Efficiency

Quality

Production

Batch Analysis

Proficy™ Plant Applications

Plant Performance Analysis and Execution Software

As a production manager, the key to unlocking the full performance potential of your manufacturing operations lies in your ability to gain a real-time understanding of what is actually happening on your plant floor. You must then be able to share that information with other important decision makers and take action that improves both your production performance and your bottom line. Proficy Plant Applications from GE Fanuc Automation gives you that power.

Proficy Plant Applications 4.1 is a unique software solution that digitizes the collective information being generated throughout your production facilities into a "virtual plant" that can be accessed where, when and how you need it. It then allows you to measure and monitor your performance across key criteria in real-time. In this way, Proficy Plant Applications allow you to gain clear insight into your production and greatly improve your operational effectiveness.

With a core set of scalable modules focused on the most critical aspects of your production – including Efficiency, Quality, Production and Batch Analysis – Plant Applications allows you to leverage the specific applications you need to deliver the greatest return on investment in these areas. And with integrated web-based reports, key performance indicators (KPIs) and notification services available with all Proficy modules, it is the complete solution for making real-time decisions throughout your plant. Best of all, as a fully-integrated component of GE Fanuc's Intelligent Production Solution, Proficy Plant Applications enable you to make business sense out of plant data in real-time, far exceeding the capabilities of any traditional MES application.

imagination at work

Proficy Plant Applications Features & Benefits

To improve overall profitability and effectiveness, Proficy Plant Applications 4.1 can help you focus on several critical, inter-related areas of your production, enabling you to:

- *Better utilize plant assets* (such as people, equipment and materials) through a comprehensive view of overall equipment efficiency (OEE)

- *Increase product quality* to lower waste, scrap and product recall costs

- *Improve production operations* by gaining insight into how products actually flow through the plant

- *Fully comply with regulations* such as the FDA's 21 CFR Part 11 rule and other strict requirements.

Proficy Plant Applications have been developed to allow you to make dramatic improvements in all of these key areas. It is available as a series of modules that can be implemented separately or as part of a fully integrated solution, providing manufacturers of all sizes with the right solution to meet their needs. And with Plant-wide Web Reporting available in all modules, you can analyze and distribute this information across the plant and across the world.

Efficiency

The Efficiency module allows you to better utilize plant assets by providing a comprehensive view of overall equipment efficiency. With drill-down capabilities to identify and monitor areas for improvement, Efficiency is the ideal solution for managers trying to increase production throughput without adding equipment, people and material costs.

Identify and improve areas that are causing operational inefficiencies
- Minimize scheduled and unscheduled downtime events
- Reduce waste and rework
- Improve machine run-time effectiveness

Perform root cause analyses to make data-driven decisions
- Gain insight into production operations by shift, equipment and products
- Evaluate operations over any period of time – from real-time to annual summaries
- Link capital expenditures to expected plant profitability improvements

Manage production operations in real time through comprehensive reporting
- Track uptime, downtime and overall plant and machine efficiencies through web-based KPIs
- Schedule reports for all decision-makers – from operators to plant managers
- Get notified on exceptions to desired operations to make real-time changes

Quality

The Quality module helps you increase product quality by lowering waste, scrap and product recall costs. Consistent product quality improves all aspects of production operations and customer satisfaction, dramatically improving plant performance and profitability. It is an ideal solution for manufacturers launching Six Sigma and other process improvement initiatives.

Improve the quality and consistency of products and processes
- Define the product specifications and recipes that are required for quality production
- Capture reasons for out-of-spec conditions
- Integrate process and laboratory data
- Trend and analyze quality data across shifts, work cells and products to identify root cause in problem areas

Lower costs of production by reducing waste and rejects
- Reduce rejects and downgrades
- Reduce customer complaints and returns
- Speed compliance with ISO, 21 CFR Part 11 and other requirements

Maintain consistent, high quality production through real-time monitoring and visibility
- Create ad-hoc quality reports to research quality issues based on performance improvement and Six Sigma methodologies
- Calculate quality KPIs and publish them to the web
- Notify and alert personnel to out-of-spec conditions

Production

Production module improves production operations by providing insight into how products actually flow through the plant, developing product genealogy reports and making scheduling changes to reduce excess inventory.

