GE Fanuc
Intelligent Platforms

Proficy Maintenance Gateway*

Evolving Your Asset Maintenance Strategy from Reactive to Reliable

Embarking on a path to increase asset reliability can result in the following benefits to your organization:

- Raise Overall Equipment Effectiveness
- Increase return on production assets
- Decrease time to repair
- Minimize unplanned downtime
- Complete Preventative Maintenance (PM) work orders on-time
- Enhance Lean/Six Sigma Initiatives
- Reduce Maintenance, Repair and Operations (MRO) inventory
- Leverage corporate purchasing power
- Boost return on installed Enterprise Asset Management (EAM) solutions

Your baseline for plant productivity depends on the availability and performance of your equipment assets.

Unfortunately, due to a lack of real-time information, many critical maintenance activities are only scheduled at regular time intervals or based on manual aggregation of downtime sheets – once per shift or once per day. By the time this data is collected, aggregated and reported, it's often too late to maintain peak performance.

You need dynamic and actionable performance information on every asset in your facility to deploy your maintenance resources for the biggest impact. By connecting your production and maintenance systems with Proficy Maintenance Gateway, you can identify your top faults by frequency and duration for each cell, line and department – by shift, day, week, product, lot and so on.

Proficy Maintenance Gateway helps you drive a real-time, condition-based maintenance strategy. You can perform maintenance when you need it, where you need it, decreasing both scheduled and unscheduled downtime. And, you can evolve from reactive maintenance to reliable production – achieving transformational results across your business.

Enhance the return on your EAM investment

You have a significant investment in your existing Enterprise Asset Management solutions. Today you probably gather information and manually enter it into your Enterprise Asset Management system to drive your maintenance strategy. This method lacks real-time visibility, has built in latency, and lacks a way to implement transformational processes within your business. Proficy Maintenance Gateway will provide you the unique opportunity to transform your "static" offline Enterprise Asset Management system into a dynamic, real time reliability management solution in the following ways:

- **Implementation appropriate maintenance strategy:** Track your maintenance activities across the plant on the 3 different approaches of reliable centered maintenance: predictive, preventive and corrective.
- **Tracking of the reliability centered maintenance plans**
- **Work order generation** (plant event based) including assignment of child work orders and tracking until closure.
- **Real time priority refinement** of an existing work order (based on plant condition escalations).
- **Visibility** to the plant of spare parts inventory replenishment plans and up to date status.
- **Root cause assignment,** visibility to failure histories, MTBF, tracking of recurring failures, frequently occurring failures, etc.
- **Visibility to labor,** material and tools costs allocation.
- **Up to date information** and tracking of the latency in repair (especially, emergency Work Orders), tracking of the Mean Time To Repair.
- **Tracking of the availability of MAXIMO**
- **Tracking of the availability of assets in the plant**
- **Reference mapping** of MAXIMO equipment-location hierarchy to the Proficy Plant Applications plant model.

In summary, Proficy Maintenance Gateway provides the means to use real-time, plant data to feed and drive your reliable maintenance initiatives. It comes with pre-built connections to the manufacturing intelligent systems on the plant floor for ease of implementation. That coupled with native connections into the EAM solution provides seamless integration to the enterprise.

GE FANUC

Proficy Maintenance Gateway

The Proficy Maintenance Gateway Value

Proficy Maintenance Gateway is a powerful software solution that directly addresses the need for enhanced asset reliability by connecting your production and maintenance systems. Proficy Maintenance Gateway can continuously monitor your plant and drive significant improvements in the reliability of your production assets, enabling you to improve your production readiness and close the loop between your production and business systems.

