And because it's designed with an extremely flexible architecture, iFIX gives you the power to meet your current application needs, while easily expanding your system as your business requirements grow.

A Highly Extensible Architecture

Distributed Network Architecture

iFIX's fully distributed, client/server architecture provides maximum flexibility when designing a system. Deployment possibilities range from a single computer running iFIX in a stand-alone HMI application to a large, networked system with many distributed servers and clients.

HMI/SCADA Servers

The iFIX server connects to physical I/O points and maintains the Process Database. A variety of tag types are available, including analog and digital inputs and outputs, calculations, alarms, totalizers, timers, continuous and statistical control functions, SQL commands, and more. iFIX applications include real-time graphics, trending, reporting, batch, MES, and many others.

iClient

iClient is the standard GE Fanuc client. It serves as a traditional PC-based client in that it is installed on the hard disk and accesses data from a local or remote computer. All applications can be run on iClient, including real-time graphics, trending, alarming and reporting. Plus, users can perform development online from each client, including building graphics and adding tags to local or distributed servers.

iClientTS

iClientTS is a thin-client and web solution that makes use of Microsoft Terminal Server technology and provides the full capabilities of a standard iClient. From any iClientTS station, users have complete access to all networked iFIX SCADA Servers – making full use of iClient technology, ActiveX controls and VBA and third party content.

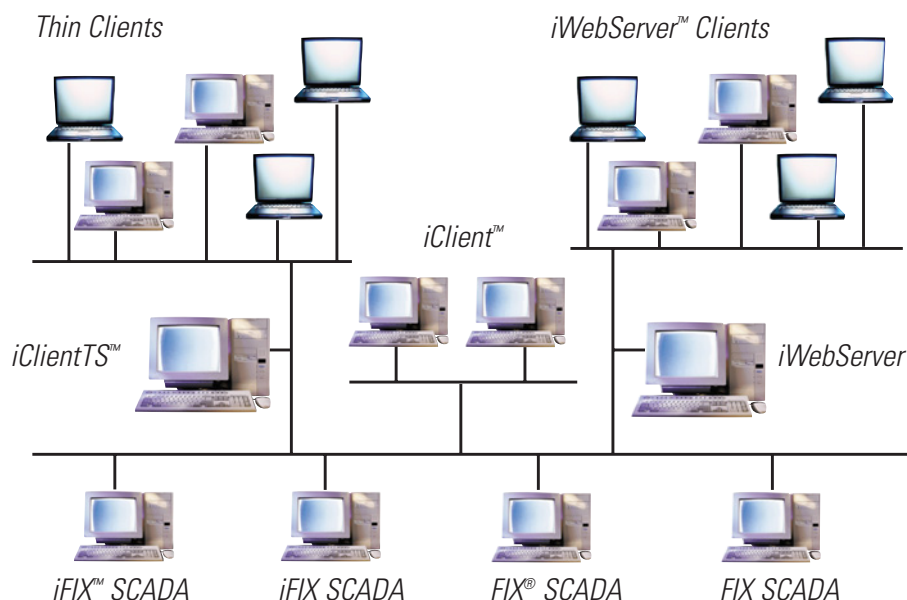
iWebServer

iWebServer is another iFIX thin client solution for distributing information to many users. With iWebServer, iFIX graphics are converted into HTML pages and published to a web server. Then, from a web browser, pages are animated with real-time data from SCADA Servers.

iFIX Architecture Advantage

The iFIX distributed, client/server architecture incorporates any combination of distributed servers (SCADA Servers) and distributed clients (iClient, iClientTS, and/or iWebServer). To users, iFIX appears as a single, high-performance integrated system.

iFIX System Architecture



iFIX allows tremendous network configuration flexibility, using a combination of SCADA Servers, or even existing FIX nodes and clients.

Building Your HMI/SCADA Application

System Tree

The main navigational tool for locating files in iFIX is the System Tree. This hierarchical view of an application enables users to easily manipulate iFIX documents and objects, and quickly launch iFIX and third-party applications. And because of its completely customizable design, applications, folders and files can be easily added or removed.

Development Toolbox

The iFIX Development Toolbox contains a complete set of state-of-the-art, customizable drawing tools, Experts and animation objects. You can position the most commonly used tools and buttons anywhere on your picture and resize them as desired, for fast and easy screen development.

