

2020 Global Food & Beverage

DIGITAL

Transformation Benefits Report

Life Is On

Schneider
Electric

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Contents



Introduction

Food and beverage manufacturers are facing many similar challenges as other industrial companies – slim margins, aging equipment and lower budgets. However, there are also challenges unique to this sector, such as changing consumer tastes for healthier, more convenient and sustainable products, new players entering the game and disrupting the traditional retail model, or more companies operating globally and handling shifting regulations. This means that to remain competitive in today’s market, food and beverage businesses need manufacturing and operating processes that are flexible, efficient and sustainable.

Schneider Electric is leading the way with our own EcoStruxure™ IoT platform. Our solutions are facilitating unprecedented advances in operational efficiency (OpEx), maximizing asset value (CapEx), and reducing energy consumption and waste to protect the environment.

Our vision

*“We see digitization as an opportunity for manufacturers to better align with new customers’ needs and expectations. They will need more flexible and efficient manufacturing, safer, more reliable and greener facilities, and more agile and transparent supply chain. We are uniquely positioned to help improve all customer processes from design to operation and maintenance.”*¹

At Schneider Electric, we think that energy and process efficiency are impossible to decouple. We are talking about one equation for total efficiency, a sustainable future, and healthier people. Digital transformation of energy management and automation is reshaping food and beverage production environment and the whole supply chain. What was once diffuse and wasteful can now be consolidated and highly efficient. And all of this is attainable using solutions available today — solutions that not only change but anticipate future needs and improvements.

This report documents four core benefits of digital transformation in food & beverage, based on real data aggregated from Schneider Electric’s global network of customers. The results reveal that efficiency gains, reliability improvements, and cost savings are realistic and achievable using these solutions.



Digital transformation in food & beverage

A competitive landscape is putting more and more pressure on the food and beverage sector. While consumers expect better, healthier and more personalized products that meet their individual nutritional needs, retailers require higher volumes at lower prices per unit. Current societal trends are also introducing new legislation that focus on food safety, health, animal welfare, climate and environmental sustainability – making digitization a business imperative. This is forcing a rethink in manufacturing due to the multiplication of references and the need to increase flexibility to manufacture and deliver the right product at the right time.

New players such as Amazon are also entering the game and disrupting the traditional retail model. Mobile apps are empowering end-consumers, who demand more complete and traceable information. Buying decisions and trust are a click away. And so, smaller and innovative producers are gaining visibility and winning significant market shares.

INTRODUCTION

In an industry where success is associated with a strict control of the costs and slim margins, dealing with aging equipment has always been a significant roadblock in increasing efficiency, flexibility and competitiveness in the entire supply chain. Optimizing the efficiency of assets, processes, water, energy and waste management is key to ensure our operations are reliable, secure and sustainable.

A greater focus on food safety can also highlight various constraints in food production. An ingredient that is permissible in one country may become impermissible in that same context in a different country or region. Product fraud, counterfeiting and product recalls are still happening and are a real challenge for manufacturers.

Stricter regulatory frameworks are pushing for a combination of the traditional approach to quality with new technologies to reach higher levels of compliance and reduce risks. Regulations also demand increased transparency regarding product safety, quality, labor, origin traceability and sustainability. Investors are also starting to link sustainability to company value.

This sustainability trend is also impacting the workforce in the industry. Millennials want meaningful jobs, that are aligned with their values on sustainability. Innovation is also key to train and retain talent, as it helps transparency by breaking information silos and empowering people to be safer, more efficient and focused on value added tasks.

To meet the needs of the new digital world, the food and beverage industry is transforming the way it functions, from farm to fork. This need for expanded digitized industrial solutions is causing a dramatic impact for all involved.

Current challenges in the F&B industry

- Increase in consumer demands.
- Capex and Opex constraints coupled with an aging infrastructure.
- Stricter product regulations and compliance issues.
- New digital retail channels.
- Sustainability requirements for raw materials, energy, water, and waste management.

A bounty of benefits, despite barriers

Successful cases of digitally transformed manufacturing companies are emerging around the world. These new plant and manufacturing models are setting new standards and becoming industry benchmarks for digital transformation thanks to improvements in efficiency, profitability, flexibility, traceability, and sustainability of operations.

For example, Viterra's efficiency and subsequent rise in Canada's grain handling industry can be partially attributed to a system upgrade. A single, integrated, unifying platform that provided the complete functionality a large, complex facility requires was implemented after production issues at a facility was noticed. The platform was also fully scalable and served as a single source of actionable information for operational, engineering and corporate business users. Soon, Viterra was reporting a 10% increase in shipping efficiency, saving 45-60 seconds off load-in for each car.²

This ability to achieve more with less was made possible through the integration of resilient, efficient, connected and reliable digital solutions.

Enterprises on the leading edge of digitization realized a 70 percent increase in productivity, compared to just a 30 percent increase for organizations that were slower to digitize operations.³ Though most of the benefits are reaped by industry leaders, World Economic Forum and Accenture analysis, using data from 16,000 companies, found that there is an overall positive return on investment.⁴

These companies understand digital transformation as a matter of "disrupt or be disrupted,"⁵ as demonstrated by the fact that half of the Fortune 500 companies from the year 2000 have disappeared from this prestigious ranking.⁶ These findings bring the business case for digital transformation into crystal-clear urgency.

