



GE VEROVA

MANUFACTURING EXECUTION SYSTEMS (MES)

PROFICY[®] SMART FACTORY

Reach manufacturing excellence through IoT
insights & intelligence

- Named Leader by 4 analyst firms
- Cloud and/or on-prem
- Process, discrete & mixed manufacturing
- No code / low code
- Faster value, out of the box
- Plant-to-enterprise scalability





20,000 CUSTOMERS USE GE VERNONA SOFTWARE IN THOUSANDS OF PLANTS

AROUND THE WORLD.

- 30+ years of MES innovation & reliability
- Industry Leading Partner Ecosystem
- Thousands of systems integrators around the world

GE Vernova and our software are known for serving the world's largest companies including:

- 92% of the world's top oil & gas companies
- 90% of the top food & beverage companies
- 90% of the top metal products manufacturers
- 90% of the top pharmaceutical companies
- 81% of the top automotive companies
- 80% of the top consumer goods companies
- 75% of the top aerospace companies
- And more across nearly every industrial segment

CLOUD READY



**REAL RESULTS:
EXPLORE OVER 100+ CASE STUDIES**

BECOMING A DIGITAL INDUSTRIAL MANUFACTURING COMPANY

You're tasked with meeting production targets while keeping costs and risk under control. It's up to you to find the capacity needed to produce what the market wants, when it wants it, and at increasingly higher quality—even when it means quickly changing lines and entire facilities over to new products.

Products can be conceived, developed, and sold over the Internet in a matter of weeks or days, meaning your organization is probably already competing on your ability to manufacture to order.

You currently rely on the expertise of your people to achieve production targets. But long-term attrition of operational "know-how" as your people with intimate equipment knowledge exit the workforce is inevitable.

You have automated select activities, primarily by purchasing point-product solutions. But production data is all too often gathered manually and isolated in siloed systems and different formats. As a result, you may lack the comprehensive visibility into equipment, people, processes, and materials that would afford you the flexibility to make the goods people want to buy today.

Business challenges

- **It's difficult to start and stay ahead** when no two facilities are the same, and you lack a common system for gathering and analyzing data
- **Your current systems don't provide the visibility you need to take the right actions** when separate systems for inventory, production, downtime, and quality all relay data manually, slowing the process and introducing the potential for human errors
- **Your plants can't keep pace with customer demands** without advanced warning of changing preferences derived from sophisticated analysis of all available data and agility to leverage those insights

What if you could...

- Use the data your equipment is already generating to monitor production, predict order performance, detect downtime, capture waste, and more then automatically aggregate and summarize this data for powerful digital intelligence in real time?
- Get value fast by using out-of-the-box mobile operator screens and extend or customize them to meet the needs of your people and facility?
- Use this foundation to immediately begin delivering actionable insights to the right people at the right time—giving your people all the information they need to quickly optimize production?
- Use these digital industrial applications to adapt facilities with the agility to continuously change to meet customer demands?



DELIVERING THE SMART FACTORY

Proficy Smart Factory is a solution suite that seamlessly spans on-premise and cloud-based MES capabilities. Transform your manufacturing business through insights and intelligence powered by data integration, the Industrial Internet of Things (IIoT), machine learning, and predictive analytics. By bringing together the digital world with the physical world of manufacturing, Proficy Smart Factory can deliver holistic performance management for today's connected enterprise.

Proficy Smart Factory provides the no-code / low-code tools to successfully transition to a digitally driven model:

- Track data across plants, equipment, materials, and people
- Specify metrics to track across all your equipment
- Use intuitive browser-based, out-of-the-box screens as a digital cockpit for fast time to value
- Create custom views within role-specific dashboards
- Create the necessary visibility to quickly generate a new bill of materials, reroute components, change equipment schedules, and re-assign employees appropriately

Learn more about the benefits and outcomes you can realize with Proficy Smart Factory.

[Find Out More](#)

- Monitor production and catch deviations and make adjustments to avoid wasted materials
- Predict overruns and shortfalls before they happen then reschedule your orders to optimize based on material, equipment and personnel availability
- Understand your operations better with traceability across the entire scope of the production process
- Leverage innovation best practices
- Achieve 30% lower Total Cost of Ownership(TCO) through cloud capabilities



UNLOCK UNPRECEDENTED EFFICIENCY AND MANUFACTURING OPTIMIZATION

Reduce costs

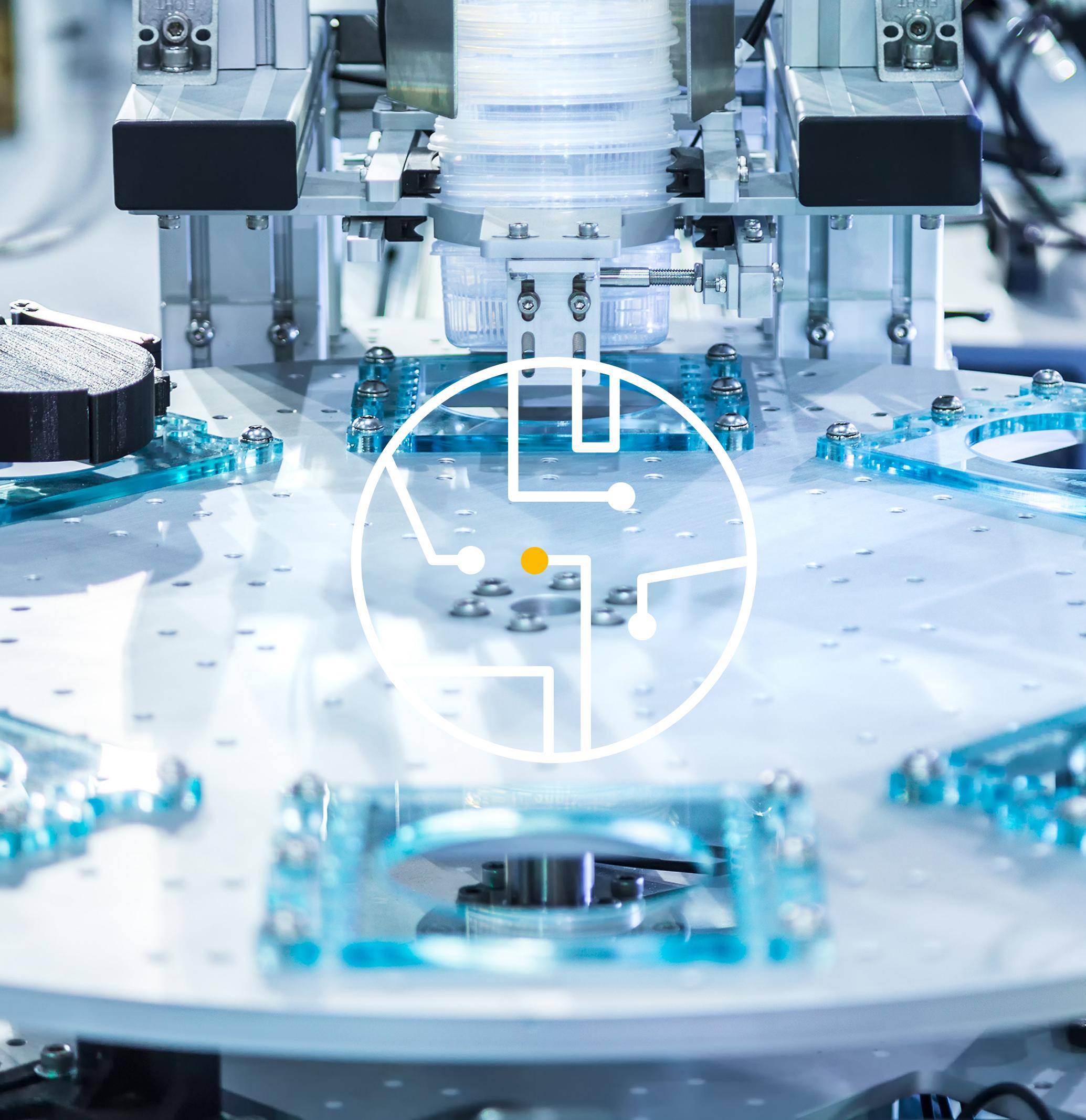
By aligning resources, energy, and efficiency management your manufacturing operations can reduce inventory, identify costly production gaps, lower energy and utility waste, and gain insight into throughput and critical processes.