Improve operational efficiency by gaining knowledge and control over real-time production operations
- Reduce inventory costs
- Control the flow of product between equipment
- Manage and report on in-process inventories
- Integrate quality and production tracking to improve the accuracy of schedule execution

Generate more revenue by meeting customer demands and government regulations through product genealogy reports
- Track products and materials through their entire production lifecycle
- Quickly develop Certificate of Analysis (COA) reports
- Limit the scope of recalls and quarantines
- Provide faster response to customer issues

Batch Analysis

Batch Analysis allows you to increase the overall quality and consistency of products and enables manufactures to better understand and control variation in batch related production environments. With powerful analytical tools and a generic interface to several commercially available batch execution systems – our solution is ideal for manufactures that are looking to extend typical batch execution systems with powerful off-the-shelf reporting and analysis capabilities.

Increase quality and consistency of batch operations and reduce variability in batch processes:
- Compare cycle times, parameters and variables across batches
- Report and summarize batch data in support of improvement initiatives
- Trend related parameters across batches to understand and control process variation

Lower costs by leveraging existing systems and infrastructure to drive improvements
- Leverage both new and existing batch systems through standard interfaces
- Combine quality, production tracking and other core manufacturing functions with batch operations providing a complete picture of plant operations

Plant-wide Web Reporting

Plant-wide Web Reporting allows you to make real-time decisions by providing an up-to-the-minute status on production operations, and enables you to perform a root cause analysis on problem areas. And with the suite of pre-built and customizable report options, you can save time and resources by harnessing the power of each Proficy module.

Make real-time decisions with web-based reports
- Generate and deliver reports to users where and when they need them
- Combine text and charts to meet virtually any reporting requirement
- Create access to user-developed, site-specific reports
- Get notified on any deviations from specified production events

Quickly perform root cause analyses on problem areas to maximize plant profitability and efficiency
- Identify problem areas through Key Performance Indicators (KPIs)
- Drill down into production data to analyze performance and understand problem areas
- Change operations and specifications to minimize future problems

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.

Quality, Production, Efficiency and Batch Analysis – Plant Applications help improve manufacturing in real-time.

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

Plant Applications – The Virtual Plant

Proficy Plant Applications 4.1 are core components within the GE Fanuc Intelligent Production Solutions that enable production managers to make dramatic improvements in plant profitability and efficiency. Proficy provides a versatile and powerful solution that is entirely scalable, allowing you to cost-effectively meet your specific production requirements.

Proficy Plant Applications feature a unique approach to digitizing production operations, creating a "virtual plant" that provides unprecedented levels of analysis, reporting and insight throughout your operations. Unlike traditional MES applications, Proficy Plant Applications apply business and historical context to all of your real-time manufacturing information, providing an intelligent window into your manufacturing processes to help you maximize efficiency.

By digitizing your production processes, Proficy Plant Applications allow you to gain a clear and very detailed perspective of how your products are being produced. It leverages the data being collected by any process historian and provides in-depth analysis and reporting of that information – not just by time, but by the specific events taking place throughout your operation. In this way, Proficy Plant Applications provide real-time context to your production data, allowing you to make adjustments that increase overall efficiency, mitigate risk, improve product quality and meet important regulatory requirements – all while reducing costs and minimizing waste.

The foundation of the Proficy Plant Applications is a flexible, easily configurable "plant model" and notification service that allows you to define how your products are being manufactured based on your actual plant layout, along with product specifications and the routing instructions which take place from the time a product is ordered. Proficy Plant Applications automatically generate intelligent KPIs which allow you to monitor production performance, as well as alarms to indicate when exceptions to those standards occur.

With its unique "virtual plant" approach to MES functionality, no other software package can match GE Fanuc's Intelligent Production Solutions and the Proficy Plant Applications.

Why Plant Applications?

With a full breadth of application-specific modules designed to support every stage of your production process, Proficy Plant Applications 4.1 provides crucial analysis and reporting capabilities which can allow you to:
- Remain aware of key processes taking place throughout your plant
- Track a product from order to delivery
- Monitor consumption of key resources, such as raw materials, equipment, energy and more
- Know and understand the precise scope of a recall situation as soon as it happens
- Meet crucial regulatory requirements, such as the FDA's 21 CFR Part 11 rule
- Keep track of downtime events and the reasons they occurred
- Compare product profitability and other KPIs

Proficy Plant Applications are a natural extension to the HMI/SCADA software that has helped manufacturers around the world save millions of dollars in operational costs. Proficy Plant Applications provide a comprehensive view of the entire production operation, giving insight into key areas such as:
- Tracking how products flow through the plant, providing product genealogy information and driving scheduling improvements that can reduce inventory
- Monitoring OEE and identifying reasons for downtime and waste, helping improve purchase decisions and increasing throughput
- Analyzing product quality to determine root causes of inconsistencies so that corrective action can be taken

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What's Unique?