Drawing Tools and Objects

For additional flexibility and customization in your screen development, the Toolbox also features an extensive array of drawing tools. From a full range of geometric shapes to features such as buttons, datalinks, charts, alarm summaries and more, the drawing tools let you quickly and easily create graphics, animation and control that precisely suit your needs.

Wizards and Experts

Built-in Wizards and Experts perform both simple and complex tasks, eliminating the need for programming. An extensive set of Toolbox Experts automatically generates powerful VBA (Visual Basic for Applications) scripts so developers can build applications quickly and efficiently.

Objects/Graphic Dynamos

Graphic Dynamos are reusable, animated objects or groups of objects that enable you to create graphics quickly and easily. Graphic Dynamo sets provide a number of pre-defined objects such as tanks and pumps, which can be dropped into the WorkSpace to save development time.

Grouping Objects

Grouping objects is a convenient way to organize and reuse them to accelerate picture development. Users can easily duplicate and manipulate groups of objects to expedite iFIX application building.

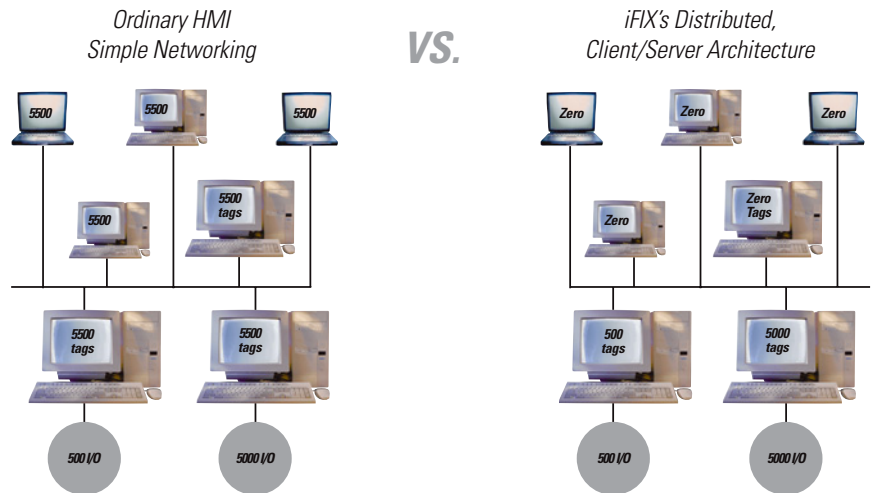
Object Drill Down

In an iFIX picture, users can modify the properties of objects within a group without separating them, and without losing scripts or animations applied to the group – all without programming.

Drag and Drop

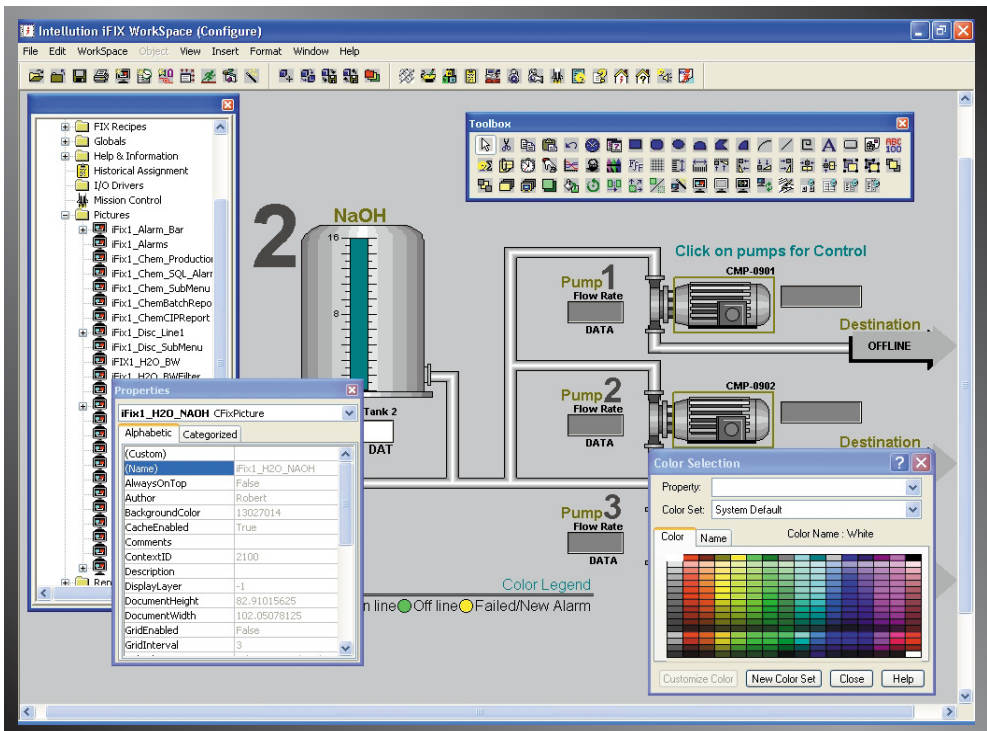
With simple drag and drop ease, graphics can be moved and copied into the WorkSpace, between programs, or among two or more programs.