Improve quality

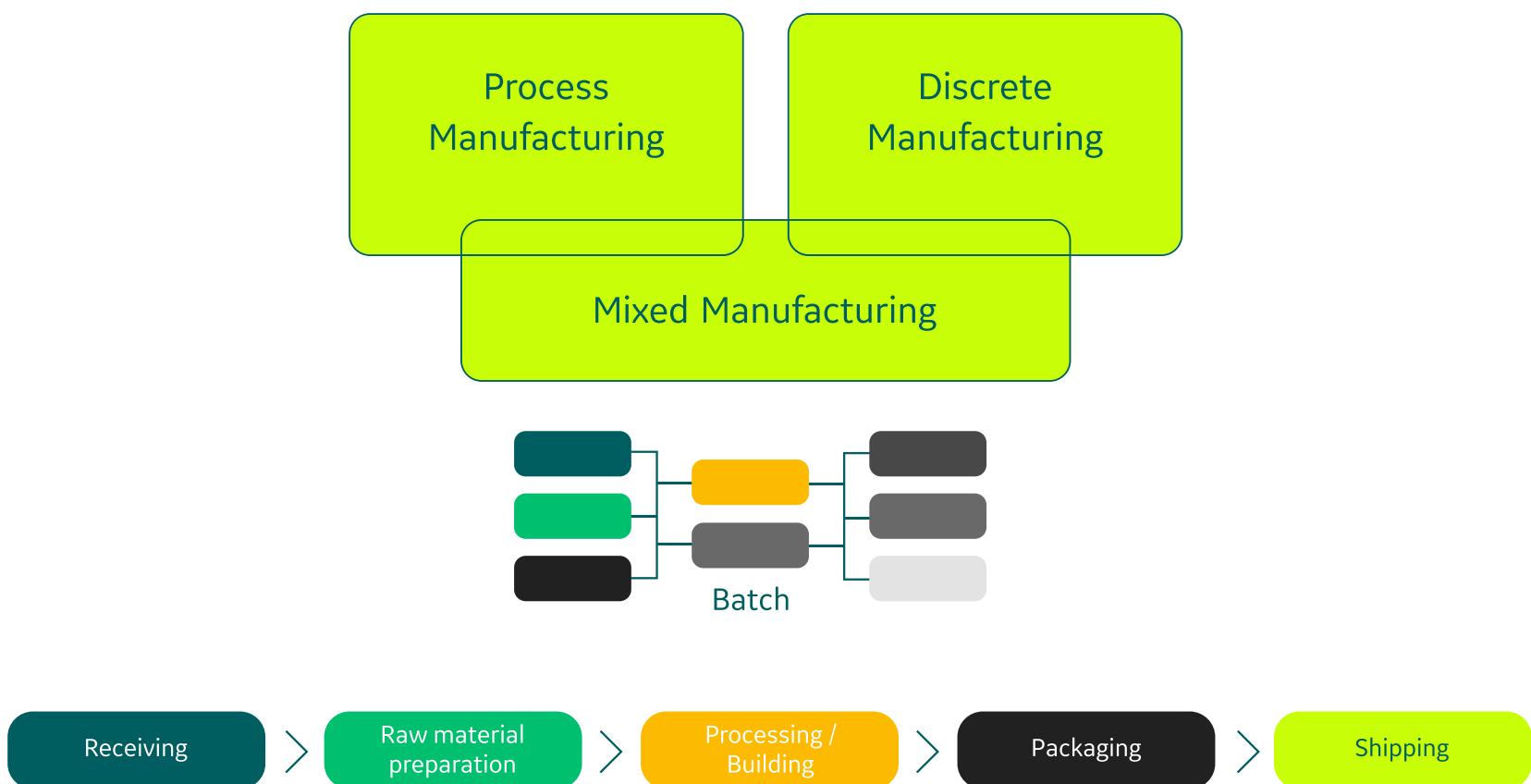
Capture robust quality data and related traceability information while, at the same time, performing analysis on process-oriented data and product-oriented data, and classifying materials as non-conforming, out-of-spec, or related to recalls.

Speed production

Improve on-time delivery performance and respond optimally and with agility to late stage changes, gain up-to-date visibility of all work-in-progress orders, get more successful new product instructions (NPIs), and shorten design-to-delivery cycles.



REDUCE COSTS AND INCREASE VISIBILITY WITH ONE SEAMLESS MES FOR ALL TYPES OF MANUFACTURING



Gartner® Recognized GE Vernova as a Leader and Customers' Choice in MES

Gartner named GE Vernova a Leader in the 2023 Magic Quadrant for Manufacturing Execution Systems for its Proficy Smart Factory (MES) software solution. The evaluation was based on specific criteria that analyzed the company's overall completeness of vision and ability to execute.

Also, find out why Gartner recognized GE Vernova as a Customers' Choice in the 2023 Gartner® Peer Insights™ Voice of Customer: Manufacturing Execution Systems. Read your complimentary reports today.



Customer's Choice

THE WORLD'S SINGLE MES FOR YOUR ENTIRE ENTERPRISE

Drive results with one MES for Process, Discrete, and Mixed Manufacturing

Proficy Smart Factory is a powerful operations management solution for process, discrete, and mixed manufacturing environment manufacturers that collects and analyzes data and helps manage highly automated fast-moving processes as well as slower moving, labor-intensive jobs. It automates and integrates the information related to activities for managing production execution and optimizing performance holistically, helping to balance the trade-offs between competing priorities of production operations.

