
Computer/Machine Interface Terms

Agile Manufacturing - A manufacturing enterprise in which Information flows seamlessly among inventory, sales and research departments and between the organization and its suppliers and customers." Work within an agile organization occurs concurrently rather than sequentially.

Algorithm - A set of rules specifying a sequence of actions taken to solve a problem.

API, Application Program Interface - The interface between the application's software and the application platform.

Application Software - A program that performs a specific service or solves a particular problem.

Architecture - A structured set of protocols that implement the functions of the system.

Batch Manufacturing - Manufacturing in groups, lots or batches in which each part or finished good is identical.

Batch Processing - The method adopted when the required product volumes do not allow continuous production of one product on particular machines.

CAD, Computer-Aided Design - The use of high-resolution graphics in design activities that allows quick evaluation and modification.

CAPP, Computer-Aided Process Planning - A management framework for data that assists the functions of process planning in manufacturing.

CASE Tools, Computer-Aided Software Engineering - Allow users to make changes in the way they access information from a relational data base.

CIM, Computer Integrated Manufacturing - A manufacturing process that is automatically controlled and executed through a computerized system of technology.

COMMS, Customer Oriented Manufacturing Management System - A software package that promotes closer communication between a manufacturer's departments, its customers and its suppliers.

Control System - A system to guide or manipulate various elements in order to achieve a prescribed result.

Critical Path Method - Use of computers to determine the order in which operations must be executed to complete a program in minimum time, and determine which operations have some "float" or capacity to be reprogrammed without affecting the minimum time.

Data Acquisition System - Any device that acquires information from sensors using amplifiers, multiplexers and analog to digital converters.

DCS, Distributed Control System - A real-time control system for continuous and batch process applications.

Distributed Processing - The physical and/or logical connectivity of hardware, software, information and load sharing.

Document Management System - Provides storage, retrieval and manipulation of documents in a compact space.

Dynamic Dispatching - Updates the entire factory floor automatically of status changes (such as work completed, operational problems or priority changes), rescheduling all operations for all released jobs to reflect the changes.

ERP, Enterprise Resource Planning - Recognized as a logistical extension of MRP (see MRP).

Expert System - Software that applies knowledge and reasoning techniques that involve rules and heuristics to solve problems normally requiring the abilities of human experts.

Fault Tolerance - The ability to execute tasks regardless of the failure of strategic components.

Fourth-Generation Language (4GL) or Fourth-Generation Environment (4GE) - A computer language instructing the computer at a higher-level language abstraction than traditional high-level programming languages. Any computer language that does not require traditional input/process/output logic falls into this category.

Fuzzy Logic - A method used to model linguistic expressions that have non-binary truth values such as PID algorithms in process control.

Integration - The state in which all aspects of plant-wide operations are tied together in a continuous loop of information.

Inventory Management - The systematic determination of items and quantities to be ordered; the coordination of order release and order due dates; changes in the required quantities; and the rescheduling of planned orders.

JIT, Just-In Time - An approach to manufacturing in which each operation is closely synchronized with subsequent operations.

MES, Manufacturing Execution Systems - A term defined by Advanced Manufacturing Research (AMR, Cambridge, MA) to describe a system that rather than focusing on measurements of material usage or process control, "centers on the product itself as it moves through the plant on the way to the customer."

MESA, Manufacturing Execution Systems Association (also known as MESA International) - A trade association of MES producers and companies that offer complimentary products and programs.

MIS, Management Information Systems - Computerized networks used in effectively structuring critical information in a form usable for identification of inefficiencies.

MRP, Materials Requirements Planning.

MRP II, Manufacturing Resource Planning - A software tool that enables a manufacturer to plan, allocate and track material and financial resources for a production process.

Object-Oriented Programming - Programming based on a package of information and descriptions of procedures that communicate by passing messages.

Open Systems - An approach to computing that allows the interconnectability of systems based on compliance with established standards.

Operator Interface - A physical link between the human operator and a computer system, typically consisting of a graphical representation.

OSI Reference Model - The reference model defined by the International Standards Organization (ISO) that provides a framework for an open network. The seven layers are physical, datalink, network, transport, session, presentation and application.

Portability -The ability to use and migrate software across different platforms.

Process Control - Automatic monitoring and control of a process by an instrument or system configured or programmed to respond appropriately to process feedback.

Process Simulation - Use of a mathematical model by a computer program to implement different process design scenarios with real-time feedback.

Production Control - Systematic planning, coordination and direction of all manufacturing activities to ensure that products are made on time, of adequate quality and at reasonable cost.

Protocol - An agreed set of rules to allow data to be transferred among systems.

Real-Time System - Use of precise timing in controlling an event typically consisting of multiple changing variables.

Relational Database - Management system software that configures usually large, volumes of data in table-like structures called relations. Structured Query Language (SQL) has been accepted as the official standard in retrieving information from these tables.

Rule-Based System - System written in the form of simple if-then or condition-action rules.

SPC, Statistical Process Control - A quality control method that focuses on continuous monitoring of the process with the intent to achieve closed loop control of the process to eliminate defective product.

SQC, Statistical Quality Control - Applies statistical techniques to the observed characteristics of a process.

SQL—Structured Query Language - A format for accessing data within a relational database management system.

Supervisory Control - The use of computers to accomplish operator interface, data acquisition, process monitoring and some degree of production control.

Systems Integration - The ability of computers, instrumentation and other components to share data or applications.

X-Windows - Defines an interface standard between an application and a user interface to allow the display of remote applications on a network.