Increase asset performance and food safety with Industry 4.0 technologies

The global pandemic has accelerated the need for organizations to embrace Industry 4.0 and start realizing digital technology's potential to positively impact their business operations. In fact, **a recent McKinsey study** reveals that six months into the pandemic, 94% of respondents said that Industry 4.0 had helped them to keep their operations running, and 56% said these technologies had been critical to their crisis responses.

If you haven't adopted any Industry 4.0 technologies, you're not alone. Many food and beverage companies have been slow to adopt aligning technologies, yet that's no excuse to not get started. To stay competitive and meet the ever-intensifying needs of Industry 4.0, food and beverage companies must rise to the occasion and make a plan to become digitally connected.

As plant equipment and assets are crucial to the delivery of food and beverage products, this is a good place to start. If you can't use your machines, delivering to customers becomes nearly impossible. Leveraging opportunities for improved asset productivity will increase equipment uptime, extend asset lifecycles, support sustainability initiatives, minimize non-compliance issues, and reduce food and worker safety issues.

Turn numbers into insights

Next-gen technologies are reshaping the asset management landscape and the software that supports it. With the cloud, organizations can securely forego expenditures on hardware and IT in favor of investment in their core lines of business. Analytics technology has become more sophisticated in order to provide the optimal data needed for critical daily decisions. Artificial intelligence (AI), the internet of things (IoT), and machine learning (ML) use advanced sensors and sensor fusion along with edge devices to provide more advanced monitoring and diagnostic capabilities.

Sensors incorporated in machinery and equipment today collect volumes of temperature, material wear, moisture level, usage time and other data. Analytics can transform this data into intelligent, predictable, and efficient information to inform when, for example, conditions arise that can compromise food safety. When utilized effectively, these technologies can not only significantly reduce the risks for contamination, they can also help reduce waste, more reliably safeguard food quality, and contribute toward sustainability initiatives.

Increase uptime of plant equipment and extend asset lifecycles

To survive in the current volatile and competitive landscape, it's mission-critical for plant equipment and assets to keep running—even when the machinery is past its prime and needs frequent repairs or even replacement. But fixing broken equipment, one emergency after another, is an inefficient use of resources and can even result in entire production lines shutting down. A more aggressive asset strategy is needed—one that ensures equipment efficiency and effectiveness to maximize the return on investment (ROI) of physical assets. Today's maintenance strategies need to go deeper. A company must collect and analyze asset data not only to better understand what the maturity of its assets signifies, but also to comprehensively assess equipment condition and predict why and when assets will fail.

Recent innovations offer support for these kinds of optimized maintenance strategies. For example, affordable sensors can be used to monitor equipment for early warning signs of performance deficiencies, downtime, or impending maintenance. Leveraging the IoT, data connectivity between these sensors and an enterprise asset management system can activate early detection of deterioration symptoms. This may enable timely intervention before an issue causes major repercussions. However, these sensors produce massive amounts of data—that with the context of time and place—must be sorted in order for it to become meaningful

for employees. Without the right analytics, gathering this data would be meaningless. Predictive analytics use embedded functionality such as AI and ML to recognize patterns, apply data-science algorithms, and project future incidents.

In the maturity model for asset maintenance, a prescriptive approach is optimal. This will become even more important in the post-digital era. In this approach, advanced enterprise asset management (EAM) solutions suggest preventive tactics, prescribe how to act, and predict the outcome. Prescriptive maintenance uses predictive science and algorithms to provide a glimpse into the future and anticipate how the asset's performance can be optimized.

For instance, plant maintenance teams, assets managers, manufacturing managers, and facility managers are keenly aware of the substantial costs associated with energy and the critical role it plays in the smooth operation of food and beverage plants and commercial facilities. In fact, as energy costs continue to escalate, energy consumption is increasingly becoming a key focus of the cost-conscious asset maintenance teams. The energy usage data collected can point to opportunities for savings as well as indicators of asset health. Technology can help monitor energy usage, giving managers a valuable tool for handling this major expense.

Support sustainability initiatives with improved energy usage

To In 2019, manufacturing accounted for approximately **35% of all energy consumption** in the US. Manufacturers that put the processes and systems in place to better track their energy usage position themselves to make a substantial impact to their financial bottom line and corporate sustainability initiatives.

