

Food Manufacturers: Becoming Best-in-Class

By Jack Payne, VP, Product Management & Solutions Consulting, Aptean



For many food and beverage manufacturers, improving the efficiency of their organization is a top priority, second only to increasing sales.

Competing in a high-volume/low-margin industry requires that every aspect of the company operate at peak efficiency. Aberdeen Group considers a manufacturer as best-in-class based on the following metrics:

- 99% production compliance
- 89% overall equipment effectiveness (OEE)
- 98% on-time and complete shipments
- 3.7 hours response time to non-conforming shipments
- +9% operating margin versus corporate plan

Even small changes can result in noticeable savings. Producing less waste, employing less labor and operating equipment more efficiently are examples of incremental improvements that yield results. But the challenge is how to determine areas for improvement.

Without access to real-time information, it can be difficult to establish a baseline, much less identify what changes need to be made.

The ability to turn data into actionable insight is a key differentiator between industry leaders and all others. Three core solutions are at the heart of many leaders in the food and beverage industry: Enterprise Resource Planning (ERP), Enterprise Asset Management (EAM) and Manufacturing Execution System (MES).

Efficiency

ERP manages the efficiency of the entire organization. It is the system of record and control, the single source of truth that supports almost every department. According to Aberdeen Group, 80 percent of best-in-class companies utilize ERP to manage products and manufacturing.

This system is the key to addressing one of the top concerns for the food and

beverage industry — food safety and traceability.

Food safety is an issue for consumers, as well as manufacturers. The number of food recalls rose 22 percent in 2016, and the two major reasons were undeclared allergens and listeria contamination. The cost of recalls can be staggering. The direct costs per recall can range from hundreds of thousands of dollars to hundreds of millions. Damage to the brand is more difficult to calculate, with more than half of consumers stating they would switch to another food brand upon learning of a recall.

A fully integrated ERP with bi-directional lot traceability tracks material from supplier to customer, and throughout the production process, providing information about where ingredients within any given batch originated, and also where that batch went. With this information readily available, manufacturers can respond quickly to minimize the potential harm to consumers, and the negative impact on the company, its reputation and its customers.

Reliability

EAM provides efficiency of engineering. Manufacturers invest heavily in their equipment, and so it is vital that those assets are reliable and have the ability to operate at peak performance.

Food and beverage is an industry with continuous processes; if there is a pause in the process, there is potential for a great deal of wasted product and downtime. Aberdeen Group reports that 79 percent of best-in-class manufacturers invest in EAM technology, moving away from “break/fix” maintenance to a more predictive approach through preventive maintenance and asset analytics.

The costs associated with the traditional approach of “break/fix” go beyond parts and labor.

When equipment fails, production stops, and every minute of lost production equals lost revenue. Deteriorating equipment can also have an impact on product quality. For example, testing equipment that fails

to detect potential pathogens will result in a recall that can erode consumer trust in the brand. Best-in-class organizations experience 21 percent higher OEE with 15 percent lower unscheduled downtime, and the majority have achieved these results through technology. Real-time visibility into production and asset performance data allows manufacturers to monitor the condition of equipment and provide valuable information to decision makers, which translates to actionable intelligence to predict and plan maintenance activities across the company’s assets.

Best practices configured into the system provide the basis for continuous improvement to provide reliability while increasing utilization of equipment and decreasing cost.

Productivity

MES allows for efficiency of production. Manufacturers must beat the competition in cost, quality and getting new products to market faster. Having reliable equipment with minimal unplanned downtime is important, but having efficient production while operating is also key. Best-in-class organizations do so by automating and optimizing their manufacturing processes, and 56 percent use MES as a key part of their strategy.

Once more, visibility is critical. The ability to see data in real-time and to enable operators to immediately act upon it is vital when every opportunity for improvement counts. The system allows users to identify




Image courtesy of Aptean

bottlenecks, analyze causes of production downtime and track the true costs of production. Factory floor teams are able to implement immediate reviews, make real-time adjustments and measure immediate performance improvements.

MES can also assist with regulatory compliance by ensuring that all tasks are completed, performed in the proper order and done by properly trained operators, as well as maintaining all necessary documentation.