Despite the potential for significant efficiency and reliability boosts, many countries are operating below their overall digital potential. For example, even though the U.S. is achieving just 18 percent of its digital potential, it's ahead of Europe's average of 12 percent.⁷ The reason for this lag is largely a matter of complexity. A survey of chief information officers identified "complex legacy technology" as the primary barrier to digital transformation.⁸ Another survey of business and IT professionals echoes this sentiment, with a majority reporting "increasing complexity of their technology ecosystem" and low confidence in resolving digital performance problems.⁹

Enterprises on the leading edge of digitization realized a **70%** increase in productivity, compared to just a **30%** increase for organizations that were slower to digitize operations.

² <https://sw.aveva.com/success-stories/viterra>

³ World Economic Forum, in collaboration with Accenture, "Maximizing the Return on Digital Investments," May 2018, <http://reports.weforum.org/digital-transformation/files/2018/05/201805-DTI-Maximizing-the-Return-on-Digital-Investments.pdf>

⁴ Note: These percentages vary by industry segment. World Economic Forum, in collaboration with Accenture, "Maximizing the Return on Digital Investments," May 2018, <http://reports.weforum.org/digital-transformation/files/2018/05/201805-DTI-Maximizing-the-Return-on-Digital-Investments.pdf>

⁵ Jean-Pascal Tricoire, "Disrupt or Be Disrupted: Innovation for the Sake of Customers," April 2018, <https://blog.schneider-electric.com/energy-management-energy-efficiency/2018/04/05/disrupt-or-be-disrupted-innovation-for-the-sake-of-customers/>

⁶ World Economic Forum, "Digital Disruption Has Only Just Begun," January 2016, <https://www.weforum.org/agenda/2016/01/digital-disruption-has-only-just-begun>

⁷ McKinsey Global Institute, "Digital Europe: Realizing the continent's potential," June 2016, <https://www.mckinsey.com/business-functions/digital-mckinsey/our-insights/digital-europe-realizing-the-continent-potential>

⁸ Logicalis, "Logicalis Global CIO Survey 2017 – 2018," 2018, <http://www.us.logicalis.com/globalassets/united-states/downloads/cio-reports/2017-cio-survey-report.pdf>

⁹ Dynatrace, "The Global Digital Performance & Transformation Audit," 2018, <https://assets.dynatrace.com/en/docs/report/digital-performance-transformation-audit.pdf>



A blueprint for success in food & beverage

The barriers cited by IT decision-makers should not get in the way of embarking on digital transformation journeys. If complexity is the challenge, expertise is the solution.

Schneider Electric has travelled the road of digital transformation for decades. Twenty years ago, a prototype of the Schneider Electric flagship EcoStruxure™ solution was developed. Transparent Factory was an Ethernet-based architecture that connected the factory shop floor to the internet. This early investment in digital transformation paid off; digitization is a significant portion of Schneider Electric revenue,¹⁰ and the company is still transforming.

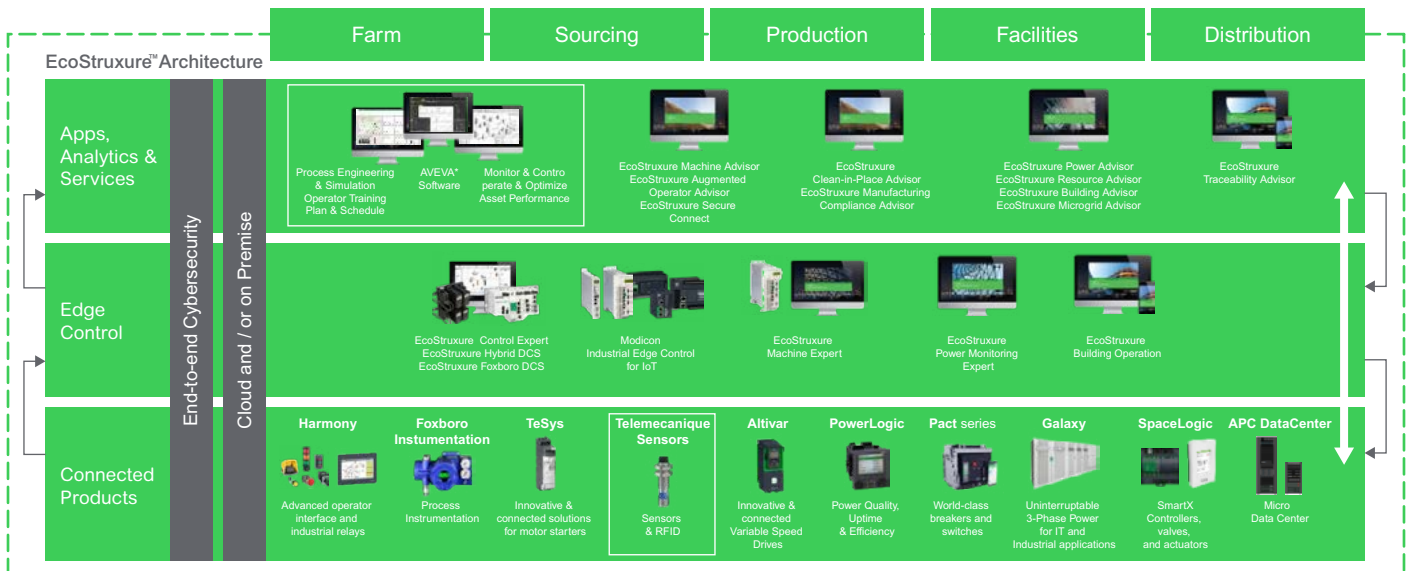
Today, EcoStruxure™ for Food and Beverage offer innovative automation, power and software solutions that help customers in their digital transformation to improve agility and efficiency, reduce time-to-market, manage end-to-end transparency and traceability in a complex market, as well as meet sustainability goals.

