

# MES Technology Trends Reduce Cost & Effort

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Consumer packaged goods (CPG) manufacturers and their suppliers face unprecedented market challenges. Market feedback indicates that the three most important attributes manufacturers are looking for are the ability to integrate with financial reporting systems, scalability and the ability to address specific pain points with an affordable investment model. Tight margins, complex and increasing consumer demands, energy management, raw material costs and regulatory compliance are some of the issues that affect their profitability.

These issues will continue to be challenging as the demands of consumers in mature CPG markets increase in sophistication and expectations. What is becoming as great a challenge is the clear and present wave of new-generation consumer demands from emerging markets. Emerging markets are expected to want the same choice, quality and value that mature markets have enjoyed, making the manufacturing of consumer goods an even more complex science requiring new and game changing ideas in information technology (IT).

Delivering attractive improvements in product manufacturing performance, product innovation, efficiency and visibility into manufacturing operations is what these new IT innovations deliver. Improving manufacturing agility, speed to market and the ability to “get it right” the first time are equally important. Tighter IT budgets mean all these measurable benefits must be achieved quickly, with the least amount of effort and with a rapid return on investment (ROI).

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A manufacturing execution system (MES) sometimes referred to as a manufacturing operations management (MOM) system, has been available from many IT vendors for decades. An MES provides key operating data that allows CPG manufacturers to efficiently resolve production challenges and proactively respond to changing market conditions. The result is a real-time view or a digital map that displays the entire manufacturing enterprise, activities and processes at a glance — vital information at their fingertips.

What is new about this technology is that some vendors have engineered this IT into an “out of the box solution” available in individual modules. This means that manufacturing pain points can be addressed on a priority basis without a large capital outlay or plant staff effort, two very important criteria for many manufacturers. MES runs in real time, so manufacturers have a solution to instantly respond to changes required to processes, such as recipe management, packaging line set up and validation, weight management, track and trace, batch analysis and execution and statistical process control.

Another new and very critical capability of modern MES software is the ability to predict what needs to be adjusted to optimize production results. This is done by analyzing historical data of all manufacturing activities that have been applied in a specific time frame. Then the predictive modeling capabilities of the MES *projects* what actions have to be taken to improve results and get back on target.

The ability for the system to identify the most effective new actions and adjustments required is considered a leading edge management tool. With predictive analysis, management now has the information to not only adjust processes relating to manufacturing operations but will also have visibility as to what the impact will be on their financial results. This advanced ability turns information into knowledge resulting in improved results and profits.

In the past, MES operated as a self-contained system. Today’s MES systems are increasingly being integrated with ERP software as well as myriad other applications and, most strikingly, financial reporting systems — a “must have” key feature of MES. With a fully integrated system, everyone in the plant has access to the same real time information to help maintain seamless operations. Additionally, to improve manufacturing efficiencies and production results, plant management will have information tools and processes that generate important data about plant operations that may not be available to them without an MES. Examples include communicating production data in a standard company-wide reporting system, capturing key performance indicators (KPI) for quality control, identifying and scheduling maintenance needs, extending production runs by minimizing start-up time and maximizing uptime and supplying process monitoring tools for research and development.

STICORP, a GE Intelligent Platforms Partner, will provide detailed information on critical processes that in many cases represent “pain points” that need to be resolved. The system allows for full traceability of all operational activity, producing records of real time operational performance. An MES collects information such as flows and downtime directly from the programmable logic controller (PLC) and/or

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from other systems and sources. The PLC or control layer will supply the MES with an event — for example the duration of a machine downtime — that could cause a production delay if not dealt with promptly. The equipment failure can be logged and a root cause analysis can be performed to prevent reoccurrences.

MES also provides real-time downtime tracking, identifying possible causes with automated data collection where possible. It records operational data associated with production performance that can be tracked by various parameters such as throughput and operator shift, etc. The MES publishes efficiency information and reports to the entire plant. It will manage by-products as well as end products and manage all manual and lab data entry such as specifications management, control specifications and customer specifications. Recipe management of raw materials and process conditions, quality alarms, set point change alarms and conditional adjustments can also be managed.

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