

# Real-time visibility with Manufacturing Execution Systems (MES)



Manufacturers are embracing digital technologies to transform shop floor processes. This executive summary examines the opportunities presented by Manufacturing Execution Systems (MES) to provide real-time data and insights that can increase machine uptime and product quality whilst reducing costs.

A recent survey by IDC1 ranked Manufacturers' top 5 IT investment priorities in the next two years. It found 58% prioritized Process automation/RPA; 56% prioritized Multi/hybrid cloud integration and management; 56% cited Cloud/cloud migration (SaaS, IaaS, PaaS); 45% cited IoT/digital twin concepts; and 33% prioritized Artificial intelligence (AI)/machine learning (ML).

As part of this manufacturing appetite for transformative digital technology, the widespread adoption of IoT sensing and the desire to connect enterprise ERP systems directly to machines is driving renewed interest in the benefits available through Manufacturing Execution Systems (MES).

## Actionable insights from Big Data noise

MES solutions provide immediate alerts, in real-time, whenever a machine or process deviates from designated parameters. To do this successfully, systems must be able to detect and identify significant (out of scope/tolerance) patterns and anomalies during production. This means the MES must continuously monitor terabytes of routine machine data, generating an alert whenever an anomalous pattern is detected – for example a change in operating temperature or an incorrect tolerance on a fabricated component.

Fueled by the increasing demand for real-time data, a desire to improve quality and productivity, and the adoption of Industry 4.0 technologies, MES is now attracting wider attention. Improved solution connectivity, the ability to manage Big Data, and significant capability enhancements afforded by AI and machine learning see the sector growing rapidly. A recent report by The Insight Partners1 estimates that the global manufacturing execution system market was valued at US\$ 11.88 billion in 2021, and is projected to reach US\$ 24.28 billion by 2028, at a CAGR of 10.8% from 2021 to 2028.



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## Why does MES matter? The move to visibly smarter manufacture...

Both large enterprises and SMEs alike are now looking to MES solutions to improve, optimize and de-risk manufacturing processes. MES capabilities can increase production, reduce costs, improve quality, and enable real-time tracking and data collection of products to increase manufacturing efficiency and margins. Benefits include:

**Increased production:** by providing real-time data on the status of production, MES systems can help to sustain and even increase production. Issues are identified quickly and can be immediately addressed, maintaining production schedules, and increasing output.

**Improved quality control:** MES systems can help to improve quality by providing real-time data on the status of production. This can help to identify and address quality issues early on, preventing them from causing problems later in the production process.

**Improved traceability and compliance:** MES systems can track the movement of materials and products through the entire production lifecycle, including collecting data on product quality. The reports can confirm the provenance of raw materials, lot and batch numbers, time and location of manufacture and any actions taken to address quality defects during production - essential for highly regulated manufacturing sectors such as pharmaceuticals, medical devices and aerospace.

**Increased flexibility:** delivering real-time data, configurable workflows, integration with other systems, and mobile access, MES systems can help manufacturers to improve flexibility and responsiveness. Producers can quickly change schedules to configure production workflows to accommodate version iterations or new products- especially important in the face of changing customer demands and volatile market conditions.

**Improved efficiency and cost reduction:** by helping to reduce and minimize waste, improve quality, and streamline production processes, MES solutions confer increased efficiency and productivity, whilst also reducing costs.

**Real-time tracking and data collection:** MES systems can enable real-time tracking and data collection of products. This data can be used to improve decision-making and optimize production processes.

## What's changed? MES functionality within IFS Cloud...

Historically, manufacturers wishing to leverage MES capabilities have had to connect and maintain a standalone third-party MES solution. This adds complexity and cost in terms of version management and licensing. In contrast, in IFS Cloud, MES functionality is available already fully integrated into the core ERP solution. This has several advantages:

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## Global visibility, enterprise-wide

Firstly, with MES in the cloud, it's possible to measure and compare production across multiple machines in multiple sites around the world. Having near real-time data accessible on any device enables manufacturing operations to 'see', and so understand, what is happening at each connected machine. Intuitive IFS Lobby screen interfaces automatically surface priority events and actions at-a-glance, with the ability to drill down at a click. Machines can be remotely started and stopped, or processes re-routed, within moments of an alert.

## A single view of the truth

Secondly, since IFS Cloud stores all enterprise data in one common unified database, MES reporting informs asset management. With data about the health of all machines, organizations can make much more informed decisions about maintenance, shifting from a preventative to a predictive maintenance regime. MES data analysis can also pinpoint precisely where, when and why operating efficiency across the asset fleet falls, revealing areas requiring improvement or change.

For example, if a machine regularly starts to consume more power at a given time in the week, scheduling a regular cleaning cycle could result in energy savings – decreasing costs and increasing sustainability whilst still maintaining on-time, in-full production.

## Continuous operational improvement

Thirdly, coupled with artificial intelligence and machine learning, IFS Cloud supports smarter replanning. By capturing and analyzing historic incidences, interventions and outcomes, AI can propose the most effective, proven actions and automated re-routing rules should a similar issue re-occur. Moreover, MES functionality in IFS can be readily customized and optimized to reflect a specific use case or the needs of different manufacturing processes or sectors.

Faced with increasing competitive pressures, rising material and energy costs and heightened scrutiny around environmental performance and ESG reporting, Manufacturing Execution Systems offer manufacturers immediate, actionable insights: a powerful way to continuously optimize, improve and increase productivity and performance.

## Sources

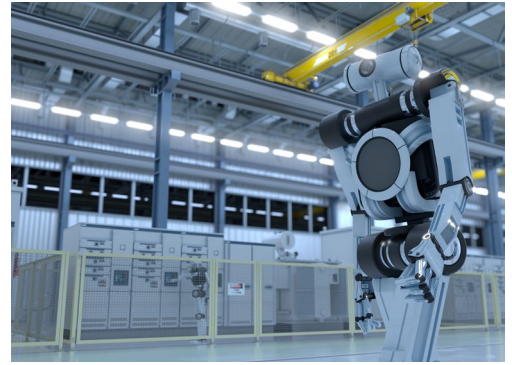
1.IDC/IFS: Shaping the Future of Manufacturing: Move Beyond Operational Excellence, Agility, and Innovation with a New Approach to Digitalization

2.The Insight Partners: Manufacturing Execution System Market Forecast to 2028, Feb 2022

*Note: an alternative market projection and source:*

<https://www.precedenceresearch.com/manufacturing-execution-systems-market>

The global manufacturing execution systems market size was valued at USD 14.7 billion in 2021 and is expected to hit around USD 53.9 billion by 2030, poised to grow at a compound annual growth rate (CAGR) of 15.53% during the forecast period 2022 to 2030.



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