¹⁰Schneider Electric. "Financial and Sustainable Development Annual Report." March 15, 2019.
<https://www.schneider-electric.com/ww/en/documents/finance/2018/03/2018-annual-report-tcm50-467357.pdf>

EcoStruxure — the engine for digital transformation

EcoStruxure drives the digital transformation of energy management and automation in food & beverage. It is an IoT-enabled digital platform consisting of connected products; edge control solutions; and apps, analytics software, and services. The platform affords visibility and control across the enterprise via real-time monitoring, mobile insights, digital twin capabilities, and proactive risk mitigation. Today, EcoStruxure covers 500,000 sites globally, connecting some 20,000 software developers, 3,000 utilities, and 650,000 service providers and partners as a community.

EcoStruxure for Food and Beverage



* The Schneider Electric industrial software business and AVEVA have merged to trade as AVEVA Group plc, a UK listed company. The Schneider Electric and Life is On trademarks are owned by Schneider Electric and are being licensed to AVEVA by Schneider Electric.

Quantifying the benefits of digital transformation

After helping dozens of customers with food and beverage plants navigate successful digital transformation, Schneider Electric is ready to present a comprehensive report on the state of digital transformation among a global sample of customers. The 2020 Global Food & Beverage Digital Transformation Benefits Report puts forth concrete evidence of the power of digitization in the context of this industry.

This evidence takes the form of data points developed from a repository of 130 customer projects Schneider Electric completed in the last five years across 50 countries. In addition, the report features stories from nine customers, providing overviews of the goals they started with, the challenges they faced, the solutions they chose, and the results they achieved.

At the core of this report are four key business benefits of digital transformation. These benefits (see table) revolve around two statistics: our customers' average (mean) performance on these benefits, as well as the "up-to" or best-case scenarios. The goal of this report is to provide a useful and realistic benchmark on the potential of digital transformation.

BENEFIT	UP TO	AVERAGE
Maintenance costs optimization	39%	25%
Flexibility and efficiency increase	41%	26%
Energy cost savings	30%	20%
Quality traceability time	60 seconds	5 minutes

Table: Benefits at a glance

Benefit #1:

Maintenance costs optimization

It goes without saying that the level of automation in the food and beverage industry is high. However, the pressures to deliver more flexibility, faster changeovers and modular machine designs, as well as more data provision from the machines can take a toll on asset reliability. As machines get more and more complex, operation and maintenance must become easier – at a much lower cost.

Digitally transformed businesses can accomplish this because tools now exist to manage the complexity of data and asset reliability required – often from a single interface. Augmented reality solutions and digital twins empower operators to remotely monitor machines, improve efficiency and fix problems virtually without having to physically work on dangerous machines.

Thanks to our expertise, the average figure reported for maintenance costs optimization for our clients was an increase of 25% while the highest was almost 40%. In the following customer stories, we look at how our solutions allowed our customers to turn analytics and insights into valuable knowledge to optimize machine maintenance costs while winning competitive advantage.



EcoStruxure at Berto Coffee Roaster ensures efficiency.

[LEARN HOW.](#)

BENEFIT

UP TO

AVERAGE

Maintenance costs optimization

39%

25%

Increasing profitability through end-to-end solutions

Berto Coffee Roaster, Indonesia

“We trust Schneider Electric as our partner because of its expertise and integrated EcoStruxure solutions that help us leverage the latest IIoT technologies.”

— Marcel Patilaya,
General Manager, Berto Coffee Roaster

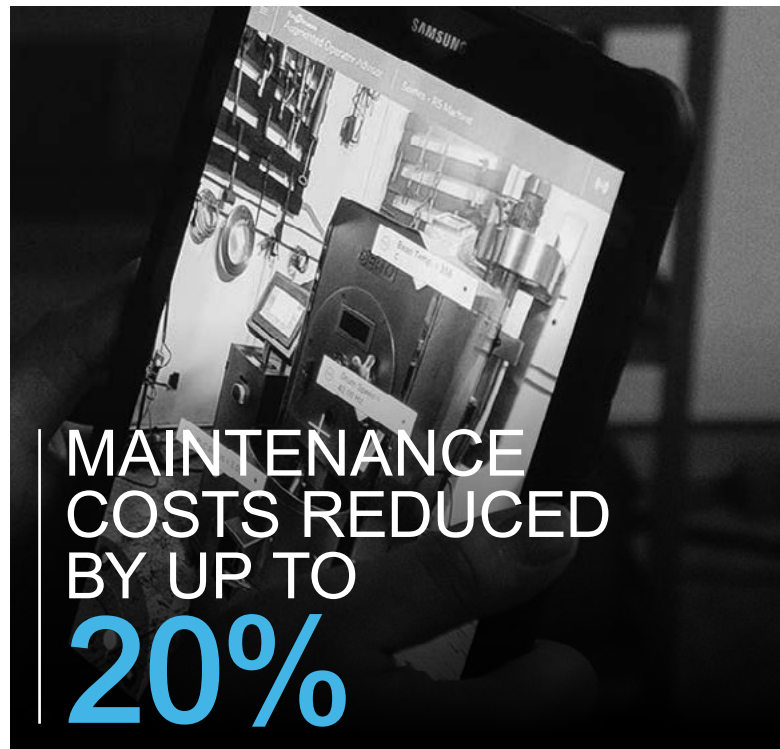
The demand for coffee roasting machines in Indonesia has grown significantly in recent years, thanks to the region’s thriving coffee production industry, teamed with the growing global appetite for coffee. When Indonesian industrial food machinery producer Berto saw the available opportunities, the firm decided that it needed to modernize its systems to be able to competitively sell its roasting machines.

