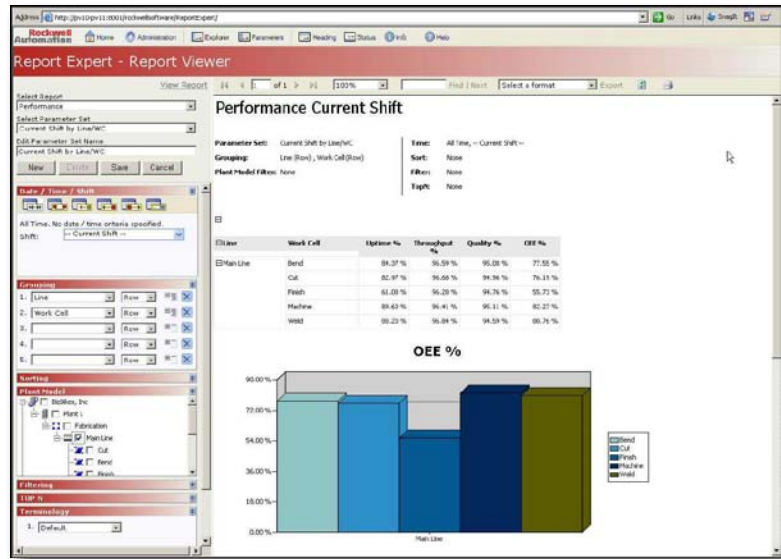




Advantages

- **Increased capacity** – More product, revenue, and profit in the same amount of time
- **Decreased manufacturing costs** – Less overtime, reduced labor costs, lower per-unit costs
- **Deferred capital expenditures** – Make your current equipment produce more
- **Decreased overhead costs** – Save time in collecting data and preparing reports
- **Empowered continuous improvement** – Accurate data puts the focus on improvement

Gather real-time information to measure and improve the performance of manufacturing assets and overall equipment effectiveness (OEE).



Overview

With FactoryTalk® Metrics, you can increase production, reduce costs, and increase quality using existing equipment and labor more effectively. This is accomplished through accurate reporting of real plant-floor activity.

FactoryTalk Metrics monitors plant-floor equipment and helps provide accurate, timely, granular, and specific information on machine performance, while providing detailed machine event history to document performance. This data is the basis for understanding the real causes of inefficiency, waste, lost capacity, and equipment states.

FactoryTalk Metrics help you refine, streamline, and prioritize your process improvement initiatives, resulting in reduced downtime, decreased cycle time, and increased overall production.

Features

FactoryTalk Metrics is a complete system for efficiency monitoring and event collection and analysis. It offers:

- Easy, flexible, scalable configuration
- Compatibility with any PLC or HMI using OPC standards
- Reliable, 24/7 data collection
- Data storage in a standardized, efficient, usable form
- An equipment state engine
- Highly configurable data collection formulas or calculations
- Microsoft® Reporting Services technology

- Access to reports with a Web browser
- Customizable and extendable features
- Customized event data collection

In addition, FactoryTalk Metrics provides real-time and historical visibility of:

- Key Performance Indicators (KPIs)
- Total/good/scrap production counts
- Ideal production counts
- Time in custom events such as downtime, setup, changeovers, waiting, idle, and more
- Event counts
- Equipment states: Running, blocked, starved, down, and more
- Ideal and actual cycle times
- Faults
- Mean Time Between Failure (MTBF), Mean Time To Repair (MTTR)

Benefits

- **Increased capacity** – More product, revenue, and profit in the same amount of time
- **Decreased manufacturing costs** – Less overtime, reduced labor costs, lower per-unit costs
- **Deferred capital expenditures** – Make your current equipment produce more
- **Decreased overhead costs** – Save time in collecting data and preparing reports
- **Empowered continuous improvement** – Accurate data puts the focus on improvement

FactoryTalk Metrics Deployment

FactoryTalk Metrics is designed to be tailored to each unique plant environment allowing for flexible configuration of the plant model, schedules, performance parameters, custom events, and reports.

FactoryTalk Metrics is configured by authorized users using the Configuration Console. Configuration wizards guide the author through the process, which can scale

from very simple to very detailed, depending upon requirements. Since FactoryTalk Metrics applications often evolve over time as new opportunities for improvement are uncovered, previous configurations are easily modified and new reports may be added without the need to interrupt ongoing data collection.