Proficy Smart Factory allows you to:

Increase efficiency with customization

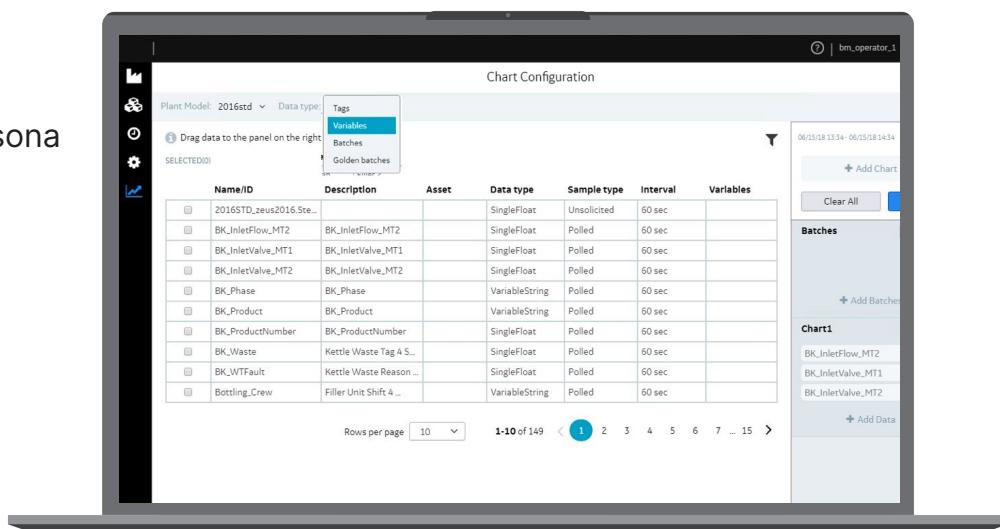
With a completely browser based and mobile ready UX, Proficy Smart Factory offers both operators and supervisors a personalized, modern user experience.

Reduce rework

With increased visibility into data and quality, you can reduce rework and the risk of errors, while staying current on recall information.

Turn data into value

Gain enterprise-wide visibility into your data to improve analysis and compliance, while at the same time reducing IT costs and footprint. Additionally, Proficy Smart Factory out-of-the-box persona based UIs run in our no-code rapid application development environment called Proficy Operations Hub so you can easily extend standard visualizations to meet your needs.



Capabilities of Proficy's MES

- Efficiency Management
- Quality Management
- Production Management (Non Serialized and Serialized)
- Batch and Process Analysis
- Manufacturing Product Data Management
- Scheduling
- Digital Operations: Centralized, Remote and Mobile
- Cloud Industrial Data Management for Analysis and Reporting
- Industrial Advanced Analytics
- Dynamic, Interactive Work Process Management



EFFICIENCY MANAGEMENT: ON-PREM & CLOUD

With Proficy Smart Factory, you can better utilize plant assets by leveraging a comprehensive view of Overall Equipment Effectiveness (OEE).

Proficy tracks and monitors OEE and other critical key performance indicators such as downtime, waste, and production counts, MTBF, MTTR, and more, all by reading signals directly from the equipment or, if not available, via manual inputs.

Our proven efficiency management capabilities provide drill-down functionality, making it ideal for managers trying to increase production throughput without adding equipment, people, or material costs. Manufacturers can correlate events and reasons to actual production parameters in context of shift, crew, order or any other event that makes sense for your facility. Standard and ad-hoc reports and dashboards improve real-time decisions, supporting Lean and other continuous improvement programs.

Proficy Smart Factory allows you to:

Identify and improve areas that are causing operational inefficiencies

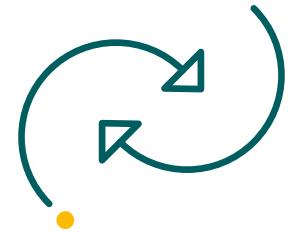
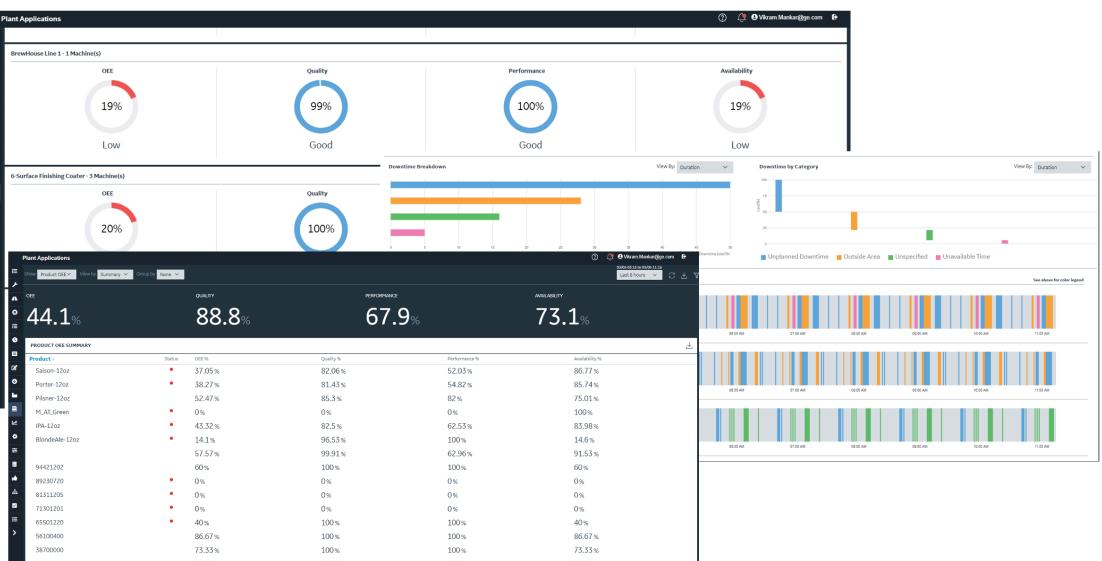
Use Proficy to detect and minimize scheduled and unscheduled downtime events, reduce waste and rework, and improve machine run-time effectiveness.

Perform root cause analyses to make data-driven decisions

Gain insight into production operations by shift, equipment and products. Proficy helps you evaluate operations over any period of time—from real-time to annual summaries. Furthermore, 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. You can schedule reports for all decision-makers – from operators to plant managers. Get notified on exceptions to desired operations to make real-time changes.



