

A photograph of a factory production line for bottled water. The bottles are arranged in a long, straight line, moving from left to right. The background is slightly blurred, showing the industrial machinery. A semi-transparent grid pattern is overlaid on the entire image. A dark grey rectangular box is positioned in the center, containing the main title. Below it, an orange rectangular box contains a subtitle.

# WHAT NEW TECHNOLOGIES AND DATA CAN DO FOR FOOD & BEVERAGE PRODUCTION

Increase Quality and Safety of Products, and Improve Performance  
with New Technologies and Continuous Availability



**simplify** and  
**modernize** automation

# CHALLENGES AND OPPORTUNITIES IN FOOD AND BEVERAGE PRODUCTION

## TOP 3 CHALLENGES IN FOOD AND BEVERAGE PRODUCTION



Adopt scalable, flexible, more efficient production processes



Get new products, new brands and new packaging to market quickly



Manage complex batch production across a wide product range and standardize processes

## FROM OPERATIONAL CHALLENGES TO NEW SOLUTIONS



Updated automation and production systems



New technologies to monitor, digitize and streamline processes



Need for a foundation of simple to operate, always on, cost-effective systems infrastructure

Market forces require food and beverage producers to seek further efficiencies, achieve agility in their processes and adopt new technologies to stay competitive. Product quality and safety are obviously top concerns; consumers are demanding more and more healthy, less-processed, natural and local foods. With higher regulatory scrutiny, quality recalls are becoming more commonplace and there is a clear need to “track and trace” ingredients and process steps, and maintain consistent purity and quality. Food and beverage companies can take advantage of new tools, data and systems to rapidly identify root causes of quality and safety issues. When consumers’ health, company compliance and reputation are at risk, these companies cannot afford a slip in their processes.

Changing consumer tastes, more frequent production line change-overs, fluctuating and seasonal demand and volatile commodity prices are increasing pressure on operations and decision-makers to adopt more agile production processes. In addition, there is a growing number of package types and sizes offered among producers. In such an environment, food and beverage companies need to modernize their underlying technologies in order to quickly adapt production to demand while ensuring that products are compliant with quality and safety standards. To address the competitive and cost pressures they continue to look for productivity improvements – both process and equipment productivity - with flexibility and cost efficiency as top priorities.

This ebook provides an overview of some of the trends, challenges and opportunities for food and beverage companies today and discusses the operational technology solutions needed to address them. The keys to better operational decisions and increased efficiencies lie in updated industrial automation systems, future-proof processes, cost-effective new technologies, as well as new sources of data, analytics solutions and monitoring applications.

# FOOD AND BEVERAGE COMPANIES ARE STARTING TO MAKE USE OF COST EFFICIENT NEW TECHNOLOGIES TO IMPROVE OPERATIONAL PERFORMANCE AND DELIVER AGILITY AND PRODUCT SAFETY.



## NEW TECHNOLOGIES:

—  
Upgraded industrial automation and operational technologies (OT) with new architectures

—  
Systems for real-time decision making leveraging new data sources

—  
Connected smart metering, sensors, thermostats and controls and IIoT solutions

—  
Converged solutions and distributed computing with new interfaces – tables, smart phones, etc.



## PROCESSES THAT BENEFIT FROM NEW DATA SOURCES AND NEW TECHNOLOGIES

—  
Optimized production processes

—  
Quality and safety monitoring and compliance

—  
Supply chain tracking and optimization

—  
Supply and demand and production forecasting and capital budgeting



## OPPORTUNITIES WITH NEW TECHNOLOGIES

—  
Enable operators to improve productivity through smart automation and continuous data capture

—  
Ensure real-time decisions utilizing new data sources

—  
Enable and benefit from energy consumption controls

—  
Deploy future-ready, virtualization, IIoT and smart technologies with a proven return

—  
Extend equipment lifecycle

## KEY TAKEAWAYS

The need to update food and beverage manufacturing control systems is becoming increasingly acute as many operate with aging hardware and often unsupported or costly to support operating systems. Virtualization continues to drive demand for always-on, fault-tolerant systems.

## ENSURING QUALITY AND SAFETY WITH NEW TECHNOLOGIES

Locally sourced, more perishable and less processed foods require updated production and distribution processes

Continuous data capture, monitoring and reporting is needed to ensure safety and compliance, including data and traceability along the supply chain

Retention of product ingredient and process step data for compliance and recall purposes minimizes risks

Critical application processing, data capture and data retention require modern, continuously available infrastructure.

## THE MANDATE FOR PRODUCTIVITY IMPROVEMENT

Replace manual processes and enable operators through smart automation

Ensure connectivity and integration with legacy infrastructure for responsiveness and cost efficiencies, e.g. IIoT solutions for Asset Performance Management

Utilize smart metering, thermostats and controls to track and control energy consumption

Extend equipment lifecycles to obtain higher return on assets (RoA)

## ACHIEVING AGILITY

Deploy versatile equipment to be able to shift production to different, high demand products quickly

Enable processes that allow for quick adaptation of production and ultimately lower CapEx and quicker time to market

Enable faster visibility and collaboration between central and remote staff

Facilitate real-time decision making for demand forecasting and supply chain management

## A CLOSER LOOK AT FOOD AND BEVERAGE PRODUCERS' TOP CHALLENGES AND REQUIREMENTS

Food and beverage companies operate in an ever-changing and complex environment. Not only are consumer preferences shifting towards less processed, healthier foods but competition from new brands is intensifying making it difficult to drive growth. The cost pressures to efficiently produce and deliver natural and local foods together with increased regulatory scrutiny around quality and safety require a new approach to productivity, efficiency and scalability.

