Top 10 benefits of a manufacturing execution system (MES)

Today's fast-paced manufacturing environment demands complete, real-time, accurate, and accessible data from the shop floor. However, many manufacturing organizations still use shop floor systems that do not meet this requirement. These include departmental applications that don't communicate with each other, ERP (Enterprise Resource Planning) covering some shop floor functionality, operators spending precious time manually collating data, and even a lot of spreadsheets.

At its core, 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.

MES delivers many benefits to the modern manufacturing organization. Below are our top 10 benefits that will help your manufacturing operations get to the next level:

1. Visibility

Real-time visibility of manufacturing processes and events happening in production is a key benefit delivered by MES. This is enabled through deep integration of MES with the process level of plant operations. How is this a game-changer? MES provides the data to identify bottlenecks and enables better response to quality issues and downtime, thus improving output, efficiency, and quality. MES also supports tighter supply chain integration by providing accurate inventory data to the ERP. MES is for these reasons also recognised as an essential building-block of smart manufacturing and digital transformation.

> " **Infor MES empowers the machines with intelligence so they know what they have to do.** "
>
> MANOJ KUMAR GONA
> Director - Enterprise Applications, Maxeon

2. Error-proofing production

MES standardizes processes, provides operators with the latest instruction, and enforces routing and workflows. This delivers the second key benefit of MES, the error-proofing of production which reduces waste of raw material, rework and energy consumption, whilst ensuring repeatability, compliance and improving quality. Moreover, as an MES guarantees everyone works in the same way across all plants, it enables performance benchmarks in multisite organizations.

3. Agility

Manufacturers need to become more agile, and MES supports this requirement. MES enables operations to allocate resources and adjust the production schedule on the fly to meet rapid changes in demand and adapt to supply chain disruptions. MES also supports flexibility in product customization, a growing requirement of consumer markets. Finally, the visibility which a manufacturing execution system provides into operations improves the response time to issues such as unplanned downtime, improving assets utilization and OEE (Operational Equipment Effectiveness).

4. Inventory accuracy

A manufacturing execution system enables the management of inventory with a granularity which ERP cannot achieve. The system records accurately what is consumed (as well as parts or batch numbers) and enables the management of semi-finished goods. MES will also create labels to track materials as they move through the factory, as well as lots and serial numbers of finished products. Managing inventory consumed in MES reduces cash flow tied up in inventory, provides ERP with accurate data which improves supply chain efficiency, and enhances traceability.

Core functions of an MES

- Integrates production equipment with business systems (such as enterprise resource planning (ERP) solutions) and production lifecycle management

- Provides integrated analytics and dashboards for monitoring and reporting of plant performance

- Dispatches work orders and their specifications from the ERP system to production

- Supports the execution of production orders from order release to finished goods

- Enforces process steps to ensure manufactured goods conform to the plan and meet quality requirements

- Collects data automatically from equipment or through manual input to drive operations, demonstrate compliance, measure efficiency, etc.

- Provides a data store to hold historical data

- Embeds quality management processes and implements the quality control plan

- Enables traceability and genealogy of parts, raw materials, labor, and equipment to manage warranty services and product recall

- Learn more about what an MES is **here**

5. Enhanced traceability and compliance

Traceability is a requirement in many industries. MES enhances the capability to track products throughout their lifecycle, from raw materials and parts to finished goods, reducing or limiting both the occurrence and impact of potential product recalls. Typically, MES records data such as lots and serial numbers, personnel involved with the manufacturing process, quality checks carried out and more.

Manufacturing organizations must comply with industry standards and regulations in several areas: product safety, workplace health and safety, quality standards, environmental protection standards, export controls. As well as enhancing traceability, a manufacturing execution system offers a single source of truth to demonstrate compliance, making audit preparation and the production of documents, such as certificates of analysis (COA), easy.

6. Better communication throughout the business

As described in **the ISA 95 model**, MES is the functional brain between the factory equipment, automation, and ERP. Receiving orders from ERP, MES orchestrates production and feeds back what has been produced to the ERP. MES provides the right level of information at the right time to the right people, from the shop floor to the top floor.

7. Driving continuous improvement

The system supports the implementation of process improvement methodologies such as Lean and Six Sigma. As MES keeps a detailed record of production, historical data is available to Continuous Improvement teams to identify issues and root causes. Importantly, when corrective actions are implemented, MES continues to provide feedback helping with evaluation and further decision making. Good MES systems will enable operators to record non-conformances on the line.

8. Faster new product introduction

How does MES facilitate NPI (New Product Introduction)? In production trials, as MES system records process and quality data, information such as adherence or deviation from takt times, and failed quality checks can be fed back data to engineering teams to improve product development and industrialization. As production transitions from trial to manufacturing at scale, MES also helps onboard new products faster.

9. Efficiencies and cost-savings

One of the greatest benefits of MES is the elimination of non-productive time spent on manually collecting and collating data.

Other efficiencies and cost-savings delivered by MES which are sure to make a positive impact on the bottom line include reduction of waste and rework, improvement of on-time delivery, reduction of cash-flow tied up in inventory and product recalls.

10. Top floor to shop floor integration

Connect MES to ERP to achieve "Top floor to shop floor integration" and get the best of both worlds. On one hand, ERP manages business processes such as finance, HR and the supply chain. On the other, MES handles the complexities of shop floor operations, executing production orders and ensuring real-time control of operations, whilst feeding back timely, accurate information on production attainment and inventory to ERP.

> **The roll-out of the new ERP provided an opportunity for Formica Europe to find and adopt a single standard system to manage production, i.e. to get a manufacturing execution system (MES)."**
>
> CHRIS DAVIES
> European IT Director, Formica

Driving greater efficiency and quality in manufacturing with Infor MES

Infor MES can digitalize all manufacturing operations across production, quality, inventory/logistics and maintenance. The solution provides effective monitoring and synchronization throughout the factory helping you achieve higher productivity and responsiveness to market demand.

Find out more about Infor MES.

> **[Infor MES] has revolutionised our ability to monitor and improve our equipment and processes, enabling weaknesses to be identified quickly and corrective actions to be undertaken.**"

TONY CROSS
Managing Director, H&T Presspart

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