Proficy Plant Applications 4.1 combines the best plant performance analysis and execution solutions in the marketplace, and highly differentiated in a number of critical dimensions. Overall, it focuses on enabling greater levels of analysis, reporting and flexibility than any product of its kind.

Part of a Complete Intelligent Production Solution
Proficy Plant Applications are a key aspect of GE Fanuc's Intelligent Production Solutions, the most comprehensive and versatile offering available. The product fits seamlessly into an integrated set of applications that includes Historian, our plant-wide data module, Real-Time Information Portal, our web-based visualization and analysis module, Shop Floor SPC, our shop floor quality module and other powerful software. This open family of applications gives you the option of installing only the modules you need or seamlessly expanding your infrastructure to incorporate a fully integrated solution.

Unique Historian Based Approach
Proficy Plant Applications are uniquely designed to leverage the powerful technology of historian applications, allowing you to capture far more production data than traditional MES tools. Because it is coupled with a high performance historian, Proficy Plant Applications are able to leverage the detailed collection of your plant-wide data, providing an intelligent window into your entire production technology infrastructure. Proficy Plant Applications' unique use of historian technology also allows you to analyze past production data across the application, allowing you to calculate quality, efficiency and production management information – even for production runs that are several years old.

Open Product Architecture
As with all applications within GE Fanuc Intelligent Production Solutions, Proficy Plant Applications are designed with a completely open architecture. Just as it works seamlessly alongside our best-in-class Historian module,

Proficy Plant Applications connect with Wonderware, Rockwell, OSI PI, Honeywell and many other historian systems. This flexibility allows you to experience the power of Proficy Plant Applications while gaining synergies with leading GE Fanuc solutions, or while continuing to leverage any existing historian investments, PLCs or control systems you may have in place.

Flexible and Easily Configurable
MES applications are commonly known as notoriously challenging to install and applicable only within the specific market segment for which they are configured. Proficy Plant Applications, on the other hand, require minimal services to install and include a broad scope of functionality that can be customized for virtually any industry application.

Modular and Scalable
With a modular and scalable design, Proficy Plant Applications can be implemented incrementally to address only the specific functionality you require at the time. Then, as your needs change, you can easily and cost effectively add new modules to further expand the overall performance of your application. This component client approach allows you to incorporate the aspects of the Proficy Plant Applications solution which make the most sense for your requirements.

Secure and Audited
Proficy Plant Applications provide a secure audited environment, featuring electronic signatures and other capabilities to ensure that users have the functionality required to meet 21 CFR Part 11 as well as other crucial regulations.

Comprehensive Integrated Reports and Analytics
Standard reports and analytical capabilities are built into Proficy Plant Applications, greatly simplifying the reporting process. Flexible extensions to Excel allow you to quickly and easily generate ad-hoc reports without needing a third party reporting package.

Plant Application Modules: The Right Solutions for Your Most Critical Production Challenges

Proficy Plant Applications 4.1 offers configurable software packages designed for a rapid return on existing technology investments. These applications include:
- *Efficiency* – Tracking and monitoring of OEE (downtime, waste, production counts)
- *Quality* – Product and process quality analysis and control
- *Production* – Production schedule execution and product geneology tracking and reporting
- *Batch Analysis* – Batch trending, analysis and reporting
- *Plant-wide Web Reporting* – Integrated scheduled and ad-hoc web reporting across all modules

As a result, Proficy Plant Applications allow for an incremental approach to purchasing, installing and implementing the right functionality at the right time for your business. Each module features specific capabilities designed to provide you with a scalable solution that precisely meets your needs.

And with integrated web-based reports available with all modules, Proficy Plant Applications offer advanced KPI reporting that can help you make real-time decisions throughout your plant.