Improve Production Readiness

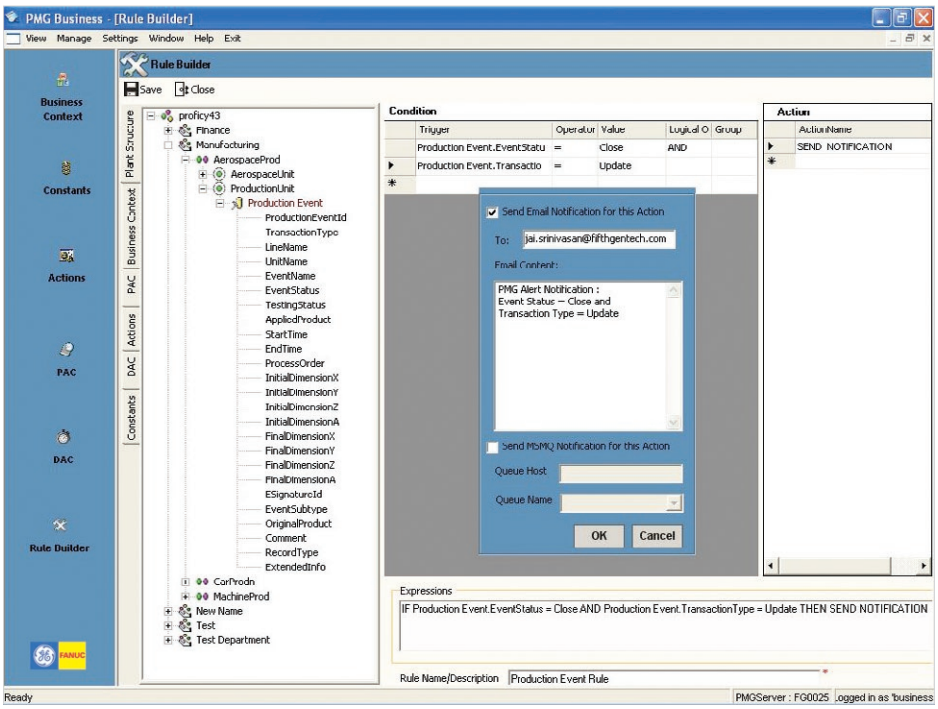
Proficy Maintenance Gateway offers many benefits to organizations looking to improve and strive for better production readiness.

- **Reduce unplanned downtime:** Increase responsiveness to unplanned downtime, generate better rules to prevent unplanned downtime, and gain insight to know when an unplanned downtime will occur and prevent it from happening.
- **Eliminate unnecessary maintenance:** Utilize manufacturing intelligence to understand the right amount of maintenance. Over maintaining the equipment leads to additional maintenance costs and lost revenue from lack of machine availability.
- **Identify reasons for downtime and provide root cause failure analysis:** Understand what conditions lead to downtime and gain the ability to programmatically eliminate them without the need for manual data collection and entry.
- **Improve first pass quality and reduce waste:** Unplanned downtime can lead to defect or wasted products. Eliminating these unplanned events can reduce material and labor costs due to waste.
- **Enhance the effectiveness of existing maintenance systems:** You have a significant investment in your Enterprise Asset Management system. Enhance the return on that investment by feeding it real-time, in-context, equipment information on production and run time conditions.
- **Improve turnaround time for repair:** Quick and efficient repair is necessary to maximize availability. Gain the ability to monitor the Mean Time to Repair.

Close the Real Time Loop Across Your Systems

Proficy Maintenance Gateway tightly integrates your plant floor equipment to your Enterprise Asset Management system. This provides a closed loop environment which utilizes the information contained in your equipment to drive real-time optimization of your maintenance systems.

- **Connect to your Enterprise Asset Management connection:** Proficy Maintenance Gateway has built in connectors for existing EAM solutions removing the need to write custom interfaces.
- **Achieve Manufacturing Intelligence connection:** Proficy Maintenance Gateway also has built in connections to manufacturing intelligence solutions for your factory floor. This allows the use of data with context (information) with a pre-built connection again relieving the need for writing custom code.
- **Easily configure your rules engine:** Proficy Maintenance Gateway offers a simple way to enter in business logic that fits your environment. This speeds up deployment and enhances the long-term supportability which reduces ownership costs.
- **Automatically trigger work orders in your EAM:** MAXIMO and other EAM solutions have work order trigger mechanisms. Proficy Maintenance Gateway uses real time manufacturing intelligence from the plant floor and a simple rules engine to trigger such mechanisms automatically in MAXIMO and other EAM systems.
- **Track Maintenance Status:** MAXIMO and other Enterprise Asset Management systems contain information on maintenance work order status, spare parts inventory, failure histories, etc. Proficy Maintenance Gateway integrates these pieces of information through the Proficy Real-Time Information Portal for maintenance status tracking by shop floor personnel.



Proficy Maintenance Gateway Rule Builder

Proficy Maintenance Gateway offers an easy administration tool that enables business logic to be developed on contextual plant floor information. These business rules provide the actionable intelligence to be used in conjunction with EAM to decrease downtime and increase plant equipment reliability.

Achieve Packaged Reliability

Today many companies develop custom applications to connect asset management systems to plant floor operations with a long term view of improving the reliability of the plant. As the plant's need and asset configurations change with time, the custom applications previously developed become outdated. The overall objective of achieving improved Plant Reliability is never realized unless the custom applications are also modified to suit the new configuration of the plant. Since the configuration of the plant is an ever changing dynamic, there is a continuous need for change in the applications, and therefore, large cost of ownership.