Efficiency Data

FactoryTalk Metrics collects the following types of data from the control system for calculating Overall Equipment Efficiency (OEE) and other default KPIs:

- Total/good/scrap production counts
- Part ID and cycle time
- Available status and shift – time patterns and exceptions or shift and availability data points.
- User-defined fields or “Flex Fields”
- Running indicator
- Custom formulas or calculations for KPI or event data collection

Custom Events

Aside from being an OEE analysis tool, FactoryTalk Metrics excels as an Event-Tracking System, and custom events can be created to monitor whatever is important for a particular machine. Examples include:

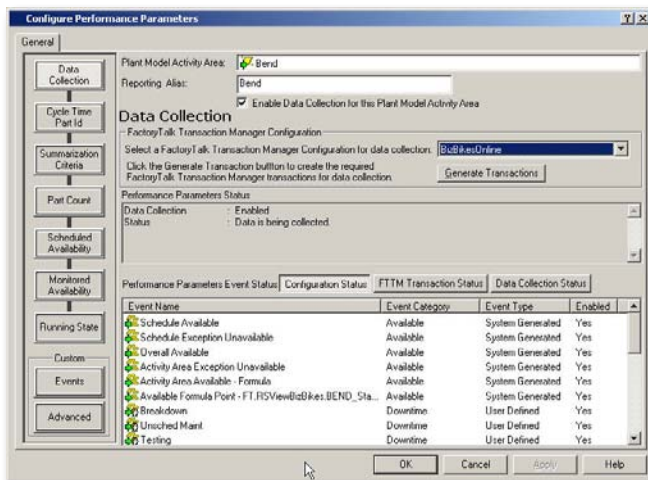
- Downtime analysis
- Predictive maintenance
- Intra-machine optimization
- Equipment states
- Fault calculations such as MTBF/MTTR
- Simple traceability
- Cycle-time analysis
- Defect tracking
- Quality controls

Custom events are often added incrementally to a running FactoryTalk Metrics system when more detailed data is desired, like when a particular problem area is identified and investigated through a continuous improvement program such as Six Sigma. FactoryTalk Metrics is commonly used to provide automated data collection for Six Sigma programs to accelerate efforts and improvements.

Reporting

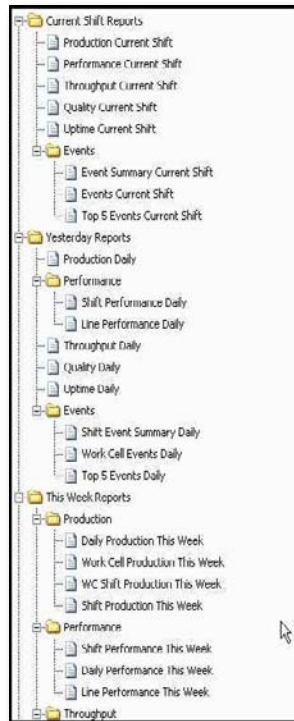
FactoryTalk Metrics supports two reporting systems: QuickWeb and Report Expert.

QuickWeb and its Configuration Console, which is the same interface that can be used to configure FactoryTalk Metrics data collection, is used to create QuickWeb reports. These reports can also be created or modified by other HTML editors like Microsoft® FrontPage®. QuickWeb reports can be embedded into any ActiveX® container, such as FactoryTalk® View or third-party HMI applications, providing operators with the latest data at their terminals. All FactoryTalk Metrics reports are available to licensed



runtime users via a standard Web browser.

Report Expert is a new and optional capability for reporting FactoryTalk Metrics data. Report Expert is based on Microsoft Reporting Services (MSRS) technology, with special extensions geared toward reporting FactoryTalk Metrics data. It has both out-of-the-box reporting capability, and support for extensive customization. Pre-configured reports are provided, and users may create parameter sets to apply to standard report templates that customize both report content and behavior, all through an easy-to-use web interface. Report Expert allows web access to MSRS, QuickWeb, and Report Expert reports.



- Time filtering (date range, relative time, shift, named time filters)
- Grouping (page, row, and column grouping on any data field)
- Sorting (on any data field)
- Plant Model filtering (on any workcells, lines, areas, and more.)
- Filtering by data value
- Top N pareto filtering
- Language/terminology

Report Expert report templates and parameter sets provide a powerful capability for users to both create custom reports that can be shared among users, and to generate ad-hoc reports. Reports also provide built-in drill down and drill through capabilities to view more or less detailed information as required.

For FactoryTalk Metrics solutions that require more customized reporting, all of the features of Microsoft Reporting Services are available. Users can be permitted to create their own reports in an ad-hoc fashion using SQL Server Report Builder, and to save these reports for later use. This feature is securable, and can be assigned to only those users who require it. New reports can also be created using the Business Intelligence Developer Studio included with SQL Server 2005. These reports can be included in the Report Expert interface through a simple configuration page. Additionally, custom reports can be enabled to utilize the Parameter Set functionality provided by Report Expert.