Schneider Electric helped Berto Coffee Roaster modernize its processing systems by implementing EcoStruxure solutions. Powered by the internet of things, the plug-and-play platform delivers enhanced value around safety, reliability, operational efficiency, sustainability and connectivity.

Berto faced three specific challenges regarding its modernization. It needed to: strengthen its competitive edge in the expanding market; leverage the industrial internet of things (IIoT) to improve machine productivity and reduce downtime and maintenance; and add value to the export market.

Berto installed Schneider’s Modicon M221 programmable logic controllers (PLC) and Magelis HMI (Human-Machine Interface) which help machine operators to consistently roast coffee beans to the desired standards. Our EcoStruxure Machine SCADA (Supervisory Control and Data Acquisition) Expert solution was also implemented to monitor machine productivity in real-time. Combined with EcoStruxure Machine Advisor, operators can now remotely monitor their machines to improve efficiency. By using EcoStruxure Augmented Operator Advisor, Berto can immediately detect and address issues as they arise using augmented reality via a tablet or mobile device.

Overall, by using Schneider Electric’s EcoStruxure smart machine solutions, Berto Coffee Roasters has been able to increase production output, quality and consistency by automating and digitizing its roasting machines.



EcoStruxure Architecture

APPS, ANALYTICS, AND SERVICES:

EcoStruxure Augmented Operator Advisor, EcoStruxure Machine Advisor

EDGE CONTROL:

Modicon M221 PLC, EcoStruxure Machine SCADA Expert

CONNECTED PRODUCTS:

Altivar Machine 320 variable speed drive, PowerTag, TeSys contactor, Magelis HM



50% reduction in machine maintenance time



Potential ROI: 173%



Increased profitability by selling complete solution, bundling software, apps, and services

Harnessing the power of sugar

Wilmar Sugar, Australia

“Schneider Electric’s EcoStruxure Plant provides us with a more thorough picture of our infrastructure.”

— Russell Brown,
General Manager for Asset Management, Wilmar Sugar

Wilmar Sugar is Australia’s leading manufacturer of raw sugar. They are also Australia’s leading producer of renewable energy from biomass.

Electricity is generated at Wilmar’s eight mills via onsite industrial boilers by burning bagasse – the fibrous material left over after the juice has been extracted from sugarcane. Wilmar’s eight mills exporting enough excess energy each year to power more than 80,000 Australian homes.

To ensure the ongoing safety and reliability of the site’s power production capabilities, a major upgrade of their Invicta Mill’s boiler control system was required. Our solution was to install Modicon M580 Safety PLCs, reducing spare parts inventory and maintenance costs. It also enabled Wilmar to have a complete view of all the factory’s systems in one easy-to-use interface.

At the heart of our solution is the EcoStruxure Plant architecture combined with Citect SCADA software to bring all the control systems together, creating a unified picture of exactly what equipment is running and how efficiently. The seamlessly integrated EcoStruxure Plant architecture creates a system which operates efficiently and robustly, with minimal input.

By simplifying Wilmar Sugar Australia’s control systems into one interface, we enabled the sugar and energy producer to improve safety, efficiency, and productivity with a modern system that is easy to use. In particular, installation of the M580 Safety PLCs has allowed Wilmar to increase factory automation, driving better efficiencies through improved operational performance.



UP TO
\$2M
IN COST SAVINGS OF
EXTRA PRODUCTION

EcoStruxure Architecture

APPS, ANALYTICS, AND SERVICES:

AVEVA* DYNsIM Dynamic Simulation

EDGE CONTROL:

Modicon M580 Safety & M340 PLCs, AVEVA* Citect SCADA

CONNECTED PRODUCTS:

Magelis HMI, Trio radios, TeSys T motor protection relays, MasterPact NW circuit breakers

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Simplified
control



Improved
safety



Optimized
maintenance

Benefit #2:

Flexibility and efficiency increase

Data is at the heart of digital transformation. While a vast amount of data is collected in plants, it is shocking that less than 10%¹¹ of it is utilized – clearly a wasted opportunity in what could potentially benefit profit margins.

Harnessing this data can further accelerate the product development process, minimize waste, lower costs and bring greater flexibility in supply chains.

Furthermore, an IT/OT convergence will create an engineering environment that makes it easy to simplify integration of information from numerous device types. This will allow manufacturers to implement a knowledge infrastructure that will unlock profitability, maximize throughput, and control costs throughout the plant lifecycle.

Implementation of these and other digital approaches saw our customers reporting an average over 25% increase in flexibility and efficiency, with one customer achieving a greater than 40% increase.



Digital transformation in food and beverage manufacturing.