Proficy Maintenance Gateway is unique in that it is a packaged offering that provides an off-the-shelf configuration environment that allows faster time-to-value without the requirements of a specialized skill set.

Support Strategic Maintenance

Instead of manually collecting information to feed into an Enterprise Asset Management solution to drive maintenance, Proficy Maintenance Gateway offers a live feedback loop of contextual information into your maintenance system to drive:

- **Reactive Maintenance Strategy:** Connect real-time breakdown conditions back into your EAM solution in order to reduce the Mean Time to Repair (MTTR) of your equipment.
- **Preventative Maintenance Strategy:** Build logic analyzes runtime and activities in real-time and drive the right amount of preventative activities.
- **Predictive Maintenance Strategy:** Gain better understanding of your equipment and use that insight to build in unique detection algorithms to avoid unplanned downtime.

How does it work?

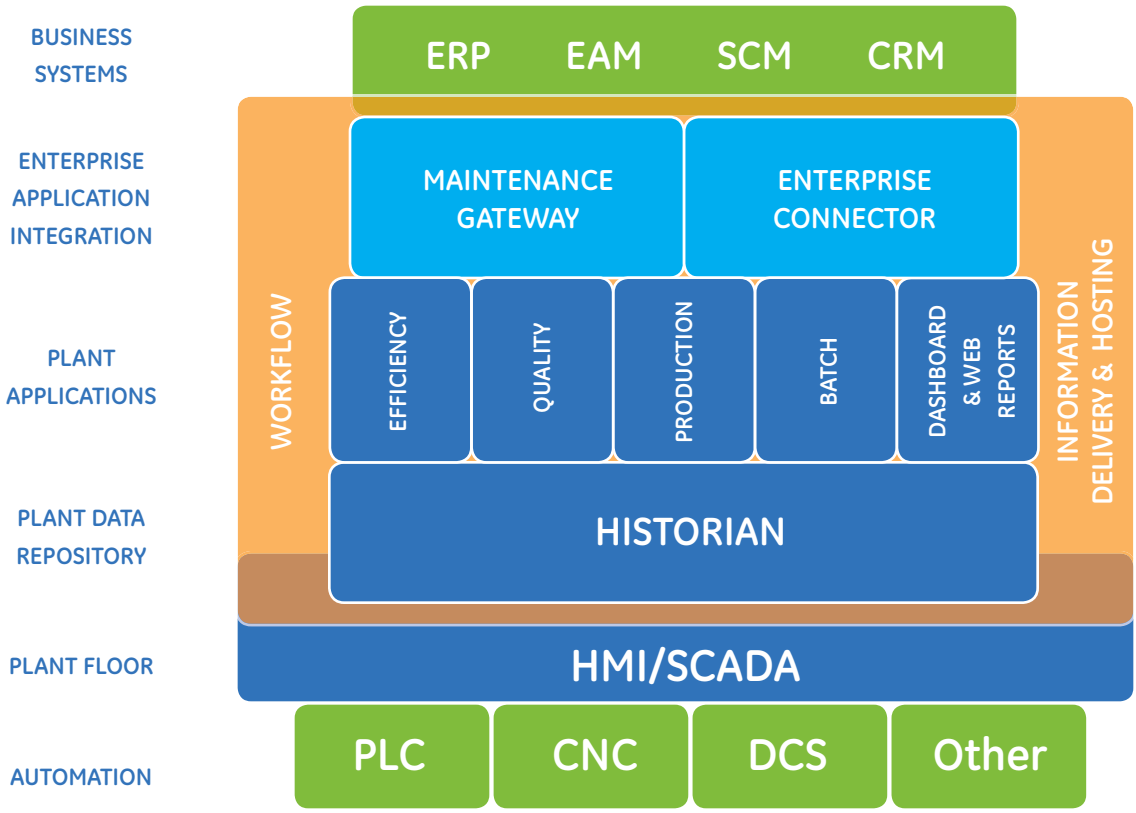
Proficy Maintenance Gateway is the conduit for which vital real-time plant floor data in context can be used by Enterprise Asset Management systems.

The data starts at the deepest level of your architecture, the control layer, where PLCs, DCS, CNCs, and other devices provide the raw manufacturing data. From there this data can be stored in a central repository for the site and then put into the business rules engine of Proficy Maintenance Gateway.

This powerful engine contains rules that can be adapted over time as you gain insight into your equipment and enhance your rule set to achieve a state of "reliable maintenance" in your environment.