Efficiency

The Efficiency module enables you to monitor and control OEE, providing a comprehensive look at factors such as equipment downtime and waste production, as well as production quantity and event sequences. It is the ideal module for improving throughput without adding extra equipment.

Efficiency has four key areas of focus: downtime tracking, waste tracking, production counting and user-defined event tracking. Together, this comprehensive set of capabilities helps significantly improve operating efficiencies while greatly reducing costs.

Efficiency makes it possible to associate each downtime event with a specific cause on a real-time basis. It provides a window into why that downtime is occurring and allows you to calculate and improve your OEE. In addition, the module calculates important KPIs and allows you to create ad-hoc reports on your performance that can be shared throughout the organization via the web. The result is a substantial gain in efficiency and productivity throughout your operations.
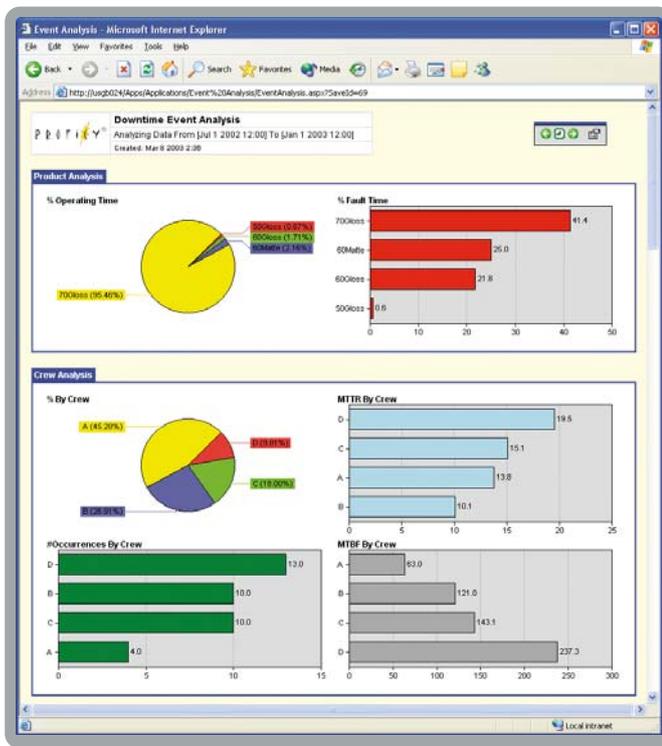
Event Analysis
Understand what impacts production by analyzing detailed data surrounding production events such as downtime and product changeovers.
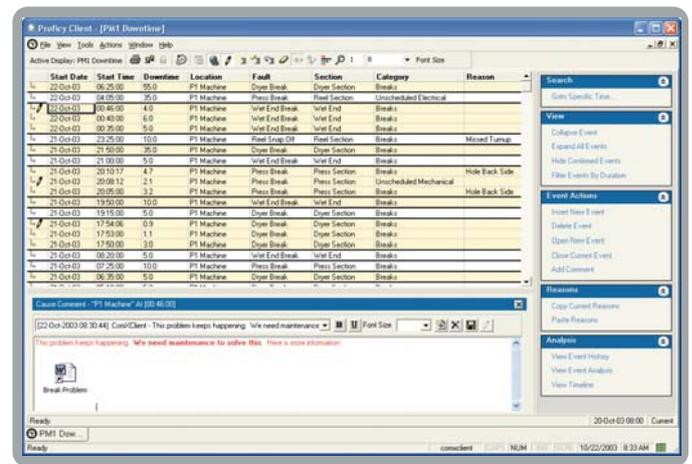
Downtime
Track and understand what contributes to downtime and overall efficiency.

Quality

Imagine if you were able to capture the specifications of your ideal product run – your "golden batch" – and re-create it consistently throughout your entire production. Imagine how much time, money and raw materials you could save by reducing product waste, scrap and overruns to an absolute minimum. And imagine how much your company could save annually by virtually eliminating quality-related product returns. With the Proficy Plant Applications Quality module, you can realize all of these goals and more.

Quality allows you to capture and summarize manufacturing and quality data in the context of production events such as batch, lot, item, serial number, time period and more. After capturing that data in whatever way you choose,

Quality enables you to apply product specifications and recipes to that data and alarm against any out-of-spec conditions the moment they occur. If a batch or run is flawed, the module allows you to isolate exactly which products have been impacted to greatly reduce waste. You can calculate KPIs by trending and analyzing the quality information, then publish that information to the web with easy-to-understand ad-hoc reports that can be created according to your needs.

