



EXECUTIVE BRIEF

Top 8 benefits of a manufacturing execution system (MES)

Today's fast-paced manufacturing environment demands complete, accurate, and accessible data from the shop floor. A manufacturing execution system (MES) can help factories meet this demand. A manufacturing execution system (MES) is a specialized type of software solution that focuses on managing and monitoring manufacturing operations in which raw materials are transformed into semi-finished and/or finished goods. An MES provides effective monitoring and synchronization throughout the factory to achieve high productivity and ensure responsiveness to market demand. Not only is an MES key to executing production efficiently, it's also considered an essential building-block of smart manufacturing and digital transformation.

How does an MES benefit your business?

In the [ISA-95 model of plant operations](#), an MES synchronizes production by connecting the Level 2 machines and equipment that control operations with Level 4 systems (typically business information system, such as ERP) to provide real-time views of the state of the factory. Here are the top 8 benefits of an advanced, modern MES:

1. Provide real-time visibility with user-friendly dashboards

Empower operators and teams while promoting transparency, accountability, and reactivity with visual MES data in real time.

- User-friendly dashboards enable line operators to work efficiently and react faster when issues arise (for example, with work orders and process monitoring data)
- Shift supervisors have a real-time view of shift performance and problems (for example, with production count and downtime data)
- Plant managers are able to focus on driving plant performance more effectively, with real-time data available 24/7

2. Enable continuous improvement support

An MES supports continuous improvement plans.

- Historical data held in an MES system helps teams identify root causes of problems
- Corrective actions can be measured and evaluated
- An MES can identify sources of low quality and ultimately reduce the cost of good quality

3. Ensure regulatory compliance

Quality assurance and control—often dealt with by departmental applications—can be integrated within an MES to deliver significant added benefits.

- Operators and quality engineers document nonconformance in the MES
- Recording, assignments, and follow-up of CAPA
- Compliance to 21CFR11 for FDA requirements
- Certificates of analysis for customers, instantly available
- Conformance to ISO 9001 for quality and ISO 14001 for environmental impact

4. Improve agility and flexibility

Competitiveness can be increased by improving processes and integrating people, technologies, and real-time data.

- An MES supports fast new product introduction (NPI) processes
- Operations personnel can react fast and effectively to unplanned events
- Real-time process monitoring helps prevent adverse quality issues
- Connected to business systems, an MES delivers greater integration with the supply chain

Core functions of an MES

- Integrate production equipment (Level 2) with business systems (such as enterprise resource planning (ERP) solutions) (Level 4) and production lifecycle management
- Provide integrated analytics and dashboards for monitoring and reporting of plant performance
- Dispatch work orders and their specifications from the ERP system to production
- Support the execution of production orders from order release to finished goods
- Enforce process steps to ensure manufactured goods conform to the plan and meet quality requirements
- Collect data automatically from equipment or through manual input to drive operations, demonstrate compliance, measure efficiency, etc.
- Provide a data store to hold historical data (relational database, integration with a data historian)
- Embed quality management processes in production steps in a regulated environment nonconformance and corrective and preventive actions (CAPA) management
- Enable traceability and genealogy of parts, raw materials, labor, and equipment to manage warranty services and product recall

5. Standardize operations and enforce best practices

An MES provides a framework to control business process—for single and multisite manufacturers—by standardizing workflows and procedures.

- Routings and workflows enforce processes and ensure control
- Built-in health and safety procedures help ensure they're followed accurately
- Up-to-date documentation is available to operators at all times on the line
- In multisite organizations, an MES guarantees everyone works in the same way across all plants

6. Maximize use of assets

An MES drives efficiencies.

- Changeovers are sped up via alerts to key personnel when a job is nearly completed
- Cycle time can be improved with accurate, overall equipment effectiveness (OEE) monitoring, which enables operations personnel to focus on cycle-time improvement activities based on reliable information
- Preventive and predictive maintenance of assets is enabled with real-time data from production and quality departments
- Alerts can be triggered for preventive maintenance activities
- Internet of Things signals can be captured in the MES to enable predictive maintenance

7. Reduce operational costs

An MES enables increased control and cost-efficiency of all production inputs.

- As an MES monitors machines and jobs, operator time is released to focus on higher-value tasks, with the system only alerting operators when issues arise
- Operational data is automatically collected from the machines and equipment, improving accuracy and saving man-hours often wasted in collecting and replicating data across multiple systems

Enabling digital transformation

An MES can serve as the foundation of digital transformation for manufacturers. Infor® MES provides a flexible framework to leverage new technology, including:

- **Smart manufacturing:** Infor MES enables automated data capture from all machines, production lines, and ancillary equipment; it communicates with ERP systems to provide a real-time view of the state of the factory, with visual controls and user-friendly, role-based interfaces
- **Ease of deployment:** Infor MES is an out-of-the-box, full HTML5 application, built on standard technologies with trusted worldwide support
- **Hosting options:** Infor MES can be deployed on-site, in a corporate data center, or in the cloud
- **A functional MES system:** Infor MES delivers rich functionality across all areas of manufacturing production, quality, warehouse, logistics operations, and maintenance

A world-leading, enterprise-level MES system, Infor MES offers a flexible approach to digital transformation that's particularly suited to multinational, multisite organizations.

- An MES drives down material costs with real-time process control that optimizes the quantity of material used to meet specifications and real-time production counting to prevent over-making
- Automated monitoring of energy usage of all plant equipment in an MES can quickly help identify faults and optimize energy consumption
- A single enterprise platform available through a subscription model removes fragmented systems that are responsible for significant overheads (IT development and maintenance, support, software licenses)

8. Replace fragmented systems

An unbroken thread of critical data can be created across all manufacturing operations, from the shop floor to the head office.

- The “paperless factory” can be achieved as an MES system integrates with machines and equipment, removing the need for manual data collection, while increasing accuracy and security
- An MES can replace all siloed spreadsheets, databases, and departmental solutions that don’t communicate with each other or the business systems
- An MES builds a unified view of the state of the factory in real time, with a single source of data available to all departments (including production, quality, maintenance, and logistics) that empowers them with smarter decision-making capabilities

Improving plant operations

An MES solution is critical for manufacturing organizations that want to ensure data consistency and real-time visibility across all plant operations. Integrating these capabilities with Infor’s industry-specific ERP systems will help deliver even more powerful solutions to manufacturing organizations as they look to digitize their operations and grow their businesses.

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