



**Rockwell
Automation**

RESHAPING PROTEIN PRODUCTION

**How Decision Makers Can Adapt to Major Trends
and Transformational Forces**

Flexible in the face of shifting demand

Despite drastic fluctuations in demand for consumable products over recent years, the market for protein-based goods has remained resilient. While demand has stayed consistently strong for staples such as meats, poultry and seafood, including fresh, frozen and processed variants, consumers have shown increased interest in alternatives such as plant-based meat categories as well.

Additionally, consumers are becoming more interested in knowing the source and supply of the protein products they purchase. Growing awareness of food provenance and production issues, combined with greater appetite for healthy, ethical and local consumption, has opened up the sector to unparalleled supply chain scrutiny.

For manufacturing decision makers, the ability to adapt production in line with rapidly changing market conditions and consumer preferences is key. Accordingly, their focus is on creating a flexible, digitally-enabled manufacturing environment that serves the need for transparency and flexibility. Within this focus, priorities around cost, food safety and quality, data security, workforce transformation, yield generation and greater localization all need to be balanced. These factors are putting pressure on producers to digitalize and operate as a connected enterprise.

Over the course of this paper we will explore how your organization can leverage new technologies to achieve flexible manufacturing and distribution, enabling you to meet the needs of a changing marketplace.

EXPANDING CONSUMER CHOICE

Protein is a dynamic and fast-expanding sector. The animal and plant-based protein sector is projected to grow to **more than \$70 billion** by 2025, while seafood is expected to reach **\$336 billion**.

Farm to fork transparency and other forces of change

Changing consumer diets and a greater emphasis on ethical business practices are compelling the protein-based goods sector to adapt, bringing a need for brands and producers to embrace transparency and integration from farm to fork. In parallel, technology is playing a more important role in production, driving improvements in volume, quality and safety.

The priority for decision makers is how to effectively and profitably manage their businesses amid changing consumer demand and added manufacturing complexity.



Across markets, staffing challenges are becoming more prominent. In the US, manufacturers reported that finding the right talent is now **36%** harder than it was in 2018, even though the supply of available workers has nearly doubled. **77%** of manufacturers said they expect ongoing difficulties in attracting and retaining workers.¹

¹ <https://www.nam.org/2-1-million-manufacturing-jobs-could-go-unfilled-by-2030-13743/>

Key considerations include



- **Raw Material and Processing Cost Control**

Keeping costs to a level that allows the business to remain competitive in the market, including managing cost risks around distribution, exporting, waste and recycling.



- **Labor Optimization**

Developing strategies focused on forming new skillsets and capabilities in production facilities, while managing concerns around an ageing workforce and the transfer of knowledge.



- **Complying with Changing Regulations**

Adapting to changing food safety regulations, including stricter requirements around transparency, verifiability and accuracy across the food supply chain.



- **Increasing Workforce Productivity**

Food producers are seeking more actionable data to connect people, assets and processes, leading to improvements in workforce productivity.



- **Ensuring Food and Data Security**

Maintaining food security requires visibility around risks and the ability to respond to issues fast, such as in dealing with cybersecurity incidents and disease outbreaks in livestock.

Forces impacting **demand** for protein-based products:

- **Population Growth**
Manufacturing needs to produce greater quantities of protein products to satisfy the market.
- **Need for Transparency**
Consumers are becoming increasingly selective as they seek a commitment to ethical and responsible production.
- **Seeking Alternative Proteins**
Changing consumer sentiments around health and eco-friendly choices is bringing new entrants into the market.
- **Increasing Prices**
Inability to mitigate increasing raw material prices drives a greater need to lower production costs, which requires strategies designed to generate higher yields or improve productivity.
- **Increasing Demand for Product Variations**
Achieving product differentiation requires greater flexibility in the application of production assets and processes.

Forces impacting **supply** of protein-based products:

- **Scarcity of Labor**
Companies are dealing with pandemic staffing challenges around availability, skillsets, safety and cost.
- **Localization**
Increased focus on local production to improve food sovereignty and demand management.
- **Yield Optimization**
Resolving conventional frictions in production by leveraging connected technologies.
- **Supply Chain Volatility**
Global supply chain disruptions are creating cost pressures and forcing companies to develop more robust and traceable supply chains.

Cyber attackers are pursuing more aggressive tactics in order to disrupt and extort the companies they target.

In 2021, meat packing company JBS was forced to **pay \$11 million** to resolve a ransomware attack that caused the temporary shut-down of some of its operations in Australia, Canada and the US.

What strategies can help you address these challenges?