Increase Your OEE with Proficy Smart Factory

- Critical KPIs: OEE, downtime, waste, production counts, and more
- Exceptional connectivity: connects to various historians to capture equipment signals to detect data related to downtime, quality and production
- Root cause analysis by automatically or manually associating events with causes
- Ad-hoc reports and dashboards for real-time decision-making
- Ability to summarize and analyze data by context

QUALITY MANAGEMENT: ON-PREM & CLOUD

Proficy Smart Factory ensures consistent and integrated quality control, delivering capabilities that we developed in partnership with the world's largest manufacturers to support their best practices to reduce variability and ease compliance.

GE Vernova 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. Proficy is an ideal solution for manufacturers launching Lean, Right First Time, Six Sigma and other process improvement initiatives.

Proficy Smart Factory allows you to:

Increase product and process quality and consistency

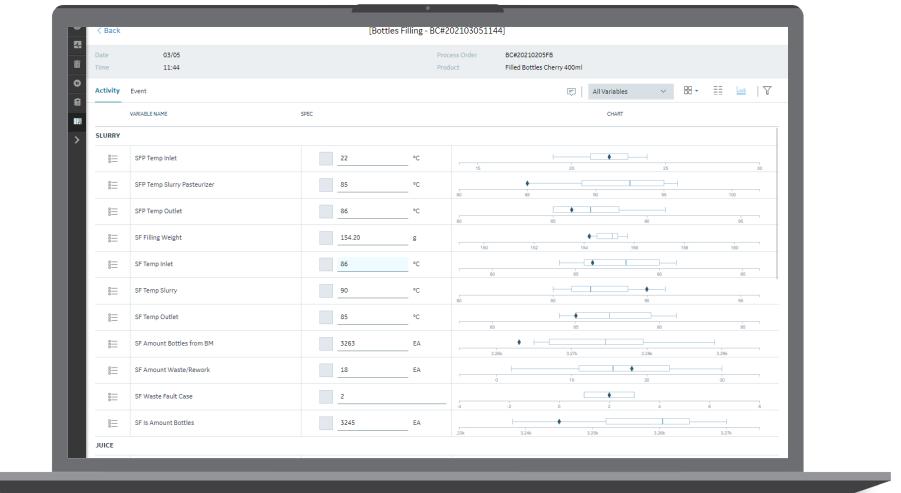
Proficy ensures consistent quality in your products, helping you define the product specifications and recipes required for quality production and providing real-time trends, statistics, SPC, and notifications to control quality levels. Our solution integrates process, inspection, and test data from both manual and automated sources and houses this information in one, integrated place – including support for 21 CFR Part 11. Additionally, you can attach operator comments including videos and pictures you can annotate directly on your mobile device, specifications, recipes, and procedure documents to this information.

Lower costs of production by reducing waste and rejects

Capture reasons for out-of-spec conditions to resolve quality issues faster. With Proficy, you can reduce rejects and downgrades, decrease customer complaints and returns, and 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 proven methodologies. Calculate quality KPIs and publish them to the web – and notify and alert personnel to out-of-spec conditions for the fastest resolution. Identify your "golden batch" and compare it to the current running orders to quickly identify deviations.



Improve Consistency and Ease Compliance

- Real-time trends, statistics, SPC and notifications to control quality without slowing manufacturing speed
- Integrated process, inspection, and test data from both manual and automated sources
- Related information stored, including operators' comments, specifications, recipes and procedure documents – supporting 21 CFR Part 11 and eSignature
- 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
- Integrate log-sheet information for real-time performance and quality management
- Improve consistency, drive out variability with simple SPC/SQC

NON-SERIALIZED AND SERIALIZED PRODUCTION MANAGEMENT: ON-PREM & CLOUD

Proficy Smart Factory manages both non-serialized and serialized 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.

Meeting the needs of diverse production management, Proficy Smart Factory oversees production operations, supporting production schedule execution and product tracking against scheduled completion times with adjustments to optimize efficiencies. Our solution supports full traceability of individual products through every step of the manufacturing process allowing for auditable genealogy and production reporting.

Proficy Smart Factory allows you to:

Improve operational efficiency by gaining knowledge and control over real-time production operations

With Proficy, you can reduce inventory costs, control the flow of product between equipment, manage and report on in-process inventories, and integrate quality and production tracking to improve the accuracy of schedule execution.

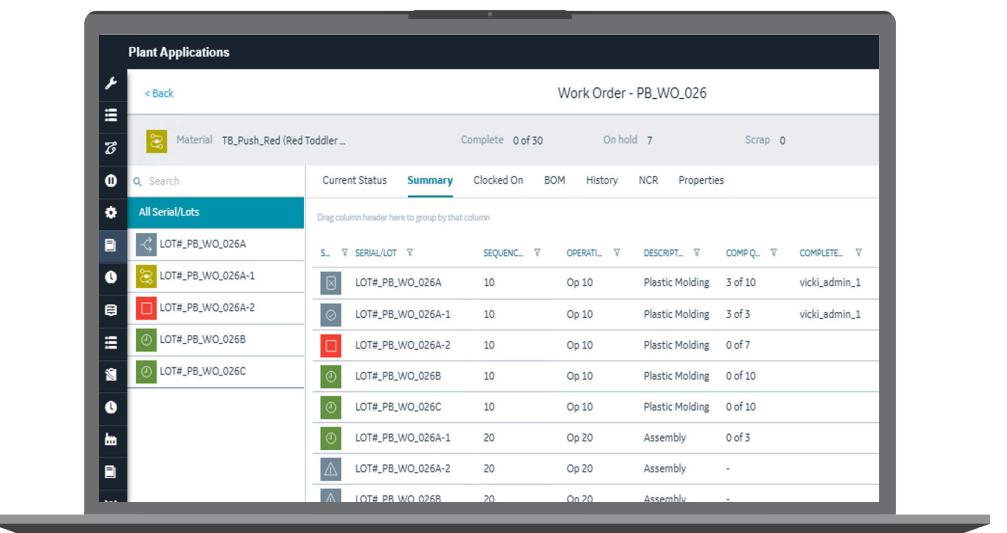
Generate more revenue by meeting customer demands and government regulations through product genealogy reports

Track products and materials through their entire production lifecycle, quickly develop Certificate of Analysis (COA) reports, limit the scope of recalls and quarantines, and provide faster response to customer issues.

Enable Lean and continuous improvement

Improve performance with capabilities designed to solve the toughest manufacturing challenges and drive continuous improvement – while leveraging GE Vernova's renowned expertise in Lean, as one of the largest manufacturers in the world, and our work with other top manufacturer's methodologies. Calculate quality KPIs and publish them to the web – and notify and alert personnel to out-of-spec conditions for the fastest resolution.

Identify your "golden batch" and compare it to the current running orders to quickly identify deviations.



