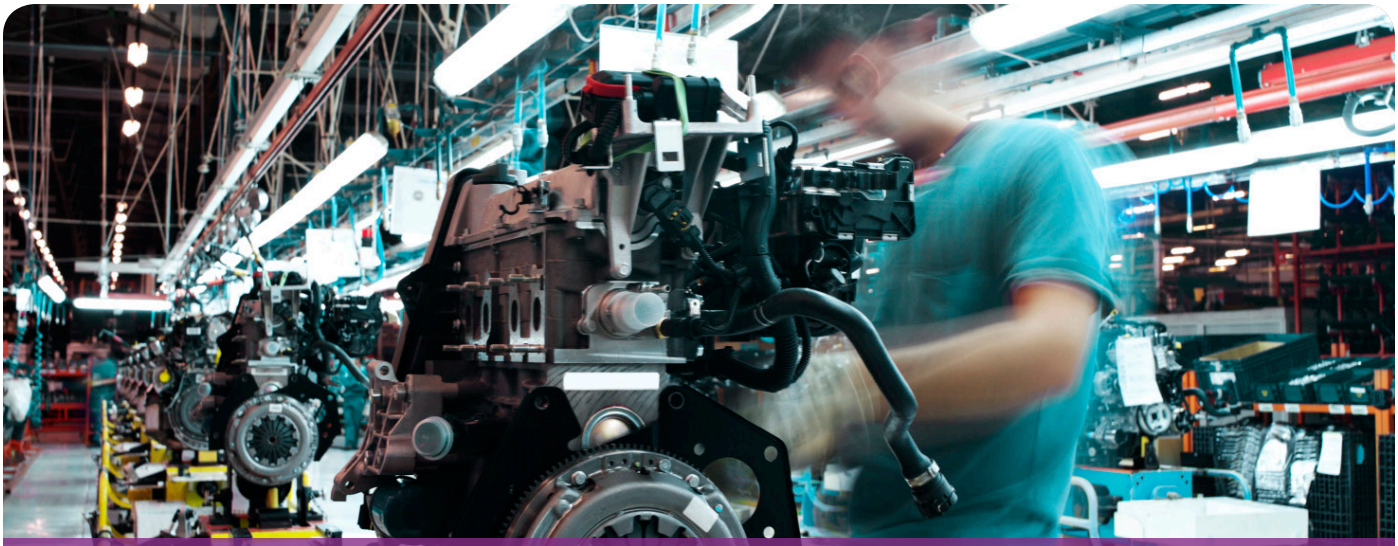

# What's Happening on Your Shop Floor?

Plex Online
White Paper

## At a Glance:

- This paper demonstrates the value of real-time, accurate data reflecting production activity, planned production schedules, quality checks, machine breakdowns, inventory levels, and more.
- A comprehensive ERP solution offers manufacturers a clear view of what is happening on their shop floor, since shop floor operators themselves monitor and track the data.
- Truly integrated information lets manufacturers increase productivity; decrease scrap; reduce total work-in-process inventory; reduce premium freight charges; and gain dramatic increases in production throughput.

## The Power of the Plant Floor

Today's manufacturing enterprise gains a key competitive advantage by implementing an extremely strong Shop-Floor Control System, also known as Manufacturing Execution System (MES).

It's noteworthy that many ERP software companies claim to support manufacturing companies, but they do little more than accounting, order entry, and other office tasks. They are not suitable for use on the shop floor, and they provide little value to the manufacturing department. Many manufacturers indicate that traditional ERP software actually hinders manufacturing, rather than helps it.

The key is to implement a solution that includes job/production management, process instructions, production scheduling, ultra-detailed real-time inventory control, tool tracking, production tracking, traceability and part genealogy, labor tracking, PLC machine integration, and much more.

> "Capturing shop floor activity as it happens is a powerful way to increase overall visibility."

## Base Requirements

### Base requirements for a Manufacturing Execution System include:

- Simple, easy-to-use design for use by shop-floor personnel.
- Real-time information reflecting up-to-date processes.
- Online for ease of access via a browser.
- Built-in barcode labeling.
- Built-in support for mobile/wireless handheld units.
- Built-in integration with machine PLCs.
- Built-in integration with weigh scales, packaging machines, and other equipment.