System Architecture Comparison



Unlike ordinary HMI/SCADA software packages designed with simple networking, iFIX's distributed, client/server architecture allows you to expand your system by simply adding the new server to the network. Adding or changing database tags is easy: you simply make the change at its source, and the data is updated across the system. All data from every node is available to all users across the network. Adding servers and clients to the network is straightforward and predictable, requiring no changes to other nodes in the system.

Intellution WorkSpace



The Intellution WorkSpace is a powerful container that provides an easy-to-use development environment. It features a Windows Explorer-style System Tree for easy project navigation and management, as well as a toolbox that contains all drawing tools, wizards and experts.

ActiveX Support

The Intellution WorkSpace is a powerful, secure container for all ActiveX controls, which can be dropped into the WorkSpace for easy integration. In addition, ActiveX documents such as Word and Excel files can be dropped into the WorkSpace with automatic display of their own menus and toolbars.

VisiconX

VisiconX is a unique and powerful set of ActiveX controls for accessing and displaying data from relational databases. With simple point-and-click ease and zero programming, users have immediate access to SQL Server, Oracle, Sybase, Informix or DB2. VisiconX controls embed easily into the WorkSpace, significantly reducing development time.

Object-to-Object Connections

Since VBA technology is embedded into the iFIX architecture, applications can be developed without the need for custom code. For example, you can drop a meter ActiveX control into the WorkSpace, connect it to a tag with zero programming, and it is instantly animated.

Tag Groups

Tag groups save valuable development time by re-using portions of an application. For example, when opening or replacing a picture, the tag group file is read, and the symbols in the picture are reconnected with the corresponding substitutions defined in the tag group file.

Event Scheduler

The Event Scheduler acts as a transaction processor, allowing a user to perform tasks at specified times or intervals or after an event. Users can generate a report at the end of a shift or replace a display when a database point exceeds a specified value. For convenience and efficiency, events can be run in the foreground or background.

Key Macros

Key Macros are user-defined key combinations that execute commands during run mode. Key Macros can be associated with iFIX pictures, or with shapes in an iFIX picture, or can be system wide. As an added benefit, the Key Macro Editor offers an expert to create and manipulate VBA scripts.

Online Configuration

Patented technology enables iFIX to be customized online to maximize efficiency. Processes do not need to be stopped to make changes to the database, pictures, or other parts of the HMI application. And changes can be initiated without having to shut down and restart your system.

Historical Data

iFIX provides an automatic, comprehensive and long-term means of sampling, storing, and displaying process data. Historical trending enables users to analyze process trends and post-process data, as well as to archive process variables to meet government regulations.

The trending capability also allows for monitoring changes in product properties and analyzing equipment performance to save time and money.

Chart Object

The iFIX Chart Object lets you configure any number of historical and real-time pens in the same chart, and supports multiple time-range assignments for each pen. The Chart Object also includes complete iFIX object color and style properties for each pen, multiple X and Y axis configuration, and configuration and property adjustment in the Runtime environment.

Reporting

The iCore® architecture and Plug and Solve capabilities of iFIX provide multiple reporting options. For example, data can be exported using SQL and ODBC connections into relational databases for extensive reporting. Crystal Reports runtime DLLs are included.

