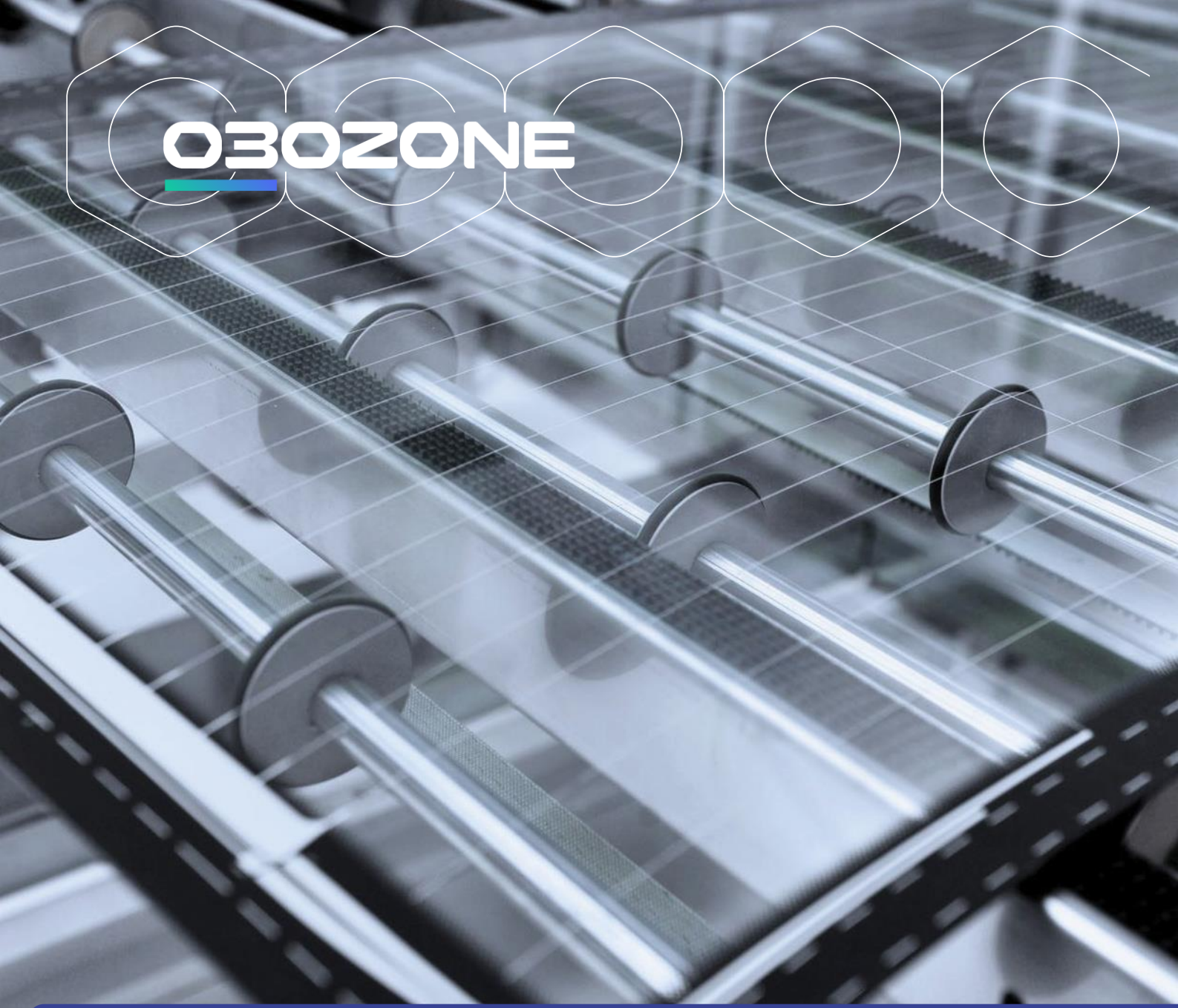


MES vs MOM

Exploring The Differences Between
Manufacturing Execution Systems (MES) and
Manufacturing Operations Management (MOM)

Manufacturers deal with a variety of systems. Each system might be great on its own – one to handle your inventory, another to schedule machine production, and another tracking final shipping.

The problem is, these **systems don't always talk to each other.** There's no "eye in the sky" overseeing them and data doesn't flow freely. It's easy to end up with disconnected data silos.

Recent research shows that, on average, an employee loses up to 12 hours per week chasing data. This is time that would be much better spent solving other challenges facing manufacturing companies, such as increasing productivity, minimizing waste, and improving product quality.

The key to successfully breaking down data silos is to get all your systems connected, capturing **real-time data in one central platform**. From there, you can analyze the data yourself or use automated **advanced analytics tools** to generate insights. You can even set up alerts to tell you when certain parameter thresholds are broken.

