

WHITE PAPER

# Optimizing Efficiency: Navigating Automation Operations in Food and Beverage



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# Norgren – Breakthrough Engineering

The challenges and problems the world faces grow ever more complex. Businesses demand fresh thinking and new approaches to successfully tackle fundamental issues such as climate change, rapid population growth and using technology to improve the quality of lives.

Breakthrough Engineering is at the heart of Norgren's offering and is an integral element in driving the essential systems we all rely upon.

From improving speed, productivity, reliability, and efficiency of equipment, to generating significant energy and cost savings, or lowering total cost of ownership across many industries - Norgren's solutions are designed to help customers pursue progress, achieve new goals, and overcome problems.

Norgren offers insight, technical excellence, and a true collaborative approach to help organisations forge a brighter future by breakthrough engineering for a better world.

**Breakthrough  
Engineering  
for a Better World**





# Scaling Efficiency: Navigating the Unique Automation Landscapes of Operations in Food and Beverage

**The food and beverage industry plays a critical role in our daily lives, providing essential resources worldwide. To ensure top performance, companies in this industry need to stay ahead by continuing to improve efficiencies through automation, and process improvements, and to ensure they are doing the very best in health and safety.**

With the growing demand for items such as fruits, dairy products, and other resources in the food and beverage industry, the requirement for increased production becomes more pronounced. This increasing demand is evident in a recent survey, which found that 62% of manufacturers plan to introduce robotics and automation into their processes in 2023<sup>3</sup>. This white paper discusses the automation journey among food and beverage operations, discussing challenges, benefits, needs, and solutions. Furthermore, this white paper shows the many ways movement, control, and speed are heightened through automated systems.



# Challenges

## In the intricate landscape of enhancing food production processes, food and beverage companies face a myriad of challenges.

Managing multiple facilities, products, and markets, ensuring compliance with global standards and regulations, providing worker and food safety, and coordinating with various stakeholders and suppliers are among these challenges. Additionally, these companies deal with resource and capability constraints that can make implementing automation more difficult.

Challenges like implementing and maintaining automation within the food and beverage industry can be difficult due to limited budgets and resources. Factors such as initial investment in equipment and other necessary components like software can be costly. In addition, ongoing costs like maintenance, upgrades, and repairs must also be considered before implementing automation in an operation. With these major considerations, smaller businesses

may not have the financial capacity or the return on investment to justify automation<sup>4</sup>.

The complexity of designing and operating automation can pose significant challenges, particularly for enterprises with a diverse range of customized products. Adapting to fluctuating customer demands, evolving regulations, and dynamic market conditions can also necessitate a level of flexibility that is needed in automation. It is crucial to approach automation with a clear understanding of its complexities and a commitment to navigating them successfully. Norgren and Bimba offer engineering resources to help educate and tackle customized needs, big or small.

# Benefits

## Companies stand to gain benefits in terms of scale, scope, and speed with the help of automation.

They can increase their output, improve product quality and efficiency, expand their product range, and market reach, and respond swiftly to customer demands and changes in the market. These food and beverage corporations can benefit from automation in terms of flexibility, differentiation, and innovation. Automation enables them to adapt to changing customer needs, create customized products, and develop new processes and solutions.

Food and beverage companies can adopt more advanced and integrated automation solutions to address their unique requirements. These solutions include robotics, artificial intelligence, Internet of Things (IoT), and smart sensors. These technologies are capable of handling high-volume, high-variety, and high-velocity production. In contrast, smaller food and beverage companies can opt for simpler and modular automation solutions that match their specific production needs and constraints. These solutions may include conveyor systems, automated guided vehicles (AGVs), and vision systems.

Automation signifies the use of control systems, machinery, and technology to optimize production processes. This involves sorting, packaging, labeling, and operations like cooking and seasoning while simplifying human involvement. The aim is to increase efficiency, boost productivity, ensure consistency, improve safety, and reduce operational costs.

As a pioneer in motion control and fluid technology, Norgren plays an instrumental role in driving innovation in automation technologies. With a deep understanding of the unique needs and challenges of the food and beverage industry, Norgren develops advanced solutions designed to enhance operational efficiency and ensure product quality. From precision control that aids in ingredient mixing to robust systems capable of withstanding harsh cleaning chemicals, Norgren's innovations are at the forefront of automating and transforming the food and beverage industry.