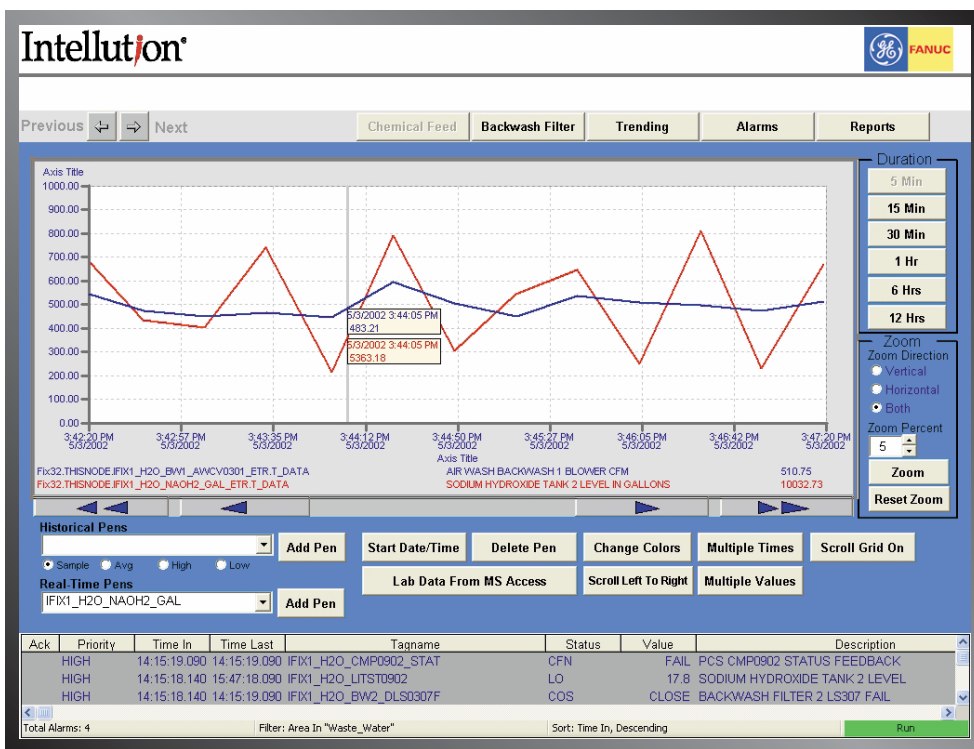
Advanced Alarming

iFIX alarming enables users to create systems that report potential problems before they occur. Distributed alarm management provides unlimited user-named alarm areas, exception-based alarming, alarm priorities and filtering, alarm counters, and remote management of alarms through dial in/out management service. iFIX can also send non-critical operator messages that do not require a response.

Picture Caching

Picture caching can be enabled to maximize application performance. Cache size is completely configurable, and pictures can be preloaded upon startup. Flexibility is provided to enable/disable caching on a picture-by-picture basis. Picture performance is also maximized through patent pending refresh technology that is only available in iFIX.

iFIX Real-Time Display



The iFIX chart object allows the ability to display real-time process data, historical and archived data, and lab data from a file or database. Users can customize properties, from colors to scroll directions, in either configure or run-time environments.

Power and Connectivity

Since iFIX is an open, scalable system built on industry-standard technology, it is more easily developed, integrated, and expanded than systems designed on proprietary technology.

Global Technology

iFIX's global technology allows changes to be made in one node and propagated throughout an application, significantly reducing development time. Globals can be used with color threshold tables, variables, custom VBA subroutines, and more.

Plug and Solve Technology

GE Fanuc's Plug and Solve technology, a unique implementation of Microsoft's COM strategy, provides easy connectivity with third-party, COM-based applications. This allows applications to be enhanced through best-in-class third-party applications.

iCore Framework

iFIX is built on iCore, a framework that combines innovative GE Fanuc technologies with industry-standard Microsoft DNA-enabled technologies, including embedded VBA, OPC, ODBC/SQL, Backup and Restore, and Secure Containment.

OPC (OLE for Process Control)

iFIX can act as an OPC Server to any standard OPC Client. Conversely, iFIX can act as an OPC Client to any standard OPC Server. OPC in the iFIX WorkSpace allows graphic animation directly from any OPC Server.

ODBC/SQL

iFIX fully leverages the ODBC Application Programming Interface (API), adding the capability to collect and write real-time secure electronic records to one or more relational databases. Data can easily be moved between a relational database and the iFIX process database. Additionally, iFIX provides a unified automatic install for Microsoft's SQL Server 2000 to reduce application development time.