Report Expert provides standard report templates for:

- Production
- Performance
- Throughput
- Quality
- Uptime
- Event Summary
- Event Detail
- Machine State History
- Workcell Dashboard (Line Edition)

Custom parameter sets can be created and applied to any report template. The following can be configured in a parameter set:

FactoryTalk Metrics Line Edition

For customers who use Rockwell Automation ControlLogix controllers, FactoryTalk Metrics Line Edition offers a faster track to a FactoryTalk Metrics implementation. Line Edition includes a User-Defined Type (UDT) structure that can be integrated into existing control system programs. The UDT includes the data points that are needed in a typical FactoryTalk Metrics application. FactoryTalk Metrics Line Edition includes a tool that automatically configures

OEE Defined

FactoryTalk Metrics uses an Overall Equipment Effectiveness (OEE) model to measure the performance of manufacturing equipment. The OEE model yields a single performance rating for every activity area (workcell, line, area, or plant) being monitored, thereby providing a simple way to determine quickly if an activity area is performing adequately.

The OEE value can be used to assess a single machine's performance over time or to compare the performance of machines to each other. Three components contribute to an OEE value: availability, throughput, and quality. Each is a percentage, and the OEE value is the product of these three percentages.

$$OEE = Availability * Throughput * Quality$$

The OEE calculation that is used by FactoryTalk Metrics is the product of these three components.

Availability is a ratio of running time to available time. Available time may be defined by a schedule or modified by planned downtime events such as preventive maintenance.

Throughput is the performance of a machine when it is running compared to its ideal cycle time.

Quality is the percentage of good parts that are produced.

OEE is a valuable method of analyzing performance because it is widely recognized and can be applied to any type of industry, factory, or machine. OEE is the default efficiency calculation performed by FactoryTalk Metrics; additional or alternate calculations can be implemented. Furthermore, FactoryTalk Metrics supports the collection of detailed event data, which can be used to analyze the specific causes of inefficiencies.

Key Performance Indicators

Depending upon FactoryTalk Metrics configuration, up to 15 default KPIs are available for reporting. The KPIs include:

- Good Parts %
- Scrap Parts %
- Ideal Capacity
- Running %
- Downtime %
- Fault %
- Availability %
- Performance %
- Quality %
- Failure Rate
- OEE (Overall Equipment Effectiveness)
- MTBF (Mean Time Between Failure)
- Available % (vs. Schedule)
- MTTR (Mean Time To Repair)
- Failure Frequency Rate

In addition to the default KPIs, other performance indicators can be derived from collected data.

FactoryTalk Metrics data collection by using instances of the UDT.

FactoryTalk Metrics Line Edition also has additional Report Expert standard reports, including a variety of dashboard components and an example workcell dashboard.

Data Collection

FactoryTalk Metrics can collect data from any OPC-compliant device or HMI application. All data is collected in real time, and FactoryTalk Transaction Manager, provided with FactoryTalk Metrics, is used as the data-collection engine. FactoryTalk Metrics data is stored in an open SQL Server™ or Oracle® database with a documented schema. Once data collection begins, it operates 24/7 and monitors workcells continuously so that events are never missed. Most changes can be made to the FactoryTalk Metrics application without interrupting data collection. This flexibility is enabled by the FactoryTalk® Directory and FactoryTalk® Live Data services from the FactoryTalk Services Platform.

Security

FactoryTalk Metrics includes a complete security system. Security is based on FactoryTalk® Security with application-specific extensions. Users and groups can be

created or imported from the operating system. A verified login is required to access all functions, including viewing QuickWeb reports. Users are restricted to viewing only those reports for which they have been granted rights. Special functional privileges can be granted to users or groups. Only users with FactoryTalk Metrics Authoring Client licenses are allowed to configure FactoryTalk Metrics or create QuickWeb reports.

FactoryTalk Services

FactoryTalk Services are the foundation of the FactoryTalk Integrated Production and Performance Suite. They are a flexible solution consisting of activation procedures, a common address book, centralized authentication and access control, and uniform diagnostics that can help reduce costs and extend the life cycle of your existing investments.

Get More Information

For ordering information contact your local Rockwell Automation sales office or Allen-Bradley distributor. Or learn more by visiting <http://www.rockwellsoftware.com>.

FactoryTalk Services

FactoryTalk® Services deliver value. They are a shared set of common features that enables superior interoperability and commonality between applications for reduced engineering, operations and training costs, while extending the life of existing investments. The FactoryTalk Services provide a solid foundation for today and a path for the future.

	Activation	Directory	Security	Diagnostics	Audit	Live Data	Alarms & Events
FactoryTalk Metrics	✓	✓	✓	✓	✓	✓	

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