[LEARN MORE.](#)

BENEFIT	UP TO	AVERAGE
Flexibility and efficiency increase	41%	26%

¹¹ "Factory of the future," LNS Research, September 2019, https://download.schneider-electric.com/files?p_enDocType=White+Paper&p_File_Name=SPOTLIGHT+2019+FoF_FACTORY+OF+THE+FUTURE_FINAL+%28SCHNEIDER%29.pdf&p_Doc_Ref=FoF8LNS-research

Building the world's best nutritional business

Mataura Valley Milk, New Zealand

“Schneider Electric’s EcoStruxure Plant solution delivers connectivity to all our business layers. It proves itself to us every day as we interrogate data in the MES.”

— Brent Robinson,
Projects Manager for Mataura Valley Milk

Mataura Valley Milk wanted to build the world's best nutritional business that could quickly tailor production to specific customer requirements while guaranteeing the delivery of best-in-class quality products.

Nearly three years later, Mataura Valley Milk is now benchmarking innovation and performance for other milk plants.

Schneider Electric's EcoStruxure Plant solution delivers and provides context to live, real-time data on every process at the plant through AVEVA's System Platform, Batch Management and Manufacturing Execution System (MES) software. In short, Mataura Valley employees receive any data they require immediately and know they can trust it.

Maintaining the integrity of vital data requires a robust and reliable hardware solution. Mataura Valley Milk deployed Schneider Electric products across the plant, from the switchgear in the offices to variable speed drives, programmable logic controllers, active harmonic filters, and power monitoring.

The equipment list includes over 200 Altivar Process variable speed drives, 14 AccuSine harmonic filters to ensure power quality and minimize power factor correction, air circuit breakers to reliably protect staff and equipment, and TeSys U motor controls to optimize machine efficiency.

The real-time data visibility and connectivity are delivered by Modicon M580 Ethernet programmable automation controllers (PLCs), part of EcoStruxure's Edge Control layer.

Ultimately, Schneider Electric's EcoStruxure solution provides Mataura Valley Milk with an open and connected system architecture that enhances the efficiency, reliability, safety, sustainability, and connectivity of its infrastructure.



EcoStruxure Architecture

APPS, ANALYTICS, AND SERVICES:

AVEVA* System Platform, Batch Management and Manufacturing Execution System (MES)

EDGE CONTROL:

Modicon M580 and M340 PLCs

CONNECTED PRODUCTS:

Altivar, TeSys model U, Pact series, Power Logic, AccuSine harmonic filters, 9 Series

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Ease and flexibility to increase product portfolio & volume to meet growing demand



28 months payback period for power quality equipment



4.5% additional available energy on the grid

Building smart machines for smart packaging

SOMIC Group, Germany

“With the help of Schneider Electric and EcoStruxure, we were able to double the output.”

— Patrick Bonetsmüller
CEO, SOMIC Group

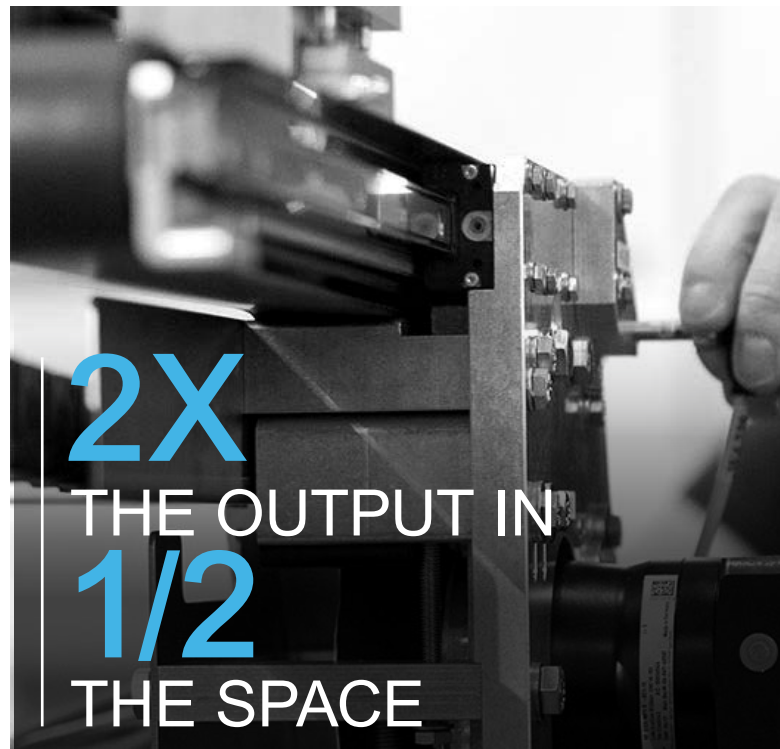
By integrating EcoStruxure Machine solutions, innovative machine builder SOMIC delivers smart, high-performance packaging systems that provide twice the output with half the footprint.

SOMIC sought to reduce costs and time to react on customer requirements, as well as improve its service business. They wanted to meet market requirements for innovative, intelligent, and smarter machines by building the most compact and high-performance solutions possible, almost cabinet-less, that incorporate preventive maintenance with an augmented reality interface. Reliability, production security, and a high availability in machines, are also priorities for SOMIC – all while delivering compact technology.

When SOMIC set out to build its high-performance coffee capsule packaging machine with 76 motion axes, they designed and engineered the machine without so much as lifting a screwdriver. Instead, they used a digital twin which simulated the real performance of the machine. A smart Schneider Electric controller and EcoStruxure Machine Expert allowed them to work virtually for added flexibility.

For safe and speedy machine diagnosis and maintenance, SOMIC uses EcoStruxure Augmented Operator Advisor, Schneider Electric’s augmented reality application. It saves time by enabling operators to identify and resolve issues virtually, without having to physically work on dangerous machines.