Food and beverage companies can combine the energy usage data from sensors attached to assets and machinery across their operations with enterprise asset software to collect and analyze it for effective decision-making. In addition, the software can also augment the maintenance team capabilities to alert employees when machinery may not be using energy optimally so they can check on the issue. The software can also help manufacturers identify where they may have "energy leaks" so they can be eliminated, resulting in even more savings.

In addition to monitoring and repair, sustainability initiatives also involve documentation and reporting to governmental and regulatory bodies. These substantial documentation requirements alone keep many manufacturers from undertaking sustainability initiatives, as they appear quite overwhelming and resource-intensive if one looks at manual monitoring and spreadsheet data collection techniques.

However, sensors and asset management software automate the onerous data collection and organization, making it simpler for employees to generate reports on the key criteria required by the regulatory agencies.

Use asset data to minimize food safety issues and non-compliance penalties

The state of equipment and the behavior of workers have a big impact on food safety. Eliminating food safety risks and risks to workers are the primary responsibilities of any food processing company. Numerous food safety issues caused by contaminations with extraneous material like metal coming from broken filling equipment, or grease or detergent remnants are reported to the FDA and RASFF every year. Cross contamination, pathogens, and faulty labeling are other possible reasons why food and beverage manufacturers must recall products.

Industry 4.0 technology can help tackle these issues. Using IoT sensors on conveyer systems that monitor temperatures and vibrations to trigger a timely condition-based replacement is one example. Another important application in today's world, is body temperature monitoring combined with facial recognition to prevent ill people from working with food products.

A modern maintenance organization is built on asset data—a large amount of data that needs to be maintained, analyzed and made readily available. This information includes equipment details, spare parts and component data, technical information, modification history, documents, manuals and drawings, permit or lock-out details, together with extensive service and work order data.

By collecting and analyzing asset data not only can you gain a deeper understanding of what the maturity of your assets means—but you can predict why an asset will fail or when. With this information, you can plan preventive maintenance schedules as well as create a maintenance program that will align with your company's strategic goals.
Assets can also be subject to a variety of federal, local, and industry mandates, covering everything from emissions to safe handling of waste. Inspections, checklists, performance standards, lab tests, and reporting may be part of complex compliance protocols. Managing such critical processes for multiple assets—each with different needs—can become chaotic. Technology simplifies and streamlines the processes, from managing documents to scheduling preventive maintenance service calls and documenting findings.

Begin at the smartest starting point for Industry 4.0

The benefits of Industry 4.0 become quite clear within manufacturers' asset productivity strategies. The comprehensive use of sensors to collect data, software to collect and aggregate the data, and analytics combined with artificial intelligence to analyze and develop actionable predictions—this is the power of Industry 4.0.

The controlled environment of a company's own manufacturing operations makes asset and equipment management a more manageable starting point for Industry 4.0 experimentation in the food and beverage industry. Manufacturers that choose asset productivity as the entry point for their Industry 4.0 strategy can learn how the technologies work, revise business processes, and document the best practices to improve productivity and efficiencies in other parts of operations.

Grimmway Farms improves asset management with EAM

A leading grower of baby carrots and dozens of other products, California-based Grimmway Farms employs Infor EAM to manage more than 10,000 assets. Grimmway's use of the solution has led to the following advancements:

- Monitoring data from across its entire environment and managing asset work orders more easily
- Simplifying reporting so that the team can prepare needed reports within 30 minutes
- Connecting employees to asset information whether they are working from an in-network computer or connecting via VPN
- Easily migrating more than 270 users onto the system

To learn more, visit **eam.hexagon.com**

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Hexagon is a global leader in digital reality solutions, combining sensor, software and autonomous technologies. We are putting data to work to boost efficiency, productivity, quality and safety across industrial, manufacturing, infrastructure, public sector, and mobility applications.

Hexagon's PPM division empowers its clients to transform unstructured information into a smart digital asset to visualize, build, and manage structures and facilities of all complexities, ensuring safe and efficient operation throughout the entire lifecycle.

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