Overall Equipment Effectiveness

Optimized production at any time

SIMATIC IT

Answers for industry.
Overall Equipment Effectiveness: high Availability, high Performances, and high Quality ... the everyday targets in our plants

Availability against planned times, performance against target values and quality standards for comparing good and scrapped pieces are the key factors to obtain the real Equipment Effectiveness. Reduction of downtime, increase of asset utilization and plant reliability, optimization of maintenance costs strongly impact productivity making it possible to establish a tight relationship between performance measures and business objectives.

All these criteria are incorporated into a plug’n’play approach, which allows rapid configuration of OEE solutions with fast Return on Investment (ROI) and low Total Cost of Ownership (TCO).
Proactively improve your operational performance

Nowadays manufacturing organizations are placing a much higher value on information generated, aggregated, and used by events and processes within real production and logistics worlds.

Information on labor, inventory measures, lead times, maintenance and operational equipment effectiveness, product data accuracy, uptimes, utilization, bottlenecks, yield and scrap metrics, etc. is valuable in environments where making decisions in near real-time is critical.

High levels of performance, quality and availability are the main targets and daily production efficiency is impacted by the 6 Big-Losses:

- Breakdowns and changeovers that limit equipment availability
- Micro-downtimes and reduced speed that affect equipment productivity
- Non-conforming items and changeover, scrap that reduces production quality and yields

The challenge of maximizing an equipment’s potential forces companies to think of “real-time efficiency data”.

Manufacturing organizations must be able to monitor the indicators related to production performance and immediately identify possible issues.

They also must be able to analyze those problems and react in real-time using appropriate corrective actions.

OEE provides simple and consolidated formulas to compute key performance indicators that can be repeatedly used to monitor production efficiency and to find the greatest areas of improvement.

It’s clear that a deep analysis of these indicators requires a complete knowledge of the plant, with the right granularity of information.

ERP systems are not suitable to handle these constraints, while Plant Operations Management systems such as MES are naturally and inherently eligible for providing feasible decision support on plant profitability and establish a foundation for addressing other manufacturing challenges in the future.
Plant Efficiency is totally integrated into SIMATIC IT

Overall Equipment Effectiveness (OEE) is an approach for monitoring and managing the lifecycle of manufacturing assets. The following functionalities make our SIMATIC IT OEE-DTM an “easy, fast and reliable to use” solution.

**Downtime management**
For detecting downtime through constant monitoring of the plant equipment. This can be accomplished in real time, through factory electronics (PLC, etc.) or offline, through manual input by operators or maintenance personnel.

**KPI management**
A list of predefined KPIs that enable a plug’n’play approach for monitoring the real efficiency of plant equipment without any engineering for configuration. In addition, it provides the capability of defining customizable KPIs, for tailoring the OEE solution to satisfy unique needs.

**Production efficiency monitoring with dedicated graphical components**
For displaying collected data and executing algorithm calculations.

It provides a number of predefined graphical screens specifically built in order to provide out-of-the-box analysis of OEE-related KPIs and equipment downtime.

**Gantt Charts**
Complete downtime records related to one or more pieces of equipment can be displayed in a graphical way.

**Contextualized analysis against manufacturing events**
It is possible to contextualize analysis by including “context data”, i.e. product ID, order ID and batch ID, in order to achieve a more meaningful, complete, and detailed data analysis and visualization.

**Reporting**
Starting from standard predefined reports, users can obtain relevant information in a PDF format or in other more suitable media.

In addition, users can also populate these reports setting custom complex queries, and retrieve in real-time the resulting “on-the-fly” reports.

**Dynamic and customizable Web Portal**
A predefined set of Web pages provide to the users all the “ready-for-use” OEE information in a flexible, scalable, and “easy-to-use” environment. It is also possible to customize these pages, in order to satisfy all user needs.

**KPI Performance Indicators**
- Availability Rate
- Performance Rate
- Quality Rate
- Maintenance Rate
- Downtime Loss Rate
- Productive Time Rate
- MTBF (Mean Time Between Failure)
- MTTA (Mean Time To Assist)
- MTBA (Mean Time Between Assist)
- MTTR (Mean Time To Repair)
- Cycle time
- Speed loss
- State Duration
- other standard algorithms and customizations
OEE is the leading methodology for measuring consistently the efficiency of individual equipment and, ultimately, of the entire factory: production performance is measured through KPIs (Key Performance Indicators), which are computed as a combination and aggregation of several data elements.

Sensitive events and financial indicators are used by SIMATIC IT OEE-DTM for contextualizing data, thus enabling decision makers to focus on specific weak points in the manufacturing cycle.

Finally, relevant information is made available for continuous improvement at different management levels: every user has access to KPIs that are meaningful for their role. Moreover, users can drill down into further analysis and information based on current and historic data can be visualized in different ways.

SIMATIC IT OEE-DTM is a truly scalable solution that can start from pure KPI efficiency management (including downtime management) and extend to a manufacturing tool including production context and manufacturing processes, thus definitely reducing the application’s overall TCO (Total Cost of Ownership) and improving ROI (Return on Investment).

One of many ad-hoc building “blocks” SIMATIC IT is the Siemens solution for broadening the scope of MES. With its “Framework & Components”, based on a strong technology platform, it enables supporting flexible, scalable and affordable solutions, with the ability to fully interoperate with all the levels of the enterprise.

SIMATIC IT for OEE is an optional component and provides a complete solution for monitoring the overall equipment effectiveness of a plant.

This innovative approach reduces the Time-to-Value of an IT initiative while retaining the inherent flexibility of the SIMATIC IT infrastructure. Such high-value building blocks can be freely combined to fulfill every individual need without compromising system architecture.

Thanks to a real fully-harmonized integration of this component with the whole SIMATIC IT solution:

• Increase acquisition performances using high speed acquisition rules
• Customization of the application through the user-exits capabilities
• Speeding-up acquisition performances by buffering mechanisms
• Improvement of the acquired data contextualization
• Definition of high-level contexts

SIMATIC IT for OEE will become a key component in your productivity toolbox, enabling you to enforce standard operating procedures, monitor and grow the efficiency of your plant equipment, increase your output, expand your product variation and achieve production cost reductions.

SIMATIC IT OEE-DTM benefits

• Reducing efforts to collect real-time production information
• Preventing unscheduled downtime
• Improving data synchronization and safety with a data recovery system
• Maximization of production equipment utilization
• Reducing maintenance costs by optimizing planning activities
• Improving assessment and business process performance
• Easy Import / Export configuration data from Excel worksheets
• Optimizing product quality grading process

Easy-to-use, fast and reliable
The information provided in this brochure contains merely general descriptions or characteristics of performance which in case of actual use do not always apply as described or which may change as a result of further development of the products. An obligation to provide the respective characteristics shall only exist if expressly agreed in the terms of contract.

All product designations may be trademarks or product names of Siemens AG or supplier companies whose use by third parties for their own purposes could violate the rights of the owners.