Next Steps

Individually, these three solutions allow an organization to improve operational efficiencies and reduce costs; when integrated, it is possible to rise to the next level, to move toward best-in-class. 

Creating a Smarter Factory Floor with Industry 4.0

By James Wood, Director of Factory MES & Activplant Product Lines, Aptean

Big data analytics, Internet of Things (IoT) and cloud computing are all familiar buzzwords, and sooner than you think, each of these technologies will begin playing a significant role in reshaping the way you operate your manufacturing processes. These technologies are all under the Industry 4.0 umbrella.

According to Gartner, Industry 4.0 is a framework for addressing the digitalization of complex value chains and the efficient collaboration of businesses, IoT, technology providers and consumers. Industry 4.0 extends beyond the digitization of physical assets with the vision of a digitally enabled industrial economy integrating business processes and data across multiple supply chains and value chain participants.

Data analytics, IoT and the cloud are platform technologies for the fourth industrial revolution, providing manufacturers a path to smarter practices. In turn, these smarter practices deliver the intelligence and visibility manufacturers need to optimize operational efficiency.

Intelligence When Stakes High

Industry 4.0 equips food manufacturers with the right information, at the right time, to the right people. Peer-to-peer wireless connections mean more data can be captured without the overhead of having to wire-in sensors and disrupt the operation, leading to a higher degree of connectivity between the automation level and the manufacturing execution system (MES). All areas of the production floor can be included, even areas that may have been deemed less important or too difficult to get connectivity, meaning higher visibility at little additional cost.

For process and discrete manufacturers in the food and beverage arena, this fast and seamless exchange of information is a game-changer. Take a scenario where there is no room for error, like a food

contamination recall. A factory that has digitized its manufacturing processes and is operating at an Industry 4.0-level can track and trace products in real-time, removing them from shelves quickly and minimizing risks to consumers.

Integrating your MES with other business systems is key to true digital transformation and efficiency on the factory floor. Food and beverage manufacturers can achieve a more holistic view by taking advantage of an integrated suite including Enterprise Resource Planning (ERP) and Enterprise Asset Management (EAM). ERP dictates, MES executes and EAM ensures reliability and uptime. Manufacturers seeking to improve their production performance using the technologies available today — particularly IoT and access to machine data — should seek solutions that provide:

- Production planning and scheduling, and materials management (ERP)
- Maintenance reliability and operational insight into maintenance activities, so potential disruptions to production can be avoided (EAM)
- Machine intelligence and analysis of data to drive continuous improvement (MES)

With these systems connected, you can access critical business information in real-time and start to paint a clearer picture of your manufacturing operations.

Still Roadblocks to Overcome

While most food and beverage manufacturers realize the need and potential for adopting Industry 4.0 practices and technologies, the difference between wanting to change and making the change is vast. A McKinsey survey indicated only 48 percent of manufacturers considered themselves ready for Industry 4.0.

The greatest barrier to adoption is the

perceived cost and time migrating from legacy systems and digitizing paper-based manual



processes would take. Many food and beverage manufacturers still do not have reliable, real-time manufacturing metrics, let alone track-and-trace capabilities.

However, in the long run, status quo technologies can cost these manufacturers more than investing and implementing advanced technology. The rise of Industry 4.0 stems from the growing demands placed on manufacturers to become more agile and accountable to their customers.

Accessing information quickly and with little disruption through Industry 4.0 technologies enables manufacturers to drive improvement and compliance, and better meet their organizations' targets.

Adoption truly pays. According to a Forbes report on Price Waterhouse Cooper's *Industry 4.0: Building the Digital Enterprise* study, 35 percent of companies adopting Industry 4.0 expect revenue gains of more than 20 percent over the next five years.

Looking Ahead

If manufacturers use Industry 4.0 to its full potential, they will be able to enhance collaboration outside their plants and involve the wider supply chain — from raw material suppliers right through to distribution centers — to streamline operations. Ultimately, food manufacturing is on the precipice of change and as the gravitation toward data, automation and other facets of Industry 4.0 grow, it will become imperative that manufacturers adapt and embrace the innovation. 