MANUFACTURING EXECUTION SYSTEM

Critical Manufacturing MES unifies the global enterprise; it improves decision-making, increases efficiency and, ultimately, helps manufacturers to compete.
MANUFACTURING EXECUTION SYSTEM

Why MES?
Implementing a manufacturing execution and intelligence system provides users with a single, integrated view of enterprise data, improving decision-making around critical business and production processes. Coordinating enterprise systems like ERP, quality, and R&D with an MES enables manufacturers to reduce risk, simplify and automate processes and support continuous improvement.

Why Critical Manufacturing?
CRITICAL Manufacturing provides manufacturers of complex, high tech discrete products, a manufacturing execution and intelligence system that empowers the organization to achieve its goals. It scales to mirror growing operational needs, drives visibility of production and costs across the supply chain, and is easy to implement on an existing infrastructure. As a result, our state-of-the-art products and services enable our customers to drive down cost, flexibly meet market demands, and ultimately achieve greater agility, visibility and reliability.

Low Total Cost of Ownership
Through reduction of all cost factors

- **ADMINISTRATION**
  - Single IT stack, with powerful admin tools
  - Application admin through a unified GUI

- **MODELING**
  - Rich, pre-customized object model
  - Modeling through the same GUI
  - Empowered end-users

- **INSTALLATION**
  - Server side full installer ready in minutes
  - No client installation

- **3RD PARTY LICENSES**
  - 100% Microsoft Technology
  - No hidden costs

- **SOFTWARE**
  - Scalable pricing model, based on size
  - Modular functionality

- **HARDWARE**
  - Scalable HW based on needs
  - From single server to full fault-tolerant, high-available configuration

Critical Manufacturing is proud of its designation by Frost & Sullivan as a global value leader in the MES industry leader for its low total cost of ownership, features and ease of use.

Global Price Performance Value Leadership Award Report
CHECKLISTS
Mandatory or optional, sequential or floating multi-step checklists with defined parameters and tracking integrated with manual or automatic rules.

STATISTICAL PROCESS CONTROL
Variable and attribute charts, integrated with data collection, exceptions, resource and material tracking. Western Electric and user defined rules.

SCHEDULING
Integrated scheduling optimization & execution.

ROUTING AND DISPATCHING
Service-oriented, hierarchical resource and material dispatching with customizable rework paths.

MAINTENANCE MANAGEMENT
Ad-hoc time and usage based maintenance management integrated with Material and Resource management, bill of parts and checklists.

RECIPE MANAGEMENT
Recipe parameters and context resolution integrated with resource and material tracking and equipment integration.

CODING
Real-time shop-floor costing control through cost absorption (labor, equipment, materials, etc.)

SHIFT LOGBOOK
Exchange of critical information between shifts.

DATA COLLECTION
Flexible, scalable and automated data collection that is fully integrated with Statistical Process Control and Exceptions Management.

RESOURCE AND DURABLES TRACKING
Resource and durables Management. Integration with Recipe Management, Maintenance, Exceptions and Data Collection.

FABLIVE
Fab layout tool with overview and zoom-in capabilities for historical and real-time trending and analytical reports.

DASHBOARDS
Graphically access material, resource or other user defined query to chart and report on process data enabling users to fulfill custom business requirements.

MATERIAL GENEALOGY
Easily access the full or filtered history information of any object with a full list of descendants or ascendants of any material.

ADVANCED LAYOUT & PRINTING
Design, preview and print labels and lot travelers with context driven information for text, images or barcodes.

MONITORING
Visualize in real time fab layouts, dashboards and other information from mobile devices.

MATERIALS & CONTAINERS
Bill of materials and container models for flexible, highly-granular traceability.

DATA COLLECTION
Flexible, scalable and automated data collection that is fully integrated with Statistical Process Control and Exceptions Management.

ORDER MANAGEMENT
Provides the means to manage the fulfillment of production orders from a shop-floor perspective.

WAREHOUSE MANAGEMENT
Manage request and return of materials between Shop-floor and Warehouse.

SHIFT MANAGEMENT
Management and balancing of users, teams and shifts.

ADVANCED REPORTS
Create, edit and publish highly-granular reports based on the online database, the operational data store or other external database.

OPERATIONAL DATA STORE
Fast and feature-rich data extraction and archiving tool for integration with external heterogeneous data sources.

DATA ANALYSIS
Intelligent, automated multi-source data extraction and analysis capabilities.