Optimized Production Operations

- Track order completion status
- Production tolerances on non-serialized material and default record quantity
- Manage material delivery to the process
- Track true/actual resource consumption and feed back to ERP
- Drive label printing and identification
- Orders dispatch from schedule
- Oversees production operations, including functions to control product flow between equipment
- Monitors consumption of resources
- Supports full traceability of individual products through every step of the manufacturing process allowing for auditable genealogy and production reporting
- Turns production data into performance metrics – monitors automatically & manages consistently
- Send COAs to customers automatically
- Support regulatory and internal compliance (energy, environmental, food safety, costs, etc.) – Including eSignature capabilities and 21 CFR Part 11 support

HIGH VALUE, VOLUME & VARIABILITY SERIALIZED PRODUCTION: ROUTING, SEQUENCING AND TRACKING

Proficy Smart Factory also provides comprehensive tracking and order execution management that meets the critical needs for serialized production that involves high volume, high value, high variability products such as automotive, appliances, electronics, agriculture and heavy equipment, recreational riding products, and more. In these environments, it tracks each serialized item that moves through your production process—providing detailed, continuous information to help you make the best decisions for a competitive edge.

Proficy Smart Factory allows you to:

Increase throughput and launch new products faster

With Proficy, each serialized item that moves through your production or packaging process can be tracked. You get the detailed, continuous information you need to optimize your manufacturing process while managing inventory levels and locations, scheduling resources and routing materials much more effectively.

Implement Lean production

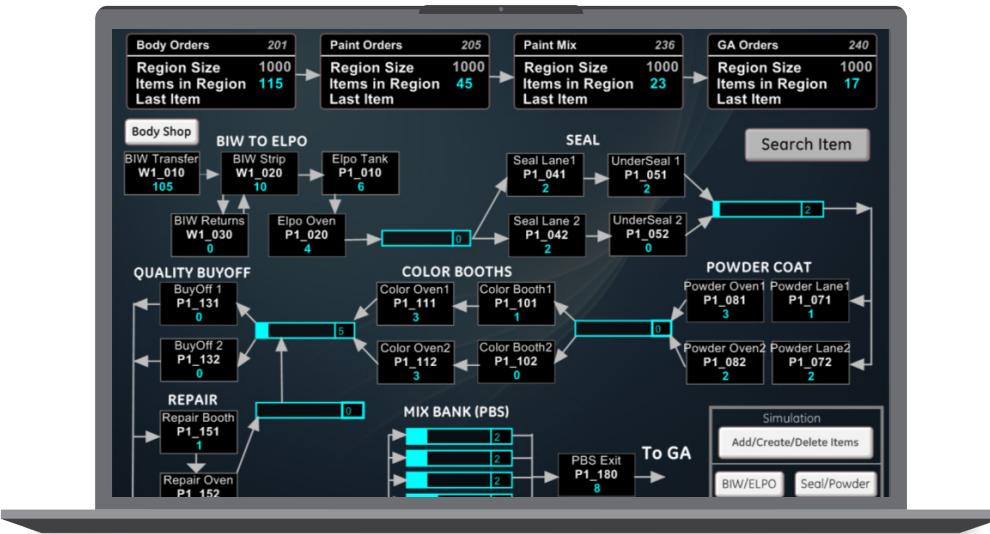
With Production Routing and Order Execution Management, Proficy helps manufacturers and suppliers understand real-time sequence requirements and handle situations that occur on the plant floor when the sequence is broken—enabling manufacturers to build right the first time. It helps facilitate a large reduction in WIP inventories along with finished goods inventories while meeting production targets.

Improve inventory, production orders

Better manage inventory, production orders, and routing materials with detailed data using Proficy. It empowers your operators with real-time information and control of their operations to accommodate a variety of production flow adjustments.

Real-time flow management of jobs

Proficy provides the ability to not only track the real-time location of jobs on the production floor but can be configured to perform routing logic on the movement of jobs throughout the facility. This unique capability allows manufacturers to manage the manufacturing, routing, and delivery of multiple product components into complex product assemblies.



High Value, Volume & Variability Production

- Production routing and tracking, including WIP inventory control
- Product genealogy and traceability for audit trails and regulatory compliance
- Error proofing
- Order management and broadcast management
- Sequence & substitution management
- Defect containment
- Hold management
- Facilitates build to order / build to sequence production

BATCH ANALYSIS: ON-PREM & CLOUD

Proficy Smart Factory provides an evaluation of scheduled and completed product recipes while generating batch records to help increase the overall quality and consistency of products.

With our unique layered applications approach and interface to standards-based commercially available batch execution systems, Proficy Smart Factory is a great fit to extend both new and existing batch execution systems. It supports ISA-88 recipe analysis for products as formulation (BOM), procedures, and equipment.

Our solution also provides analysis of scheduled and completed recipes and generates electronic batch records (EBR) to help increase the overall quality and consistency of products.

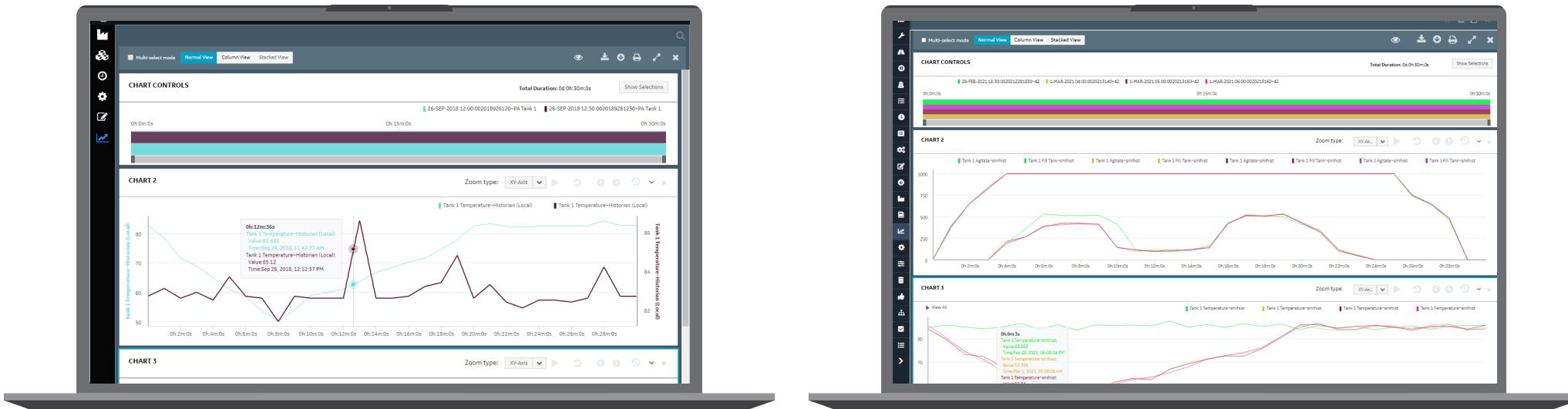
Proficy Smart Factory allows you to:

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.