As a result, Quality does more than greatly increase the quality of your production process. It significantly reduces the cost of achieving those gains and helps you get better, safer products out the door faster than ever before.
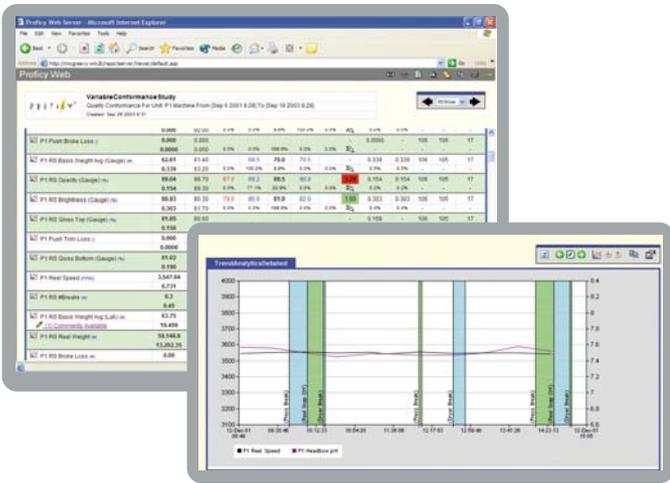
Variable Conformance Analysis

View production information against specifications to quickly and easily identify quality issues...drill-down to see trend variables and overlay production events such as crew shift and downtime to identify root causes.
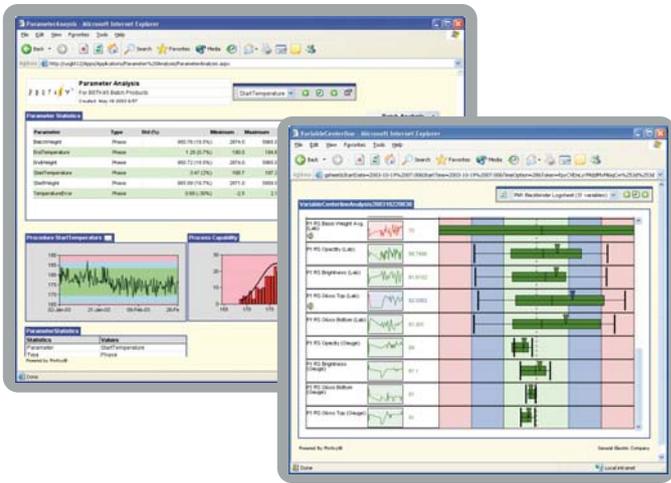
Analyze Variables

Understand what affects quality of production and processes with Proficy Plant Applications' Quality module.
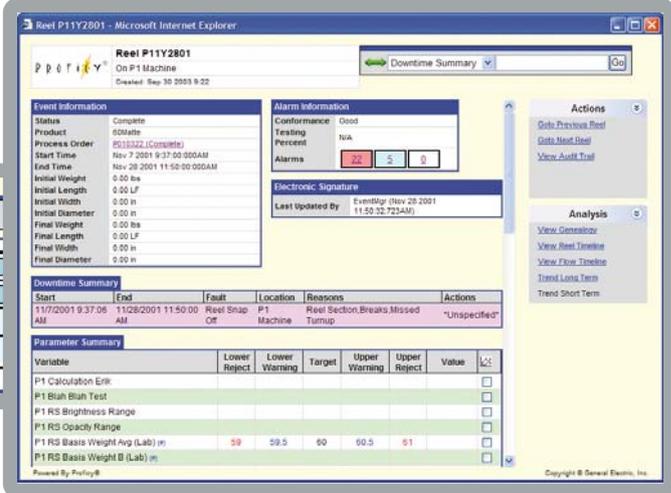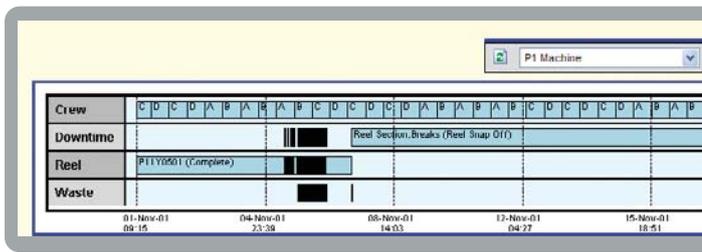
Production
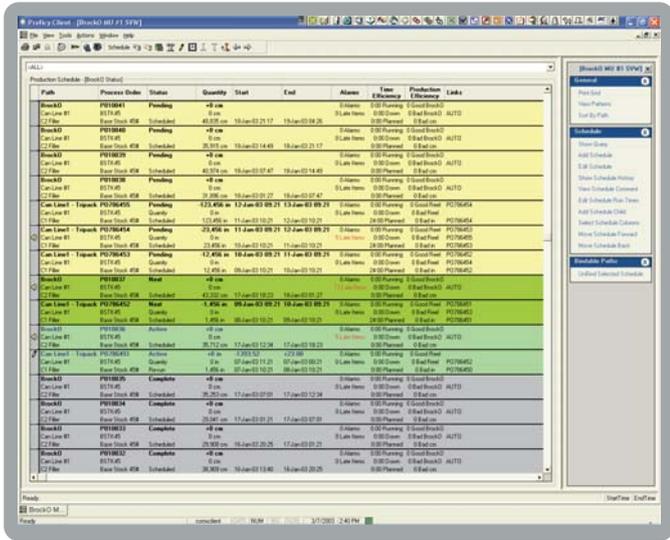
The Production module provides insight into how products actually flow through your plant. It is the ideal tool for creating genealogy reports as well as making scheduling changes to reduce excess inventory.