**Automation enables [companies] to adapt to changing customer needs, create customized products, and develop new processes and solutions.**

# The Unique Automation Needs in Operations

**Navigating the distinctive and multifaceted automation needs of the food and beverage industry, organizations grapple with varying resource capacities, prompting some to opt for broad-scale solutions while others strategically focus on specific areas to enhance efficiency, maintain quality, reduce waste, and increase production rates, all within budget constraints.**

The automation needs of operations in the food and beverage industry are distinct and multifaceted. While some organizations may have the resources to implement broad-scale, comprehensive automation solutions, others often need to be more selective, focusing on areas where automation can deliver the most significant benefits. No matter the size of the operation, the unique automation needs of these operations revolve around improving efficiency, maintaining quality, reducing waste, and increasing production rates, all within budget constraints. Norgren and Bimba provide expertise in the following applications:

1. Facilitating precise bottle and container filling ultimately enhancing productivity and efficiency
2. Enabling seamless transportation and packaging of boxes, minimizing manual labor, and optimizing workflow within the application
3. Assisting in filling of packages, delivering accuracy and consistency
4. Streamlining packaging processes of mass items like candy into bags, to maximize efficiency and maintain product integrity

5. Offer solutions that are reliable for processes in both cooking and freezing, encouraging performance optimization and downtime reduction
6. Providing accuracy in weight and measurement services, quality control, and adherence to industry standards
7. Customizing solutions to meet unique customer needs like collaborating on accurate packaging sizes
8. Prioritizing the health and safety of equipment, employees, and products, helping to build a reduced-risk, productive, environment
9. Managing the movement of products within production lines, facilitating smoother operations and product handling
10. Building and supporting position and gripping of products throughout the process, enhancing precision, motion, and control

## How Agriculture in the Food and Beverage Sector Improved Reliability

**In the pursuit of superior customer satisfaction, a collaborative effort between an agriculture company and Bimba fostered major efficiency.**

This involved insourcing key components, ensuring optimal performance and quality control are maintained throughout automated planting equipment. The project led to the development of two distinct actuators for row-cleaning applications. These actuators, designed to maintain a constant pressure across varied elevations, are an embodiment of Bimba's pioneering approach to pneumatic actuation, driving actuator technology and innovating customer experience.

A direct relationship was established between the companies, which allowed for the uncovering of potential design improvements and a full system audit, revealing additional valve and air preparation opportunities in the process. The influence of this initiative extended beyond procurement, facilitating engineer-to-engineer reviews of the pneumatic circuit, and fostering relationships outside of planting. Applications within the food and beverage industry, as seen with this agriculture company, can increase efficiency and reliability by taking advantage of end-to-end product solutions that further enhance ease of processes.

# Taking on Speed, Control, and Movement

## Equipped with products from Norgren and Bimba, companies are redefining efficiency.

Automated systems enhance speed, control, and movement in an unprecedented manner. Consider the case of a food service using electric actuators to regulate griddle cooking time. The actuators dictate the speed at which the heating element transitions from cooking to release, facilitating swift and safe product retrieval by employees. Here, automation not only delivers consistent cooking times but also enhances safety and efficiency in the kitchen.

Similarly, another organization is harnessing the power of high-speed sortation equipment, optimized by our products, for effective tomato picking. This innovative approach significantly increases picking speed, resulting in increased productivity and reduced waste.

In the beverage industry, precision control is paramount. An operation is known to use actuators and valves to manage ice production in a beverage dispensing machine and control the flow of frozen fluid beverages. This meticulous control over the process ensures consistency, quality, and satisfaction for every single beverage dispensed.

Lastly, consider the instance where automated systems streamline the bottling process. By integrating actuators, valves, and air preparation equipment to manage gravity-feed fluids, the customer enhanced both the filling and packaging processes. This integration not only provides accurate bottle filling but also facilitates the smooth movement of products around the equipment for efficient packaging.

In each of these examples, the incorporation of Norgren and Bimba products into automated systems has resulted in improved speed, control, and movement. This innovative approach to everyday processes underscores our commitment to customer satisfaction and the continuous improvement of everyday life through clear, concise, and forward-thinking solutions.

# Offering You Endless Options

## Working together to develop solutions that effectively answer your unique needs.

Norgren is uniquely positioned to offer breakthrough engineering solutions that meet the diverse needs of various industries, including food and beverage. These exceptional solutions are not just about improving equipment but also about elevating the way your businesses operate and thrive. Norgren's solutions are tailored to address the unique needs of each customer. This approach simplifies the procurement process and provides high-quality products that deliver desired outcomes. Our commitment to customer-centricity is reflected in our collaborative approach. We work together with you to develop solutions that effectively address your dynamic needs. We understand that each customer is unique, and so should the solutions we provide.

As we navigate the ever-evolving landscape of the food and beverage industry, operations stand to benefit immensely from the incorporation of automation processes. Let Norgren help you overcome your challenges and propel your business toward a future marked by efficiency, growth, and success. To start your automation journey or for more information, please contact us. We are eager to work with you, understand your needs, and provide you with reliable solutions that drive your business forward. With Norgren by your side, you can confidently step into the future of the food and beverage industry.

## References

[^3]: <https://www.columbusglobal.com/en-gb/blog/8-benefits-of-automation-in-the-food-and-beverage-industry>

[^4^]: <https://www.foodqualityandsafety.com/article/how-automation-technology-is-changing-the-food-and-beverage-industry/>

How Automation Can Give the Food and Beverage Industry a Boost

5 Benefits of Automation in the Food and Beverage Industry

How Robots Benefit Food and Beverage Manufacturers

Navigating Food Industry Challenges With Automation and Robotics

The Role of Automation in Food Manufacturing Processes



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