When these rules are established, it is an easy task to trigger work orders in your EAM solution.

Finally, Proficy Maintenance Gateway offers real-time enterprise wide visibility into the work orders generated in your EAM system via its web portal.



Proficy Maintenance Gateway Architecture

Proficy Maintenance Gateway provides a bi-directional path of information between your plant floor manufacturing intelligence platform and business systems.

Proficy Maintenance Gateway*

Proficy Maintenance Gateway System Requirements

Server Hardware Requirements (Standard Implementation)

- 2 CPUs with 2.0 GHz processor each
- 3 GB RAM (2 GB for SQL and 1 GB for the operating system)
- 50 GB hard drive

Server Software Requirements

- Windows 2000 SP4 (Windows 2003 SP1 Server recommended – 32-bit version only)
- Internet Explorer 6.0 or 7.0
- MSMQ - Microsoft Messaging Queue Service
- IIS Server 5.0 or above
- .NET framework 1.1
- JAVA Runtime Environment (JRE) 1.3
- SQL Server 2000 SP3, or 2005

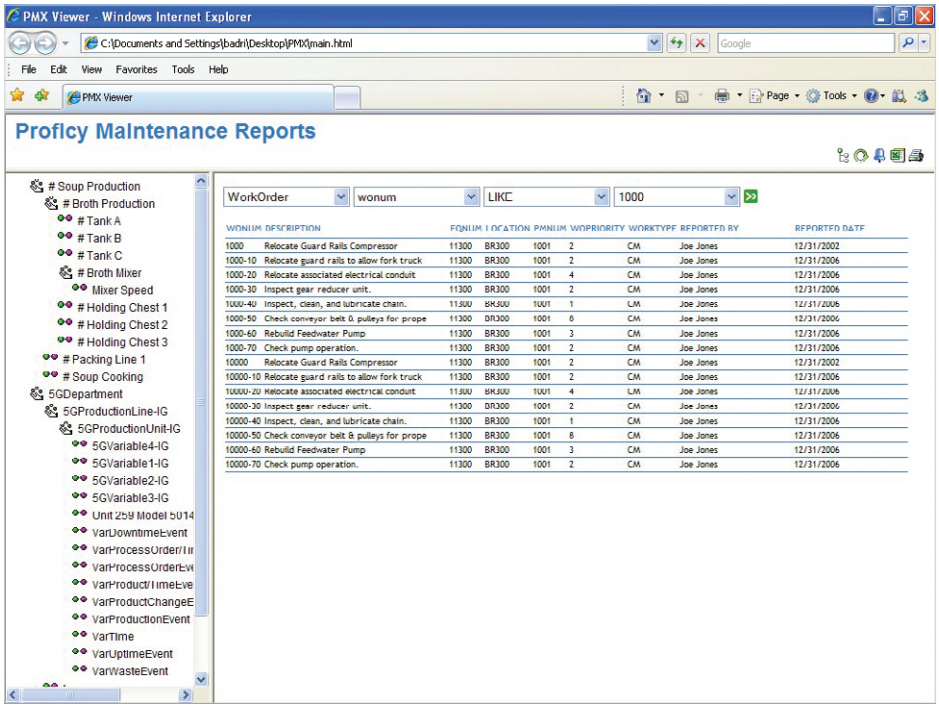
Note: It is assumed that Proficy SDK is already installed in the server.

Client Hardware Requirements

- CPU with 2.0 GHz processor
- 512 MB RAM
- At least 50 MB of free hard disk space

Client Software Requirements

- Windows XP Professional or Windows 2000
- Internet Explorer 6.0 or above
- Proficy Client with SDK
- .NET framework 1.1
- SQL Server Client Access License



About GE Fanuc Intelligent Platforms

GE Fanuc Intelligent Platforms, a joint venture between General Electric (NYSE: GE) and FANUC LTD of Japan, is a high-performance technology company and a global provider of hardware, software, services, expertise and experience in automation and embedded computing, with products employed in virtually every industry, including manufacturing automation, defense, automotive, telecommunications, healthcare and aerospace. GE Fanuc Intelligent Platforms is a worldwide company headquartered in Charlottesville, VA and is part of GE Enterprise Solutions. For more information, visit www.gefanuc.com.

GE Fanuc Intelligent Platforms Information Centers

Americas:
1 800 GE FANUC or 434 978 5100

Asia Pacific:
86 21 3222 4555

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

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

Additional Resources

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

www.gefanuc.com

04.08 GFA-950