Looking deeper, the following areas are critical when determining exactly what is happening on your shop floor.

## Engineering

### Part List

Robust shop-floor reporting must track a master list of parts, including all associated part data, such as part description, part type, and revision. This includes an easy-to-use mechanism to upload small digital photos of each part. The part list also provides links to many other areas of the system, where applicable, such as key part dates, customer part numbers, APQP checklist, inventory, shipment history, problem history, and so on.

### Process Routings

A process routing is the series of steps required to manufacture or process a given part. This function defines those steps. It includes the operation number, operation name, approved workcenters and suppliers, crew size, weight, container type, and other key routing data.

### Bill of Materials

Each manufacturing process has a distinct bill of materials (BOM) which defines the components that make up a part. A flexible BOM function offers indented BOMs, exploded BOMs, drill-down BOMs, and a variety of other methods for visualizing and editing BOMs.

### Multi-Part Production

An IT system must identify and control manufacturing processes where multiple parts are produced from a single operation. This is a critical capability for stampers, multi-part die forgers, injection molders, and other manufacturing processes.

### CAD Integration

Many manufacturers benefit from a special feature within their CAD system to number and name each dimension on the part drawing. Then, whenever the drawing is saved, it synchronizes the dimensions and their tolerances to the part specification list, which in turn drives the control plan, checksheet, and data collection systems. The CAD integration subsystem saves manufacturers from having to enter dimensional data and adds a high degree of advanced integration among engineering, quality, and manufacturing.

## Production Tracking

### Production Tracking

Robust production tracking provides tracking of machine production, including detailed and summarized reports. Data is more valuable when it is highly integrated with inventory, tool tracking, and scheduling.

### Control Panel

Control panels offer a simple-to-use, yet powerful user interface for shop-floor personnel to track and control machine status, labor hours, production, inventory, tooling, and much more.

### Workcenter Tracking

A workcenter log provides a detailed history of all events that occur at a machine, including all production, maintenance, and downtime. This function provides reports on uptime, availability, and machine efficiency. Far-reaching benefits result when integrating this function with other business processes including production tracking, inventory, labor tracking, tool-life tracking, and control plans.

### Job Tracking System

This system tracks jobs and work orders within the manufacturing facility. It depends on the situation, but usually a job represents an instruction to the shop floor to produce a certain quantity of a certain part number by a specific due date. The system is the foundation for production scheduling and can be used for simple scheduling on its own.

### Job Tracker

Job trackers offer a simple-to-use, yet powerful way for shop-floor personnel to retrieve instructions, track activities, and record production against jobs as they are processed.

### Setup Tracking

Setup Tracking provides a place to record workcenter setup times and issues, including detailed data on reasons for setup delay. This helps shorten setup times and improve setup consistency.

> "A robust MES system improves management of materials, quality, scheduling, tool tracking, production, and more."

## Visibility of Information

In addition to IT systems covering engineering and production tracking as noted above, a robust MES system must give a manufacturer visibility and management of materials, quality, scheduling, tool tracking, and inventory management in order to track individual containers or individual parts on the shop floor.

For example, full process traceability is critical in high-precision, high-liability manufacturing such as automotive or aerospace. Its advanced features automatically track the complete genealogy of all inventory containers, providing both an upstream and downstream trace, even in complex assembly and manufacturing environments. This is ideal for tracking down and isolating all parts created from a defective lot or tracking down exactly who/what/when/where a defective part was produced.

## Advanced Technologies

Other advanced technologies for shop-floor control include integrated barcode printing and reading capability for inventory, gage control, time and attendance, and user log-in cards.

Wireless networking, touch-screen functionality, integrated radio frequency identification (RFID), and automated notification capabilities are also key for shop-floor control.

### About Plex Online

Plex Online, built on a Software as a Service (SaaS) Cloud model, offers more than 400 functions, providing manufacturers instant access to vital information and management features using a simple Web browser. The on-demand solution includes product lifecycle management (PLM) functions such as program and change management; enterprise resource planning (ERP) functions such as accounting and finance programs; customer relationship management (CRM) functions such as order entry and tracking; manufacturing execution systems (MES) functions such as production scheduling and machine integration; and supply chain management (SCM) functions such as supplier quality and traceability. For more information, see www.plex.com.