Half the size and double the output: Schneider Electric's EcoStruxure Machine enabled SOMIC to achieve maximum performance from their coffee capsule packaging machine, doubling its output with half the footprint. It is the most compact and fastest machine of its kind, able to process 1,400 coffee capsules – or 140 cartons – per minute.



EcoStruxure Architecture

APPS, ANALYTICS, AND SERVICES:

EcoStruxure Augmented Operator Advisor

EDGE CONTROL:

PacDrive LMC Pro, EcoStruxure Machine Expert, Magelis Edge Box and industrial PC

CONNECTED PRODUCTS:

Lexium servo drives



1,400 coffee capsules – or 140 cartons – processed in 60 seconds



Best-in-class maintenance



40% energy management savings

Benefit #3:

Energy cost savings

While food and beverage factories typically use less energy compared to other industries, even the smallest increase, can have a noticeable impact on profit margins. In addition to this, the rising call for greener solutions and zero waste is shifting the industry toward decarbonized and digitized solutions that grant high production levels at low energy costs.

These two goals may appear contradictory, however they are in fact achievable and often translate into a competitive edge in the market. Decreasing the cost of energy has thus become a strategic differentiator pursued through renewables, demand response, and other digitally driven approaches. For example, real-time system monitoring tools now bring sweeping visibility and control over enterprise-wide energy consumption. Predictive maintenance tools and smart buildings enable operators to prevent high costs and damaging downtime.

By combining this dual approach - an active, integrated energy and sustainability management with automation solutions - food and beverage manufacturers will see not only productivity savings, but also significant benefits in reliability, people safety, equipment, and sustainability.

The results achieved by our customers speak for themselves. In this section we explore how these solutions have helped our customers reduce energy costs by as much as 30%.



Smart Machines for SOMIC deliver twice the output with half the footprint.

[LEARN HOW.](#)

BENEFIT	UP TO	AVERAGE
Energy cost savings	30%	20%

Committing to energy performance improvements

Agrial, France

“Tax impacts, transportation costs and indirect-related costs were all rising, to lower energy costs, Agrial needed to work on energy efficiency. The offer proposed by Schneider Electric was robust, simple to implement regarding the methodology and offering secure investments”

— David Delalande
Purchasing Director, Agrial

At its Château-Salins plant, one of 24 industrial sites in France, Agrial manufactures 50,000 metric tons of dairy products each year. After moving along a production line, containers of yogurt and desserts make their way to cold rooms to be sterilized. The motors and lights, and refrigeration and steam systems required to support these operations consume 40 million kilowatt-hours (kWh) of electricity annually. Due to this high usage of energy, Château-Salins was chosen as a pilot for the energy performance program, along with facilities in Rennes and Domagné.

A multi-stage approach was developed with the aim to cut kWh consumption by 10% by 2025 across all Agrial sites. Achieving this would also help Agrial reduce its greenhouse gas emissions significantly, in accordance with its corporate social responsibility ambitions.

The project began with the selection of sites that exhibited high potential for energy optimization and were representative of each of Agrial's divisions, including Château-Salins. The first step was a site walk-through audit to analyze the facilities and discover improvement opportunities as well as underlying energy savings.

Each site's technical and commercial plans were then checked before moving on to the operational phase, which included advanced controls for processing equipment, improvements to boilers, modifications to cold units and air compressors, LED re-lamping, etc. — followed by signing an energy performance contract stipulating a commitment to savings achieved.

Schneider Electric also implemented an energy monitoring tool that gives Agrial one standard solution for monitoring consumption, tracking performance, detecting other potential savings and product long-lasting outcomes.

At the Château-Salins site, the results have been substantial. Agrial is hitting its ROI target in under 3 years, furthering the company's goal of cutting energy costs by 10%.

The success at the Agrial sites in Château-Salins, Rennes and Domagné prompted the company to study 20 other sites for their potential, seven of which were then selected to benefit from the same energy optimization approach



EcoStruxure Architecture

APPS, ANALYTICS, AND SERVICES:

EcoStruxure Energy & Sustainability Services,
EcoStruxure Clean-in-Place Advisor

EDGE CONTROL:

CONNECTED PRODUCTS:



Payback of
2.5 years



Robust offer



Simple solution
to implement

Modernizing for production and energy efficiency

Yili Industrial Group, Mongolia

“By applying Schneider Electric’s EcoStruxure Plant... we have achieved transparent and efficient operations management, with operational efficiency increased by 19% and energy costs reduced by 5%.”

— Wei Xiangyun,
Deputy Director of the Liquid Milk Production
Management Department, Yili Group

Due to the Chinese government’s “Made in China 2025” strategy and the 13th Five-Year Plan*, Chinese dairy producers, including Yili, face the challenges of accelerating transformation and modernizing, energy conservation, emissions reduction, and sustainable development.

By applying EcoStruxure Plant, we provided Yili with a complete energy management solution and expert services that provide comprehensive real-time system monitoring for energy efficiency, making it relatively easy to understand the situation. It also allows them to generate energy consumption reports on demand as well as correlate and compare system and historical data across different cost centers and product lines to help optimize processes, energy efficiency and lean management

Modicon M340 programmable logic control (PLC) and controller controls and collects a large amount of data quickly through a unified protocol and uses the “information flow” to open highly dispersed systems. The connection completely eliminates information islands between systems and realizes the transparent visual management of energy consumption.