Production seamlessly ties together plant operations by exchanging key production and status information with customers and internal business systems – including ERP – as well as between plant processes using the latest XML technology. It provides a "scoreboard" for your operators which identifies the components of the product being produced and indicates when a particular order is scheduled for completion. Information such as inventory, production, schedule and genealogy can then be shared across the web for a real-time look into your production process.
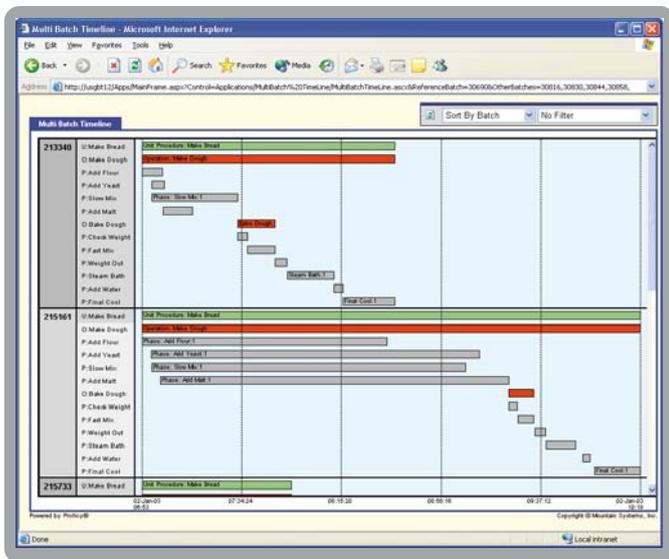
Product genealogy is a key component of the Production module. Genealogy allows you to trace a product throughout every step of the manufacturing process and identify exactly what materials and quality characteristics it contains. This allows you to control the flow of product between equipment and manage in-process inventories in real time, enabling you to close the gap between orders and production.

Real-time Interactive Schedule View

Gain a real-time interactive view of order status and schedule.

Production Timeline

Graphically view production timelines and drill down into the details to find out why production events occurred.
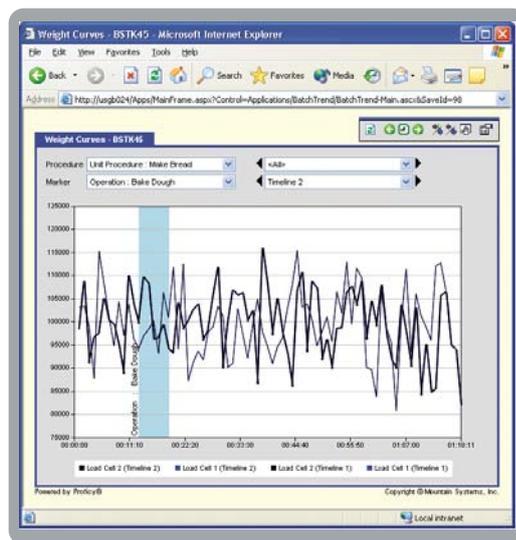
Batch Analysis

Many batch systems today lack the advanced analysis and reporting tools necessary to present a comprehensive picture of batch operations in the context of the overall manufacturing facility. Without these key tools, it is very difficult for manufacturers to drive improvement initiatives. The Batch Analysis module is an ideal fit in these types of applications as it allows you to increase the overall quality and consistency of products and enables you to better understand and control variation in both new and existing batching applications.