Control Variation in Batch-Related Production

- Supports ISA-88 recipe analysis for products as formulation, procedures and equipment
- Fits both new and existing systems thanks to its unique layered applications approach and interface to standard-based commercially available batch execution systems
- Provides analysis of scheduled and completed recipes
- Generates batch records to help increase the overall quality and consistency of products

MANUFACTURING PRODUCT DATA MANAGEMENT: ON-PREM & CLOUD

Increase throughput with accurate manufacturing product data across the enterprise.

Is your manufacturing struggling with varied products to overcome supply chain issues or meet changing consumer demands?

Uncertain supply chains and constant product innovation introduce variability and inefficiencies into daily manufacturing processes. With more products and/or regulatory standards, production gets out of sync with the latest product manufacturing information, resulting in lower quality, increased waste, and operations headaches.

Proficy Smart Factory allows you to:

Stay in sync with the constant updates to product manufacturing information

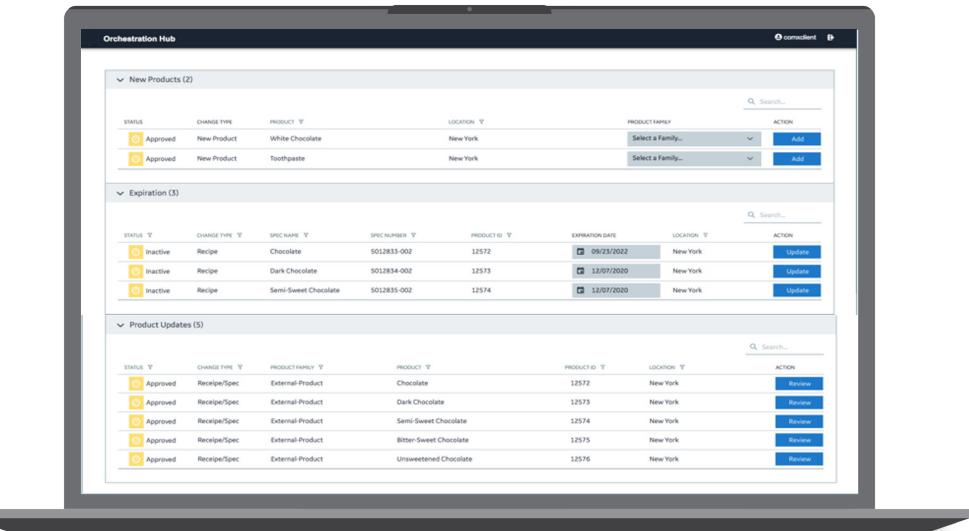
Get out-of-the-box tools to unify product manufacturing information from disparate data systems such as ERP and PLM. Transform and organize this raw business-oriented information into production-ready formats including recipes and specifications. Orchestrate the information across your factory floor systems at a single site or multiple sites.

Map data across ERP, PLM and MES

Stop cobbling together plant systems or manually trying to capture the right product manufacturing data on paper. Our solution Proficy Orchestration Hub provides Manufacturing Product Data Management based on information unified across key systems.

Achieve relevant product data context recognized by MES

Our out-of-the-box Operations Product Data Management UI helps transform the business-centric product data to relevant product context as recognized by MES systems.



Organize, Orchestrate & Analyze

- Accurate product data based on unified-systems information
- Flexibility to maintain and manage product variances with compliance
- Ease of connectivity
- Flexibility to use existing connection technologies allowed by business systems
- Mix and match connectivity to get all Product data
- No code mapping – drag and drop multi-source mashups
- Base views created at install
- Transform unstructured business Product data to MES structured Specs, BOMs, and Recipes

SCHEDULING: ON-PREM & CLOUD

With Proficy Smart Factory, you can achieve dynamic and effective production schedules in real time.

The Proficy Smart Factory scheduling capabilities enable companies to create and maintain dynamic and efficient production orders in real time based on resources and asset capacity. By providing an interactive graphical view of the production plan across the plant, Proficy helps planners to easily schedule and execute production orders then monitor the progress to ensure more efficient production operations.

Proficy tracks actual measured production, consumption, waste, and yields and updates ERP and other systems automatically. It also provides reports and analysis tools.

Proficy Smart Factory allows you to:

Reduce labor costs

Determine resources needed, scheduling down to minutes in a leaner operation

Optimize capacity

Valid schedules checked against finite capacity and material availability

Increase customer satisfaction

Improve capable-to-promise by giving reliable delivery dates

Better accommodate variation

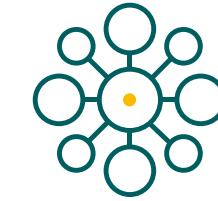
Reschedule based on capacity changes, leveraging automated rules

Speed decision making

What-if simulation of scenarios improves and accelerates decisions

Increase collaboration

Combine local scheduling and central multi-site planning, allowing users to work simultaneously from the same plan



Optimize Production with Better Planning

- Interactive graphical view of the production plan
- Configuration of product routings and resources (staff, materials, equipment) for short-, mid-, and long-term planning
- Actual production, consumption, and events information
- Automated tool for “what if” scenarios and impact on future orders
- Integrated real-time tracking including mapping current situations with production schedules to optimize and meet customers’ expectations
- Rescheduling based on capacity changes – including ability to make on-the-spot adjustments
- Integration with other systems including ERP
- Local scheduling and central multi-site planning as well as enablers multiple users to work simultaneously from the same plan.
- Access as Planners or Viewers
- Support for mobile devices, allowing remote operator access to on-line job lists

DIGITAL OPERATIONS: CENTRALIZED, REMOTE AND MOBILE

After capturing data, how are you getting valuable information from it in a desired way? Proficy Smart Factory delivers a set of comprehensive information for easy access and analysis—anywhere any time, on any device. Additionally, this solution provides a development environment to rapidly build industrial applications (visualization, connectivity, data aggregation).