Uninterruptible Power Supply (UPS), intelligent power distribution cabinets, sensors, and switches ensure continuous and reliable use of electricity by deploying smart meters and gateways, etc.

For example, at the Yili Huanggang factory, staff can now complete the data collection from all 200 energy meters in 5 seconds, increasing efficiency by 1400 times, with complete accuracy. The energy consumption key performance indicators (KPI) indicators are now measured in a single second, greatly improving management efficiency.

Disclaimer

* January 2017, the Ministry of Agriculture, the National Development and Reform Commission, the Ministry of Industry and Information Technology, the Ministry of Commerce, and the State Food and Drug Administration, the five ministries jointly issued the National Dairy Development Plan (2016-2020)



EcoStruxure Architecture

APPS, ANALYTICS, AND SERVICES:

Energy management software & expert services

EDGE CONTROL:

Modicon M340 PLC, Building automation

CONNECTED PRODUCTS:

Sensors, switches, UPS, cabinets



19%
operational
efficiency
increase



Complete
transparency
between energy
demand and supply
distribution



Labor costs
reduced and
efficiency
improved

Benefit #4:

Quality and end-to-end traceability

Faced with increasingly complex supply chains, stricter regulation and more demanding consumers, food and beverage manufacturers are making product traceability a priority. The stakes are high, involving brand reputation, regulatory compliance, competitive advantage and costs. An Allianz Global Corporate & Specialty report published in late 2017 estimates that insurance claims for a product recall reach an average of \$9.5 million, with the food and beverage industry being the second most impacted, just after the car industry.¹²

Consumers are also demanding access to much more data surrounding the sources of raw materials that make up their foods and whether those materials are produced in a sustainable manner. The press and social media are raising awareness levels when something goes wrong in the food and beverage supply chain. Any news on deceptive practices or food borne illnesses, for example, often go viral and get published nationally and sometimes internationally.

Therefore, the ability to understand what ingredients make a product, the quality of those ingredients, as well as the condition of the equipment that made the product, and workforce that produced it are essential to achieve a high level of food safety.

This data must also be captured accurately and whenever possible, in real-time to ensure proper action can be taken immediately. This data can further accelerate the product development process, minimize waste thereby achieving greater sustainability, lower costs and bring greater flexibility and operations transparency. Most importantly, it helps establish a foundation for compliance, good manufacturing practices, and profitability.

In the following pages we explore how our solutions played a significant role in helping our customers increase end-to-end food traceability and efficiency.



Find out more about end-to-end traceability with Schneider Electric.

[LEARN HOW.](#)

BENEFIT

UP TO

AVERAGE

Quality traceability time

60 seconds

5 minutes

¹² "Product Recall: Managing the Impact of the New Risk Landscape," Allianz Global Corporate and Specialty, 2017 <https://www.allianz.com/en/press/news/business/insurance/171205-agcs-product-recall-risks-report.html>

Quality monitoring, traceability and reporting excellence

F&N Dairies, Thailand

“Based on the extensive capabilities of AVEVA software, the Process Nexus II system enables our production and management teams to monitor and control plant processes in real-time.”

— Roongroj Roongruang
Factory Engineering Manager, F&N Dairies

F&N Dairies was established in 1883 in Southeast Asia and has become one of the food and beverage giants in the region, producing more than 24 million cases a year.

Ensuring product quality, streamlined production and overall customer satisfaction of its wide range of dairy products is key to its success in the market. F&N is also required to keep product quality documentation until the end of a product’s shelf life, which is typically two years.

However, it was easy to make mistakes during the process of reviewing these parameters since the reports were all hand written. It also was a time-consuming process, with a high workload that involved developing the Quality Assurance (QA) documentation of the processing line.

This was where the Process Nexus II system played a critical role. As a customized in-house automation software solution, Process Nexus II is a process and quality data acquisition system which enables online data to be captured and made ready for the user to review and release online.

To resolve the manual input of data, the new software system features Historian which is a high-performance process historian, capable of electronically storing huge volumes of data generated from F&N’s facility. Historian easily retrieves and securely delivers information to desktop or mobile devices, enabling the company to analyze processes anywhere at any time.

In fact, it reduced quality traceability at F&N from 4 hours to just 1 minute! Process Nexus II also helped the plant achieve “100% First-Time Quality”, a lean metric that indicated what parts are manufactured correctly the first time without the need for inspection, rework or replacement.



QUALITY
TRACEABILITY TIME
REDUCED TO
60 seconds

EcoStruxure Architecture

APPS, ANALYTICS, AND SERVICES:

AVEVA* System Platform, Historian and Manufacturing Execution System (MES) Quality

EDGE CONTROL:

CONNECTED PRODUCTS:

*The Schneider Electric industrial software business and AVEVA have merged to trade as AVEVA Group plc, a UK listed company. The Schneider Electric and Life is On trademarks are owned by Schneider Electric and are being licensed to AVEVA by Schneider Electric.



19% operational efficiency increase



ROI achieved in just 1 year



100% “First Time Quality”

Reducing food scraps and material costs

Campbell's Soup, USA

“For the first time, we have true ability for the operators on the floor to be alerted when their operation is out of control and to make adjustments.”

— Patrick Folan
Vice President, Global Supply Chain Process Excellence
Campbell Soup Company

For the Campbell Soup Company, facilitating food safety compliance and traceability to preserve brand equity and shareholder value is paramount. However, manual collection of data and software systems that were out of date were resulting in manufacturing issues as well as product recalls due to mislabeling instances.