In this white paper, we'll take a closer look at the most common types of manufacturing systems – MES and MOM, explore the differences between the two, and set out a plan for integrating your systems under one platform.

Data silos cause employees to lose 12 hours a week chasing data*

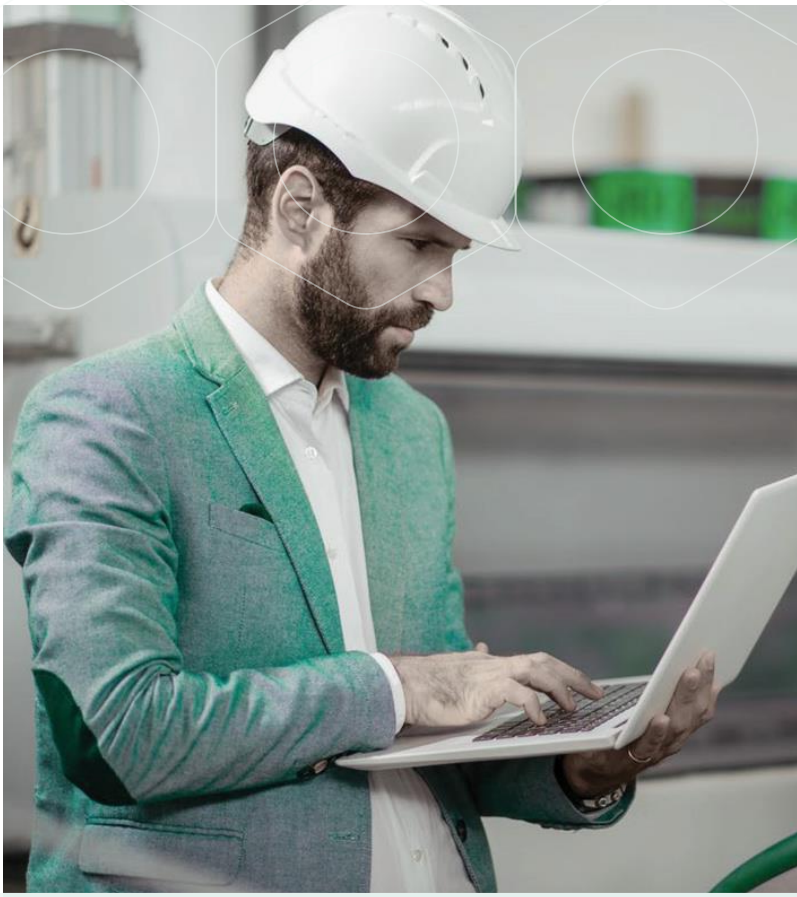
*Airtable & Forrester Consulting

MES

Manufacturing Execution System

MES is a software system that collects data from specific areas of your operations. Depending on the capabilities of the software, it can let you know whether a machine starts acting up or if there's a bottleneck somewhere that needs fixing.

Typically, a MES collects data from various machines, either through direct data input or IIoT sensors. With this data, you can monitor production performance in real-time and track output over longer periods.



Scheduling and Planning

Optimize production schedules, balancing workloads across shifts and machines to prevent bottlenecks.

Performance Analysis

Track and analyze machine and operator performance, highlighting best practices and areas for improvement.

Preventive Maintenance

Highlights maintenance needs, e.g. machine slowing down, enabling you to schedule repairs before issues disrupt production.

Document Control

Manages production-related documents to ensure compliance and keep everyone aligned with industry standards.

Quality Management

Continuously monitor product quality, identifying specifications and pinpointing defects to maintain high standards.

Resource Allocation

Track real-time resource use and inventory levels to prevent shortages and overstocking.

MOM

Manufacturing Operations Management

MOM system is like the big brother of a MES system. It oversees everything, not just shop floor data. A MOM system connects data from your entire operation – top to bottom.

A MOM system synchronizes and integrates the entire value chain. It **enhances decision-making** by connecting data from all aspects of manufacturing operations—not just production, but also **strategic planning** and process improvements.

Enhanced MES Functionality

Real-time data analysis to optimize workflows. Enhances quality and maintenance. Links inventory and supply chain for synchronized materials flow.

Strategic Integration and Scalability

Highly-scalable integration of new technologies without disruption. Framework integrates systems, reduces complexity, and enhances operational flexibility.

Lean and Continuous Improvement

Applies lean principles and continuous improvement by analyzing performance data to identify waste and inefficiencies.

Operational Excellence

Holistic view drives operational excellence across the value chain to enhance efficiency, competitiveness, and sustainability.