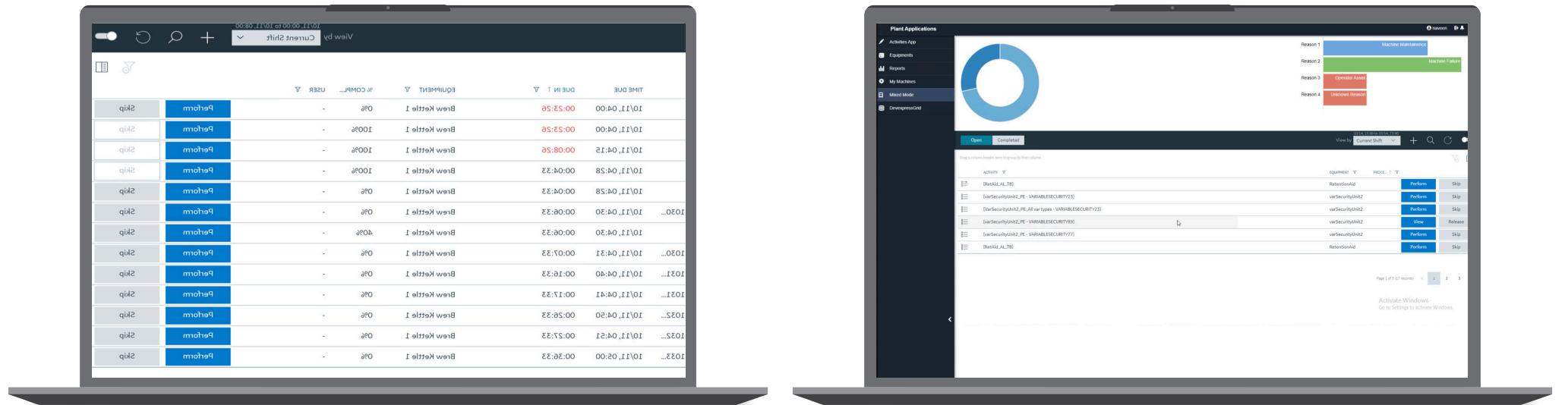
Combining Smart Factory data as well as data from other systems including historians, Proficy improves plant operations with greater visualization, data in context, and a foundation for analytics.

Proficy Smart Factory allows you to:

- Out-of-the-box Smart Factory screens
- Custom Smart Factory screens easily configured through Rapid Application Development
- A mix of out-of-the-box and custom screens

Proficy aggregates and visualizes Smart Factory data with other data sources.

Configuring screens in Proficy is as easy as 1, 2, 3. First, shrink Activities. Next, drag and drop Widgets. Lastly, select and configure your data source. Done!



For the Plant / Manufacturing Manager, Operations / Line Manager

- Real-time visibility on KPIs: OEE (efficiency, quality, availability)
- Management dashboards – including non-OT data
- Mobile access for informed decision

For the Operations Personnel / Operator, Quality Engineer

- Real-time visibility on KPIs: OEE (efficiency, quality, availability)
- Dedicated dashboards that can be customized in-house
- A single pane of glass & single source of truth

For the Mobile User

- Information on the go – any time, anywhere

INDUSTRIAL DATA MANAGEMENT FOR ANALYSIS & REPORTING: ON-PREM & CLOUD (AWS/AZURE)

With Proficy Smart Factory, you can leverage our hybrid cloud industrial data management model including best-in-class historian technology to capitalize on IoT.

Proficy Smart Factory provides a best-in-class historian that collects industrial time-series and A&E data at very high speed, stores it efficiently and securely, distributes it, and allows for fast retrieval and analysis—driving greater business value.

With decades of experience and thousands of successful customer installations around the world, the Proficy Smart Factory historian technology changes the way companies perform and compete by making data available for asset and process performance reporting and analysis.

Proficy Smart Factory allows you to:

Analyze data in context

With Proficy you achieve powerful data management with asset model context and visualization. Proficy provides: data aggregation across multiple sources or historians, ability to define an asset model including tag mapping, and advanced trend analysis.

Improve data security

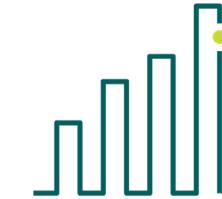
Data security remains our highest priority. Proficy uses the User Account and Authentication (UAA) service as a trusted source of tokens issued for authentication. The UAA is a multi-tenant identity management service, used in Cloud Foundry, but also available as a standalone OAuth2 server. Primarily, it can act as an OAuth2 provider. It can also authenticate users with Cloud Foundry credentials, and can act as an SSO service using those credentials, or others.

Achieve enterprise-wide industrial data management

For enterprise-wide deployments, Proficy features a model for cross-enterprise data access, cloud-like elastic computing on prem, scalability to 100 million tags, and the world's only cloud-native operational data historian.

Reduce data management time and costs

Decrease the costs to both store and access data with highly efficient compression algorithms, nearly zero database admin time, and tools to optimize performance. With just 1% compression enabled, Proficy is approximately 2x more efficient than a leading competitor and 30x more efficient than relational databases.



Real-Time and Historical Data: At Your Fingertips

- The world's only cloud-native operational data historian
- Collect industrial data at very high speed
- Normalize data and store it securely
- Distribute data and allow for fast retrieval and analysis
- Plant- and enterprise-wide capabilities: scales to 100 million tags
- 24/7 availability: avoid downtime and information gaps
- Stability and reliability for continuous improvement data analysis as well as mission-critical applications
- Easily deployable mirrored architecture
- Alarms & Events database, allowing retrieval of A&E in correlation to time-series data
- Multi-threaded for high performance

INDUSTRIAL ADVANCED ANALYTICS: ON-PREM & CLOUD

With Proficy Smart Factory, you can improve asset and process performance with AI.

Proficy uses AI and machine learning to enable process engineers to combine data across industrial data sources and rapidly identify problems, discover root causes, predict future performance, and automate actions to continuously improve quality, utilization, productivity, and delivery of operations.

Proficy has helped organizations around the world reduce costs by turning raw data into rapid business value. Engineers and data scientists can analyze, monitor, predict, simulate, and optimize and control set-points in real time.

Additionally, Proficy provides the capabilities to mine insight from historical data and rapidly develop, test, and deploy simple calculations, predictive analytics, and optimization and control solutions to reduce variability and improve operations.

Proficy Smart Factory allows you to:

Mine new insight from data

With Proficy, engineers can rapidly troubleshoot continuous, discrete, or batch manufacturing process performance by mining insight from available sensor and production data. Seamless connectivity, rich visualization, and predictive analytics enable users to analyze operating scenarios, quantifying the impact that operational changes will have on key performance metrics and identifying causes for performance variation.

Improve production throughput, yield, quality, and efficiency

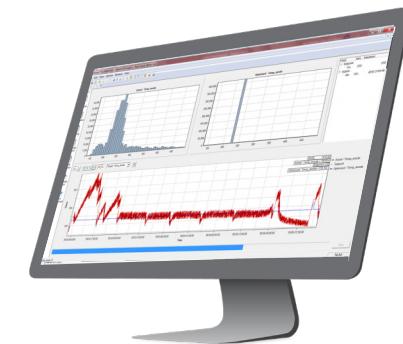
Proficy enables engineers to rapidly develop analytic solutions that typically improve production throughput, yield, quality, and efficiency with significant margin. A comprehensive solution-development environment provides visual analytic building blocks. This allows users to build and test calculations, predictive analytics, and real-time optimization and control.

Enhance engineering productivity

Proficy also allows engineers to more easily capture expert knowledge and best practices—combined with insight mined from data —into high-value analytic templates for rapid enterprise-wide deployment. Visual drag-and-drop analytics accelerate time to value and reduce dependence on data scientists and programmers.