OLAP OPERATIONS
Multi-dimensional data warehouse, with advanced slicing and dicing OLAP operations.

DATA MINING
Advanced data mining algorithms and analysis, including time series, decision trees and neural networks.

ENGINEERING MULTI-SOURCE EXTRACTION, REPORTING AND DATA MANIPULATION AND AGGREGATION
META-DATA BASED INTEGRATION AND PRODUCTIVITY PLATFORM, EQUIPMENT AND ERP INTEGRATION

FOUNDERATION
Integration and productivity platform with presentation meta-data based business and analytics layers.

CONNECT
Full point-and-click equipment integration platform connecting enterprise software (SECS/GEM, OPC, PLC, File, Database, LIMS) with Navigo or other MES, including service and message mapping.

ERP INTEGRATION
Flexible ERP integration (SAP, MS, etc.) for production orders, inventory status updates, master data and maintenance operation data with Synchronous or Asynchronous communication in the event of ERP downtime.

STATISTICAL PROCESS CONTROL
Variable and attribute charts, integrated with data collection, exceptions, resource and material tracking. Western Electric and user defined rules.

EXCEPTIONS MANAGEMENT
Manual or automatic user defined exception protocols linked to EDC limits and SPC rules and linked to process checklists.

CHECKLISTS
Mandatory or optional, sequential or floating multi-step checklists with defined parameters and tracking integrated with manual or automatic rules.

DOCUMENT MANAGEMENT
Visualize, control and approve shop-floor related documents within MES context and at the right operation.

SAMPLING
Define and execute time and counter based sampling based on flexible contexts.

PRODUCT LIFE-CYCLE MANAGEMENT, PROCESS CONTROL AND QUALITY IMPROVEMENT MODULES

OPTIMIZATION AND EFFICIENCY INCREASE SHOP-FLOOR MODULES

Empowered end-users
Next generation user experience

Fully integrated modular system
Flexible, scalable and extensible to all tiers

PRESENTATION
Silverlight / C# - Silverlight / C#

PRESENTATION WORKFLOWS
C# - C#

SERVICE INTERFACE
Windows Communication Foundation / C# - Windows Communication Foundation / C#

BUSINESS WORKFLOWS
Windows Workflow Foundation / C# - Windows Workflow Foundation / C#

BASE BUSINESS OBJECTS
C# / .Net - C# / .Net

DATA ACCESS LAYER
LINQ to SQL / ADO.Net Entity Framework / Dynamic SQL - LINQ to SQL / ADO.Net Entity Framework / Dynamic SQL

APPLICATION SERVER FARM
Application Server Farm - Application Server Farm

DATABASE SERVERS
Database Servers - Database Servers

Microsoft Partner
Microsoft Partner

Hardware Reliability, Scalability and Performance

Extensibility
At all tiers

- PRESENTATION TIER
  - Add ribbon actions
  - Create addins
  - New gui’s

- BUSINESS TIER
  - Dynamic business rules
  - Custom entities
  - Custom services

- ANALYTICS TIER
  - Reports
  - Cubes
  - Data sources

SQL SERVER OPERATIONAL DATA STORE (ODS)
SQL Server Reporting Services
SQL Server Analysis Services (SSAS)
SQL Server Integration Services
SQL Server Replication

DATA WAREHOUSE
Online Databases
OLTP to OLAP / ADO.Net Entity Framework / Dynamic SQL
SQL Server
SQL Server Reporting Services
SQL Server Analysis Services (SSAS)
SQL Server Integration Services
SQL Server Replication

FACTORY INTEGRATION
FACTORY MANAGEMENT
ONLINE VISIBILITY & TRACEABILITY
OPERATIONAL EFFICIENCY
QUALITY MANAGEMENT
OPERATIONS INTELLIGENCE

FACTORY MANAGEMENT
ONLINE VISIBILITY & TRACEABILITY
OPERATIONAL EFFICIENCY
QUALITY MANAGEMENT
OPERATIONS INTELLIGENCE
Critical Group

Provides business critical solutions across industries such as aerospace, defense and telecommunications, under stringent quality certifications like NATO and CMMI Level 5.

Experience

Our engineers provide solutions for some of the most challenging MES green-field and migration projects world-wide. Their experience is at your service.

Innovation

Our solutions address the most important industry challenges through cutting-edge innovative products and technologies.

Reference Customers

- Semiconductors
- Solar
- Electronics
- Medical Devices
- Other industries

Manufacturing & R&D

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