Backup and Restore

The backup and restore Wizard feature in iFIX allows users to pack up and go, helping them to manage their files. Once files have been selected for backup, the Wizard saves them to a compressed archive file in a defaulted or user-specified directory for use on any iFIX-ready machine.

Secure Containment

Our patent pending Secure Containment technology ensures that any improperly functioning third party application will be isolated, allowing systems to continue running without interruption. This helps prevent data loss and costly plant floor shutdowns, and avoids interruptions to your process control.

Building Custom Objects with VBA

iFIX custom objects enable display tailoring through VBA. When an object initiates an edit event, it can be customized using VBA scripts. Specifically, custom property pages can be modified, animations applied in real time, or animation code hidden into an empty user form. In addition, user forms can be placed into a global page so that every time the object is opened, the format for a particular property page is shared among several users.

Security

iFIX synchronizes its security with standard Windows security. iFIX security completely controls access to iFIX programs, operator displays, schedules, and recipes. Access to critical program functions can also be restricted (for example, reloading the process database, or write access to the process database).

Redundancy

iFIX addresses seamless system uptime through a variety of system features. Using a combination of backup SCADA servers, LAN and driver redundancy, and alarm management, iFIX enables the development of extremely high reliability applications.

iFIX: A Robust HMI/SCADA Solution

The ability to monitor and control plant-wide processes from a single location, while at the same time collecting and sharing real-time business information throughout the enterprise, has become a significant competitive advantage in today's manufacturing and production environment. In searching for a way to maximize quality, increase productivity and reduce operating costs, the manufacturing world has turned to the heart of its operation – the plant floor. Companies around the globe who have done so successfully have turned to iFIX from GE Fanuc.

Whether it's used as a stand-alone HMI/SCADA application or leveraged with GE Fanuc's iHistorian™ Plant Intelligence solution, iFIX can help you turn data into information, and information into dramatically improved performance.

Capture Electronic Signatures

Electronic Signature

Tag: FIX32.SAMPLE.IFIX1_PHARM_HSM1_TEM
HSM1 Temperature Setpoint

Action: Change value
From: 29
To: 24

Performed By

User Name: twilliams

Password: XXXXXXXXXXXX

Predefined Comments:
Secondary temperature set.

Comment:
Secondary temperature set.

OK Cancel Help

Signing dialog boxes provide a description of the action the operator is taking. The signer has the option to enter a comment from a pre-defined list or enter their own comments. Actions can also be configured to capture a verification signature. Signing dialogs can be tied to secure electronic records that will report who, what, when and why those actions were taken.

iFIX System Requirements

IBM Pentium II 266MHz personal or industrial computer that runs Windows NT/2000/XP (Recommended Pentium 4, 1GHz)

RAM Memory size: 96 MB RAM

120 MB hard disk

CD-ROM drive

SVGA or higher color monitor with 24-bit graphics card

Pointing device

Parallel or USB port

Network adapter(s): NETBIOS-compatible or TCP/IP-compatible network interface adapter.

No network adapter is required for stand-alone applications.

iFIX Capabilities

- Monitor and control plant processes, equipment and resources
- Collect and share real-time and historical data with users on all levels of your business
- Respond faster to process conditions and market demands
- Maximize plant effectiveness, increase productivity, reduce cost and waste
- Benefit from a fully secure automation system that delivers 100% data integrity
- “Designed for 21 CFR Part 11” functionality for recording operator actions and building secure electronic records as defined by the FDA’S 21 CFR Part 11 Regulation

The GE Fanuc Family of Software Solutions Includes:

Asset Management

EAM

Remote Monitoring & Diagnostics

Process Execution & Supervisory Control

CIMPLICITY. HMI

DataViews.

FIX.

I/O Drivers

iBatch.

iClientTS.

iFIX.

Intelligence Solutions

iWorkInstruction.

Manager

OpenProcess.

Plant Intelligence

iHistorian.

iInfoAgent.

Proficiency for Manufacturing.

Tracker

VisualSPC.

Control Hardware

CNC & Machine Tools

Communications & Networking

Embedded Computers

Industrial Computers

Motion Control

PLC, Controllers & I/O

GE Fanuc Automation Information Centers

***USA and the Americas: 1-800-GE FANUC
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Europe, Middle East and Africa: (352) 727979-1

Asia Pacific: 86-21-322-4555

Additional Resources

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

www.gefanuc.com