Rockwell Automation is helping industry leaders implement a range of strategies to enable companies to meet changing critical needs centered around the following priorities:

- **Optimizing yield and improving productivity.** Getting more out of production by supporting worker output, streamlining processes and implementing automation to increase product value.
- **Increasing quality and consistency of production while reducing cost.** Standardizing processes to reduce variance and decrease the risk of discarded goods.
- **Connecting operations and accessing real-time data.** Improve data flow by connecting data sources across production and distribution to draw insights for ongoing improvement.
- **Improving worker safety.** Reduce workers' exposure to hazardous conditions, such as cold areas or direct interaction with machinery through the use of automation, integrated control systems and remote capabilities.

A new paradigm in operational excellence using AR

Rockwell Automation helped Maple Leaf Foods, the largest producer of prepared poultry and meats in Canada, to capture more value from its equipment and improve worker experience. Using smart, connected packaging machines, augmented reality (AR) and end-to-to-end digitalized packaging lines, the platform supported Maple Leaf's goal of achieving **greater than 80% Overall Equipment Effectiveness (OEE)**, along with gains in shorter staff training cycles, fewer/shorter downtime events and increased first pass quality.

Taking ownership of worker safety

MP Equipment is a provider of food portioning and processing equipment solutions for the meat, poultry and seafood sectors. Across the industry, there is the need to process high volumes with low margin operations. We supported the machine builder with the modernization of legacy equipment to provide solutions from the beginning to the end product. This helped to meet evolving customer needs while optimizing for safety and compliance.

- **Reducing downtime.** Using sensor-based equipment to facilitate predictive maintenance and more active involvement on the part of the OEM.
- **Increasing flexibility.** Enabling the transition to modern production capabilities and reduced setup costs.
- **Attracting and retaining the best talent.** Providing a modern, digitally-enabled workplace that relies on skilled over manual labor.
- **Creating transparency along the value chain.** Improving accessibility of data to improve outcomes in areas including food safety, compliance with regulations, transparency for consumers and supply chain optimization.



Reducing complexity in alternative proteins

A customer in the plant-based Protein market wanted to embrace next-generation, smart factory solutions to develop a product that mimics the taste, texture and appearance of traditional animal protein while reducing cost structure to a point of closer parity with such products. Rockwell Automation helped the customer to integrate IT and OT in order to reduce product cost in alternative protein products, in turn helping improve quality, increase competitiveness and enhance the size of their potential market.

Implementing digital solutions

The future of the protein-based food sector is being driven by advances in digital and flexible technologies. These capabilities are impacting every stage of the production and distribution process while supporting producers to better respond to new and unanticipated business needs.

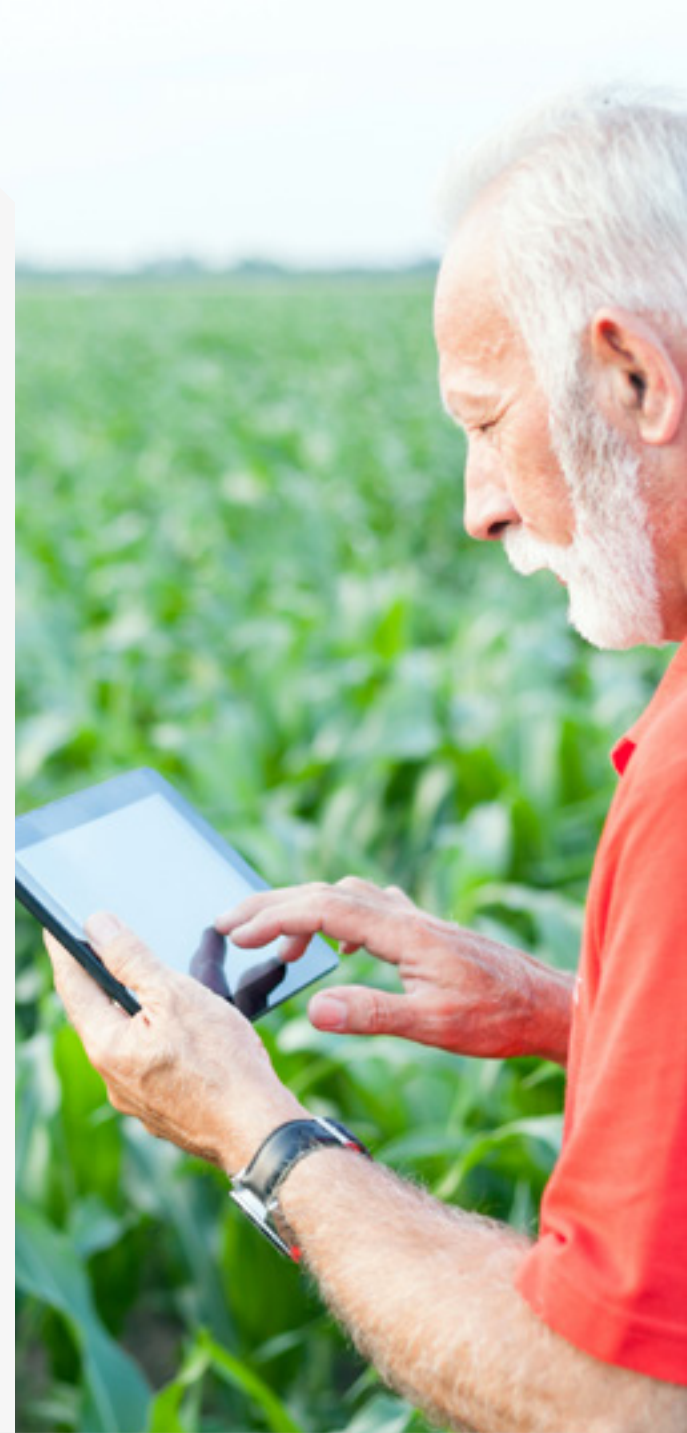
Changing market dynamics and expectations need to be met with imaginative, digitally-connected approaches to production environments and collaboration with supply chain partners. This has reinforced the requirement for automation and modern systems. We support customers in areas such as:

- **Yield and Productivity Optimization**

Enable the Connected Worker through technologies such as augmented reality (AR), IoT, robotic and automation solutions, modular and flexible equipment, and integrated motion solutions. Support greater collaboration between workers in different locations and facilitate remote maintenance capabilities.

- **Connected Enterprise**

Establish new business models built on IIoT, analytics and predictive maintenance. This enables greater efficiency of resources and allows plant management to increase production productivity and gain greater control over energy usage and costs through responding directly to changes in demand, climate and other factors.



Capturing energy savings through design innovation

Energy efficiency continues to be a major focus for the Protein sector. We helped **Marlen**, a premium manufacturer of highly engineered food processing equipment and systems to **reduce energy usage by around 40%**. We did this by designing food processing equipment to improve accuracy and reduce energy consumption in food vacuum stuffing and pumping systems, while also driving lower Total Cost of Ownership throughout the life of the equipment.

- **Production Monitoring**

Visualize operational KPIs, such as Overall Equipment Effectiveness (OEE), and continuous improvement through **cloud-based ERP** and MES process control.

- **Working more collaboratively with OEMs**

Enable direct, real-time connectivity with OEMs to assist remote monitoring and services to improve machine performance and avoid the risk of downtime.



Supporting Flexible Manufacturing

We help customers advance towards the adoption of modern manufacturing methods, including:

- **Enhanced food safety**

Implement more robust processes including cleaning in place (CIP) to automate cleaning of interior surfaces used in production, and adopt hygienic products and advanced packaging technology to preserve quality, ensure food safety and maintain compliance with guidelines such as IP69K.

- **New production models**

Embracing capabilities such as Digital Threads, Unified Robotic Control and magnet-based conveyor technology (known as Independent Cart Technology) to realize productivity and yield gains on the factory floor.

A smart, agile approach to production

With greater demands for personalization and customization, manufacturers are turning to new approaches to machine design. Rockwell Automation worked with OEM [Aagard](#) to develop an innovative customer solution using Independent Cart Technology (ICT) to bring greater flexibility and efficiency to production operations. The solutions supported **4000 product configurations** as well as offering tight floor space, fast changeover and high end line rates of **100 cases per minute**.

- **Enhanced supply chain operations**

Encourage the use of track and trace / RFID technologies to create visibility across the chain, connecting stakeholders and providing guarantees on provenance and responsible sourcing.

- **Digitalization of your factory**

Facilitating convergence of IT and OT across the organization, leading to improvements in cost savings, performance, flexibility, operational standards and security orchestration.



Adapting for digital success

Are you ready to accelerate your digitalization journey?

By partnering with Rockwell Automation, we can help you to design and build a connected ecosystem that extends across your product lifecycle.

As a global leader in industrial automation and digital transformation, we're helping to transform the Protein industry through the application of digital technologies that enable our customers to connect their people, assets and processes.

Our customers benefit from our deep knowledge of digitalization, supported by an ecosystem of high-caliber partners, to help closely tie solutions to business problems. Drawing on these strengths, we are well positioned to help you enhance every aspect from machine capabilities through to final production.

We have extensive experience across relevant sectors including Protein and Food and Beverage, and a reputation as an industry leader in control systems, integration and automation. With this domain expertise and comprehensive portfolio, we're uniquely qualified to help your business to fully realize the connected enterprise.

To find out more about how Rockwell Automation can support your business to adapt to the major trends and transformations discussed in this paper, visit:

Connect with us.

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