- **Ensuring Quality and Safety with New Technologies:** Food quality and safety is still the primary concern.
- **The Mandate for Productivity Improvement:** To make up for the costs of these market pressures, food and beverage companies need to streamline processes and adopt modern technologies.
- **Achieving Agility:** The ability to quickly respond to fluctuating supply and demand is what will continue to set top performers apart.

Modernizing and simplifying operational technologies, capturing and analyzing new sources of data and extending equipment lifecycle are still key drivers of productivity in food and beverage production. To remain ahead of the curve, food and beverage companies need: simple to deploy, continuously available and cost-effective computing infrastructure to support those updated systems.

Increased productivity is the number one driver for new equipment demand according to JP Morgan<sup>1</sup>. Clearly, automation is an essential part of any process improvements; even mid-size companies in food and beverage production today are heavily automated.

## TOP TECHNOLOGY TRENDS IN FOOD AND BEVERAGE PRODUCTION

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Despite an increased level of automation, many plants are still relying on the heavy use of Excel spreadsheets and manual processes for data collection, especially in smaller plants. Significant opportunities exist to deploy modernized operational technologies to further increase production efficiencies and prevent interruptions and errors.

Over 50% of organizations in food and beverage production are using some form of smart sensors already. With the advent of new solutions and IIoT deployments, new sources of data are available which coupled with new analytics deliver real-time, improved decision-making. Such new data sources and solutions require connectivity, integration with legacy systems, and always-on infrastructure and analytics for which there are simple to deploy, practical solutions today.

While the adoption of Big Data solutions is currently lagging, there are major opportunities in quality management, planning and forecasting, predictive maintenance and asset performance management that can be addressed with analytics based solutions.

These automation trends combined with the ongoing capture of new data are driving a need for application availability without data loss. With so many new technologies on the plant floor today, what's required is simple to deploy and manage operational technology that can be run and maintained by plant employees as opposed to IT. Additionally, every new solution or application needs to be scrutinized to ensure it delivers an RoA over the short term and guarantees the lowest possible total cost of ownership (TCO).

# AUTOMATED FOOD AND BEVERAGE INFRASTRUCTURE – THE INDISPENSABLE BACKBONE OF MODERN FOOD AND BEVERAGE PRODUCTION

To keep up with market trends and deploy automated technologies in the modern food and beverage plant, producers need to have a reliable, simple to operate, always-on underlying infrastructure in place. They need to look for modern, reliable technology solutions that allow them to:



Utilize automation and controls to track and control processes and minimize human error



Make real-time decisions within production processes and along supply chains



Do continuous data monitoring and reporting to ensure quality and safety compliance



Track and trace all product data to be able to efficiently conduct recalls



Deploy smart technologies with a proven return on investment for continuous production processes (e.g. IIoT and process monitoring systems, data analytics and others)



Extend the equipment lifecycle

# AUTOMATED FOOD AND BEVERAGE INFRASTRUCTURE – THE INDISPENSABLE BACKBONE OF MODERN FOOD AND BEVERAGE PRODUCTION

To provide these benefits, modern food and beverage operational technology needs to be continuously up and running while not requiring specialized staff to operate. Every minute of unplanned downtime results in critical loss of data and additional costs. Eliminating unplanned system downtime and the risk for data loss is not an option in modern food and beverage production – it's a must. Simplified, always-on, cost-effective operational technology allows those food and beverage leaders to face the market challenges of today and seize the growth opportunities of tomorrow by:



Preventing interruptions in data collection or data loss which may result in quality and safety risks or non-compliance



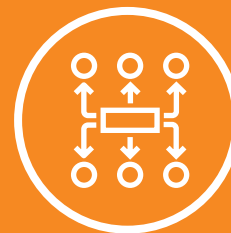
Enabling better forecasting of demand and supply and the agility to respond to fluctuations



Driving automation, connectivity and legacy-system integration for agility and responsiveness



Reducing technical and business risks and improving efficiencies (process, labor, energy, etc.)



Future-proofing the infrastructure for IIoT and continuously advancing manufacturing technologies.



Protecting customers, processes, critical data, reputation, and brand

## KEY TAKEAWAYS:

MAXIMIZE EFFICIENCIES AND PRODUCTIVITY THROUGH SIMPLIFIED AND MODERNIZED AUTOMATION.

ENABLE THE **UNINTERRUPTED COLLECTION, PROCESSING, ANALYSIS AND REPORTING OF MULTIPLE DATA SOURCES.**

DRIVE VISIBILITY, RAPID RESPONSE AND FORECASTING WHILE ENSURING SAFETY AND EFFICIENCIES.



Stratus takes the complexity out of keeping business critical applications running 24/7. Our technologies proactively prevent instances of unplanned downtime both in the data center and at the edge, and our services ensure any issues are addressed before our customers need to.

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