With our unique layered applications approach and interface to several commercially available batch execution systems, our Batch Analysis solution is a great fit for both new and existing systems. When combined with the rest of the Plant Applications solution, additional capabilities – including genealogy tracking, quality and production – can be combined to provide a powerful and comprehensive solution that delivers results.

Batch Timeline
Understand and improve operations by comparing production runs and timelines, overlay trends and production events.

Plant-wide Web Reporting

As an integral feature of all modules, Plant-wide Web Reporting enables plant-wide reporting and analytics from anywhere at any time. From a remote location, you can monitor operations by accessing web-based reports, dashboards and analytics. In addition to providing an accessible window into your production, Plant-wide Web Reporting provides drill-down analytical support for understanding "root cause" analyses of problem areas.

Plant-wide Web Reporting combines text and charts to meet virtually any reporting requirement. It generates analytical reports and delivers them where and when they are needed, all through a familiar and customizable browser screen that is accessible and intuitive for even casual users throughout your plant. Built-in security ensures that only authorized users can access your information.
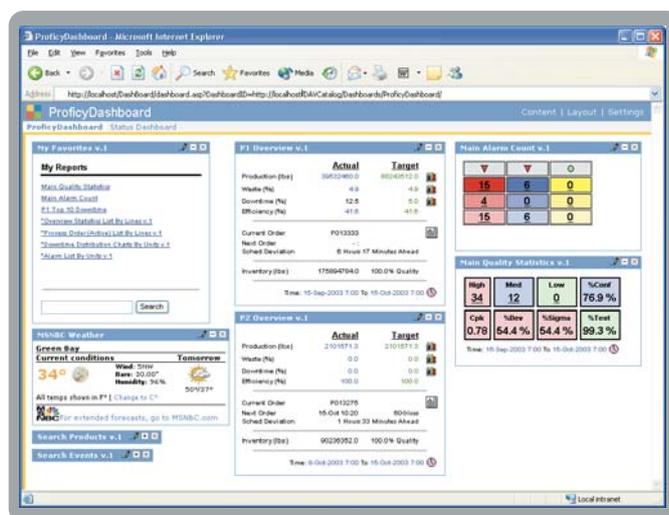
Proficy Plant Application Dashboard
Proficy Plant Applications dashboard allows you to quickly and easily highlight key areas of production.

Proficy Plant Applications 4.1 Modules

Efficiency
- Identify and improve areas that are causing operational inefficiencies
- Perform root cause analyses to make data-driven decisions on capital expenditure and process improvement investments
- Manage production operations in real time through comprehensive reporting

Quality
- Improve the quality and consistency of products and processes
- Lower costs of production by reducing waste and rejects
- Maintain consistent, high quality production through real-time monitoring and visibility

Production
- Improve operational efficiency by gaining knowledge and control over real-time production operations
- Generate more revenue by meeting customer demands and government regulations through product genealogy reports

Batch Analysis
- Increase quality and consistency of batch operations and reduce variability
- Compare cycle times, parameters and variables across batches
- Report and summarize batch data in support of improvement initiatives
- Leverage both new and existing batch systems through standard interfaces
- Combine quality, production tracking and other core manufacturing functions with batch operations providing a complete picture of plant operations

Plant-wide Web Reporting
- Make real-time decisions with web-based reports
- Quickly perform root cause analyses on problem areas to maximize plant profitability and efficiency
- Quickly and easily provide the right information to the right decision-maker

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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 – CIMPLICITY®
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

USA and the Americas:
1- 800-GE FANUC
or (434) 978-5100

Europe, Middle East and Africa:
(352) 727979-1

Asia Pacific:
86-21-3222-4555

Additional Resources

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

www.gefanuc.com