They were also facing difficulty in process optimization and continuous improvement projects due to the minimal plant data collection.

All this changed with the introduction of MES Operations. It improves production and inventory management as well as enforces quality and compliance. Workflow Management is the foundation of Manufacturing Execution System (MES) software functionality and a common denominator for operations, performance and quality modules of the software which relates specifications, execution and data collection rules and historical data in product, material, equipment and process context.

AVEVA System Platform, formerly Wonderware also ensured that applied labels correspond to the contents of each product as well as uniquely identify each product in order to track and trace them across the entire value chain.

The use of InTouch by Campbell's also provides the company with engineering simplicity, operational agility, real-time performance, lower operating costs, reduced risk, and increased security.

With InTouch, staff is able to quickly and easily see what is happening along the production lines. InTouch offers an open and extensible supervisory HMI and SCADA solution that allows Campbell's to quickly create standardized, reusable visualization applications, and easily deploy them across its entire enterprise.

By empowering operators and increasing data collection points, Campbell's successfully decreased product give-aways by a significant 25%.



EcoStruxure Architecture

APPS, ANALYTICS, AND SERVICES:

AVEVA* System Platform, Manufacturing Execution System (MES) Operations, MES Quality, Workflow Management

EDGE CONTROL:

AVEVA* InTouch HMI

CONNECTED PRODUCTS:

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3% reduction in material costs



75% additional continuous improvement (CI)

Upholding the highest quality with MES and Workflow

Kwik Trip Inc, USA

“We know that the products bought from us, that we produce in our plant, and that we ship to our stores are of the highest quality.”

— Scott Scheibel
Automation Manager, Kwik Trip, Inc.

The Kwik Trip MES journey began with one of the core requirements focussed around quality. It was imperative to Kwik Trip that data was harnessed to help make informed business decisions that would ensure brand protection.

MES Workflow tools on mobile tablets equipped operators on the floor with greater mobility and insights on the production line while they managed equipment and processes. This empowered them to make decisions in real time. The data collected from the systems also helped management focus on quality tools to help make better business decision

The increase in transparency and reduced variance in product quality helped responsiveness to unforeseen events or product recalls. Time spent on genealogy tracking/material traceability went from 2.5 hours to a mere 10 minutes. They also saw an increase in reporting and inventory management accuracy as well as an increase in workforce efficiency through mobile solutions for material receiving, labelling and consumption.



EcoStruxure Architecture

APPS, ANALYTICS, AND SERVICES:

AVEVA* Manufacturing Execution System (MES) and Workflow Management

EDGE CONTROL:

CONNECTED PRODUCTS:

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Genealogy/material traceability reduced from 2.5 hours to 10 minutes

Conclusion

The 2020 Global Food & Beverage Digital Transformation Benefits Report highlights the tangible value digitization delivers. The expansion of global food and beverage markets are aligned with the transformation of not just business, but entire industries and ever-shifting trends. As business sectors increasingly depend on data for survival, the limitations of non-digitally transformed food and beverage producers will become more apparent — and less tolerated — day by day.

These nine customer stories are a glimpse at the myriad ways Schneider Electric's EcoStruxure software and connected products help enterprises gain firm footing in an evolving digital market. Schneider Electric accelerates the pace of digital transformation by delivering reliable compute exactly where and when it's needed, ensuring deep visibility into the distributed IT network — while leveraging technologies like AI and machine learning to drive predictive manufacturing operations.

The innovations detailed in this document show that digitization is re-defining the food and beverage business. Companies will remain competitive only by accelerating in their digital transformation and enabling profitable business decisions based on data.

Technological solutions are here to help companies gain operational efficiency, transparency and traceability across the entire supply chain. It will also allow companies to become more environmentally sustainable while maximizing asset value and simplifying operations to master the market complexity and unlock higher profitability.

Customers included in this report

- Berto Coffee Roaster, Indonesia
- Wilmar Sugar, Australia
- Mataura Valley Milk, New Zealand
- SOMIC Group, Germany
- Agrial, France
- Yili Industrial Group, Mongolia
- F&N Dairies, Thailand
- Campbell's Soup, USA
- Kwik Trip Inc., USA

About the report

The 2020 Food & Beverage Digital Transformation Global Report is the first installment of what will become an annual, evidence-based publication. This report presents an analysis of 130 customer data points from projects implemented over a five-year period, across 50 countries. All the projects analyzed in this report are publicly available on our website.

About Schneider Electric

At Schneider Electric, we believe access to energy and digital is a basic human right. We empower all to make the most of their energy and resources, ensuring life is on everywhere, for everyone, at every moment.

We provide energy and automation digital solutions for efficiency and sustainability. We combine world-leading energy technologies, real-time automation, software and services into integrated solutions for homes, buildings, data centers, infrastructure and industries.

We are committed to unleash the infinite possibilities of an open, global, innovative community that is passionate about our meaningful purpose, inclusive and empowered values.

About EcoStruxure™

EcoStruxure is Schneider Electric's IoT-enabled, plug-and-play, open, interoperable architecture and platform, in homes, buildings, data centers, infrastructure and industries.

EcoStruxure delivers innovation at every level from connected products to edge control, and apps, analytics and services, on six domains of expertise – power, IT, building, machine, plant and grid – delivering enhanced value around safety, reliability, operational efficiency, sustainability, and connectivity to our customers.

Discover more stories on successful digital transformation.

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