Leverage modern analytics visualization for faster response

Take advantage of modern, thin-client visualization for high-performance analytics at your fingertips, where and when you need it.



Analytics That Drive Plant and Enterprise Optimization

- Support for on-prem and cloud-based analytics
- Ability for engineers to optimize; no data scientist required
- Enables building rich analytic solution templates with no required programming
- Simple calculations, data cleaning, math, statistics, machine-learning models, real-time optimization, and advanced process control
- Plug-and-play connectivity to historical and real-time data sources
- Rapid wizard-driven data mining for engineers for fast time-to-insight
- Built-in support for data quality to make real-time data cleaning and validation easy
- Ability to develop, integrate, test, and deploy real time solutions
- Easy-to-use, drag-and-drop environment for subject matter experts
- Multi-threaded for high performance

DYNAMIC, INTERACTIVE WORK PROCESS MANAGEMENT: GO PAPERLESS

With Proficy Smart Factory, you can decrease operator errors, costs and risk with digitized, interactive work instructions and eSOPs.

Proficy provides operators with interactive, step-by-step instructions, guiding the right actions at the right time. Operators can easily move from a paper-based method of managing procedures to an electronic format for consistency and predictability.

Proficy Smart Factory allows you to:

Unify processes

Digitize manual and automated processes with one solution across a plant or entire enterprise—from plant operators and maintenance teams to field crews and leadership.

Speed corrective action

Filter MES alarms, take automatic actions, and push required actions to the right person. With clear guidance, teams respond faster to events, and operations run more efficiently.

Decrease operator errors

Guide operators through the right steps to take, at the right time, with effective electronic work instructions.

Reduce costs and risk

Enforce and track processes to achieve higher quality, decrease waste/scrap, comply with regulations, and improve safety.

Capture and preserve knowledge

Document processes before experts retire and standardize best practices for consistency across operations.



Integrated, Interactive Work Instructions

- Guide operators with clear, step-by-step, interactive work instructions
- Document when, by whom, and how long work is performed
- E-signature and audit trails at your fingertips
- Trigger action based on time or events
- Embed videos, live feeds, pictures, manuals, and MSDS
- Automatic escalation and notification

THE INHERENT SECURITY OF SYSTEM DESIGNS MINIMIZES SOME RISKS

The good news is that some vulnerability is minimized by the nature of system design and HMI/SCADA software design, whereby the fundamental principles and canons of engineering mandate safe and reliable systems. This ensures a basic level of security to protect against an intruder.

Engineers design systems with intentionally broken automated chains—meaning in some cases functions require physical confirmation prior to the software performing commands and in other cases, the SCADA software only does a portion of the command, requiring one or many additional manual steps to execute the function. Inherent system security is best surmised at the software and hardware levels.

Software: With many viewing HMI/SCADA software as a visualization tool that provides a means for dynamic operator input and visualization as a flexible information terminal, the reality is that HMI/SCADA software capabilities are much more exhaustive. When elements are added such as control and logic capabilities, system engineers must examine the risk from a potential failure standpoint and the extent of control that is allowed without being in line of sight of the area being controlled.

Software is also developed from the operator's perspective and uses company guidelines throughout the application to ensure the operator is controlling with intent. While this doesn't necessarily bring additional security from external intruders, it does provide enhanced protection against mistakes. For example, the "select before operate" design philosophy is typically used in HMI/SCADA applications, which requires the operator to select an item on the screen, pull up the controlling

elements, operate the item, and finally confirm to send the command. While this may seem like a simple ideology or a drawn out process, this intentional design ensures that an operator's actions are deliberate as opposed to a hasty reaction to an urgent situation.

Hardware: At this level, design engineers employ many techniques to ensure safe control, either physically or by the HMI/SCADA software. Thousands of individual devices and RTUs can exist in a system and are typically implemented with an area-based manual or automatic control selection; field technicians use manual control to perform maintenance or to address a software failure—locking out the software control and establishing local control.

Additionally, when engineers design this level of the system, many hardware-based fail-safes are built in the design such

as fusing or hardwire interlock logic to examine the local situation, so when components are commanded by the HMI/SCADA software, there is a hardware level of checks to ensure it can be executed. This protects the system from unsafe or even incorrect software control. Furthermore, many critical applications use triple and quad redundant logic controllers to ensure continuous operations.

Taking into account the general design rule that system engineers apply for all levels of a system can be surmised by "if a single point of failure exists, protect it or provide secondary means." Therefore, design philosophies typically drive a holistically safe and secure-by-design environment, which can severely impede an intruder's ability at the HMI/SCADA level to impact the entire system.



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“Set and forget” is not a strategy for success. To ensure your plant and enterprise solutions keep providing the highest value possible, companies need to plan for support and maintenance.

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Premier

A complete solution that accounts for production and operational needs with 30-minute rapid response for critical issues and outcome-based services to drive Adoption. This plan is ideal for customers who want a partner to help them scale and manage their critical operations.

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- 30-minute rapid response time for critical issues
- 24/7 emergency support
- Complementary test upgrade kits

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- Unlimited access to online training
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Adoption & Outcome Services

- Account health monitoring services

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A comprehensive plan inclusive of partnerships with adoption, support, and education services. This plan is ideal for enterprise firms of all sizes embarking on digital transformation. It's also ideal for firms with operations across multiple sites that require optimal production and zero downtime.

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- Account health reviews
- Adoption and Outcome Services
- Education Needs assessments

Value Services

- Application Support Consulting Services
- Professional services consulting hours*
- Discounts on additional Education Credits and consulting hours

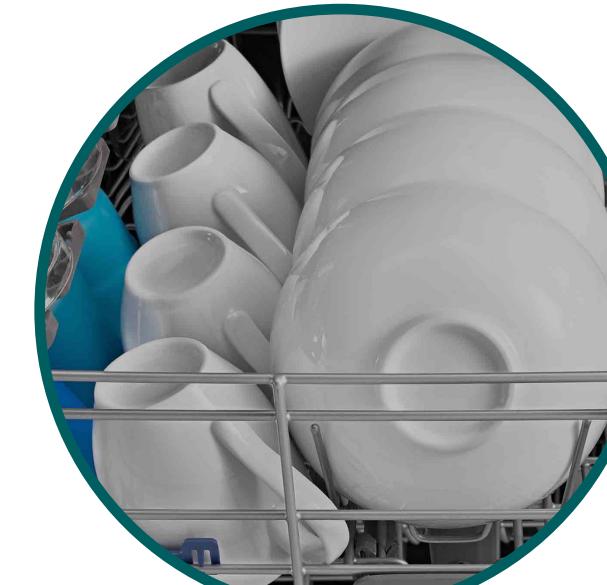
*Requires minimum annual contract commitments

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