Industry leaders in manufacturing understand the importance of controlling production capacity, optimizing quality control processes and standardizing information received from their production facilities to provide management tools to compare results and make decisions. The overall role of the Manufacturing Execution System (MES) can be broadly described as the adoption of a highly-integrated management information system that uses modern concepts and technology to reduce costs, improve business processes and standardize the industry by embedding best-practice technology. One of the main strategic advantages of an MES solution is the capture of manufacturing-related data which can be turned into information that can drive business decisions and improve KPI scores, process control, product quality and productivity.

**Production Management & Execution**
- Order management & execution
- Material management
- Tracking and tracing
- Product Definition Management
- Detailed scheduling
- System integration
- Asset management, OEE & KPIs
- BOM and recipe management
- Inventory management

**Data Acquisition**
- Third-party
- Automation layer interface
- ERP interface
- Planning system interface
- LIMS interface
- SCADA interface
- SPC interface

**Quality Management**
- LIMS integration
- At-line and in-line testing
- 21CFR11 compliant
- Full product genealogy
- Statistical Process Control (SPC)
- Audit trail and electronic signature

**KPI Management**
- KPI efficiency calculation & visualization
- Overall Equipment Effectiveness (OEE)

**Reporting Capabilities**
- Reports
- Andon
- Customizable dashboards

**Advanced Planning & Scheduling**
- Capacity planning
- Production scheduling
- Simulation
MES Features

» Standard interfaces to keep the ERP and the shop floor in sync (e.g. ERP orders, material master, product definition, planned production schedule, production performance, material consumption) according to ISA-95 and ISA-88 standards.

» Automatic tracking and tracing and full genealogy creation for all the materials present in the plant. Integration with handhelds, RFID's and barcode scanners.

» Management and execution of orders manually created within the MES solution or coming from the ERP layer (e.g. plant order, production order, maintenance order, transport order, etc.).

» Management of material master data and product definitions manually created within the MES solution or coming from a specification software. ERP and specification software are constantly kept in sync by the MES solution.

» Integration of data coming from multiple systems (e.g. LIMS, SPC, ERP, SCADA, etc.) and plants in a unique data repository optimized for reporting and OLAP analysis.

» Ability to acquire Key Operational Parameters (KOPs) linked to process orders as well as to calculate Key Performance Indicators (KPIs) that will drive improvement in decision-making and strategic planning.

» Asset management with real-time monitoring of production lines and equipment. Capability to associate reasons to down-times as well as to collect and aggregate counter data coming from several different PLCs, DCs, SCADA and Batch systems.

» Compliancy with the 21CFR Part 11 quality regulations through sophisticated audit trail, logging and electronic signature mechanisms.

» Ability to manage the material inventory automatically and in real time. Inventory levels and consequently ERP are automatically updated during the production process with consumption data, and each time new materials enter or exit the plant.