	MES Manufacturing Execution System	MOM Manufacturing Operations Management
Primary Focus	Manages and monitors real-time manufacturing processes	Oversees and integrates various operational aspects across the value chain
Scope of Control	Primarily focused on the shop floor operations	Broader scope, integrating processes across the entire plant
Typical Functionality	- Production tracking - Quality control - Machine monitoring	- Includes MES functions - Resource planning - Supply chain management - Data analysis and strategic insights
Data Utilization	Uses real-time data to manage immediate production activities	Uses data for comprehensive operational insights and strategic planning
Integration	Often integrates with machines and devices directly involved in production	Integrates and unifies shop floor systems and enterprise systems, such as ERP
Goal	To ensure efficient production processes and reduce downtime	To optimize overall operational effectiveness and enhance business performance
Output	Directly impacts production efficiency and product quality	Impacts broader business outcomes like cost reduction, market responsiveness, and agility
Typical Users	Production managers, shop floor supervisors, quality assurance personnel	Senior management, operations managers, strategy planners, and decision makers
Strategic Value	Tactical tool for managing specific production operations	Strategic tool for overarching operational management and decision-making

Combining MES & MOM Systems

Integration

Reducing Complexity
Traditional MES systems are complex to integrate with other existing enterprise software like ERP or SCM (Supply Chain Management) systems. This is mainly because different systems use different standards or technologies that don't naturally mesh together. A good MOM system provides a simple, yet flexible framework to synchronize data and workflows.

Breaking Down Data Silos
Standalone MES systems operate well alone but create isolated data silos. This means info isn't shared efficiently across other systems, making it tough to get a unified view of operations, which a MOM can provide.

Minimizing Cost
Integrating systems is resource-heavy. Sometimes integration efforts surpass the initial cost estimates and timelines, leading to budget overruns and downtime. MOM solves this problem with built-in integration and compatibility features.

Scalability and Flexibility

Improving Scalability
Standalone MES systems might be designed for specific tasks or departments, making them limited in scope.
With linked up data and workflows, MOM systems make it easier to scale up and adapt as production needs change.

Overcoming Rigidity
MES systems can be quite rigid, meaning they are not easy to modify as processes change or new technologies emerge.
MOM systems, on the other hand, provide a flexible framework to integrate corporate and factory systems.

User Adoption and Training

User-Friendly Interfaces
Traditional MES systems sometimes have complex interfaces that require extensive training, which might reduce adoption rates.
A good MOM is designed with intuitive dashboards for a reduced learning curve.

Overcoming Change Resistance
Implementing any new system can meet with resistance from workers who are used to the old ways of doing things.
Make sure to clearly communicate the benefits of the new system and show how it streamlines workflows.

Smart Operations Platform

Options For All Digital Maturity Levels

MES

Essential for every manufacturer

Integration and Real-Time Monitoring
Integrates seamlessly with existing ERP systems, utilizing IIoT technology for real-time data collection and monitoring.

Predictive Analytics
Advanced algorithms predict machine failures and optimize production processes, which aids in proactive maintenance and quality control.

Efficiency Enhancements
Streamlined processes and decision-making, for improved production efficiency and reduced operational costs.

Lean Co-Pilot

Be lean with continuous improvement modules

Continuous Improvement
Focus on lean manufacturing principles, with tools such as real-time performance analytics and root cause analysis.

Operational Excellence
Supports custom KPIs, defect management, and cost-saving measures implementation.

Strategic Alignment
Integrates with existing systems for a full unified view of operations, helping you align strategic actions with business objectives.

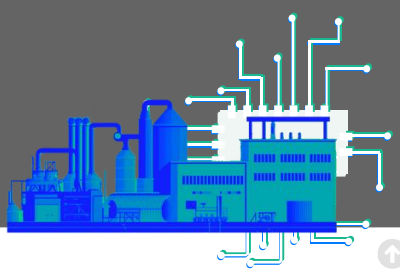
AI Analytics

Analytics and insights for optimal decision making

Data-Driven Insights
Transforms raw data into valuable insights using AI, allowing you to predict issues and optimize processes.

Customizable Tools
Customizable dashboards and real-time analysis give you the tools to monitor KPIs and make quick, informed decisions.

Anomaly Detection and Predictive Insights
Automatically identify unusual patterns and predict potential issues, enabling proactive adjustments to minimize downtime.



O3OZONE

Take A Unified System Approach

A Comprehensive Smart Factory Solution

O3OZONE is a smart factory platform that gives you the best of both MES and MOM systems. It connects data across your entire value chain, boosting efficiency with **AI and real-time data analytics**.

O3OZONE integrates seamlessly with your existing systems, giving you real-time monitoring of shop floor activities and management. This unified approach gives you clear visibility and control across your entire operations.

Contact Us Today