SIEMENS
Ingenuity for life

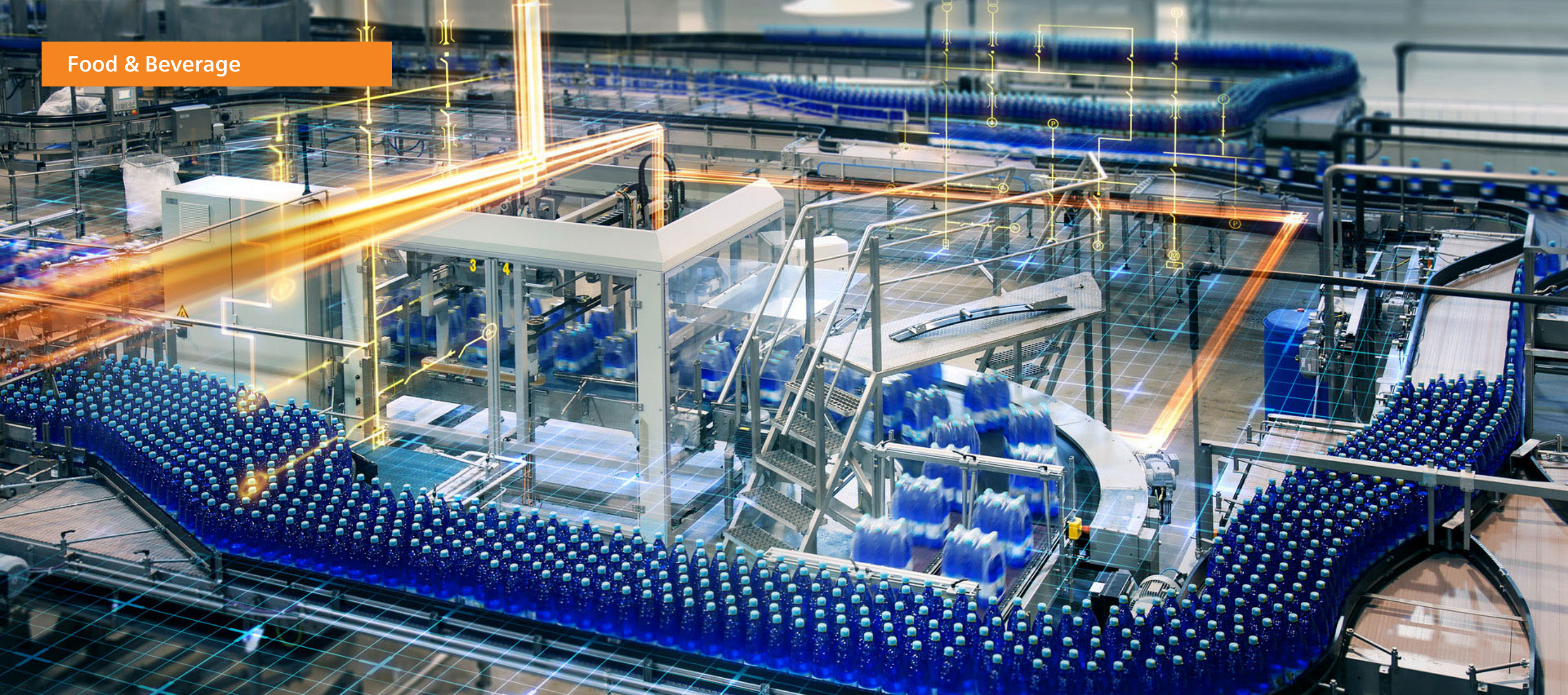Siemens Digital Industries South Africa

Dawn of Digitalization and its impact in Africa

Food & Beverage

Food & Beverage

Enable flexible manufacturing and increase operational efficiency

250 Kcal Per capita Consumption for Sub Saharan Africa in 2030

Urban population in Africa is expected to grow to **56% in 2050**

South Africa - **Global Food Security Index Ranking, 45th place**

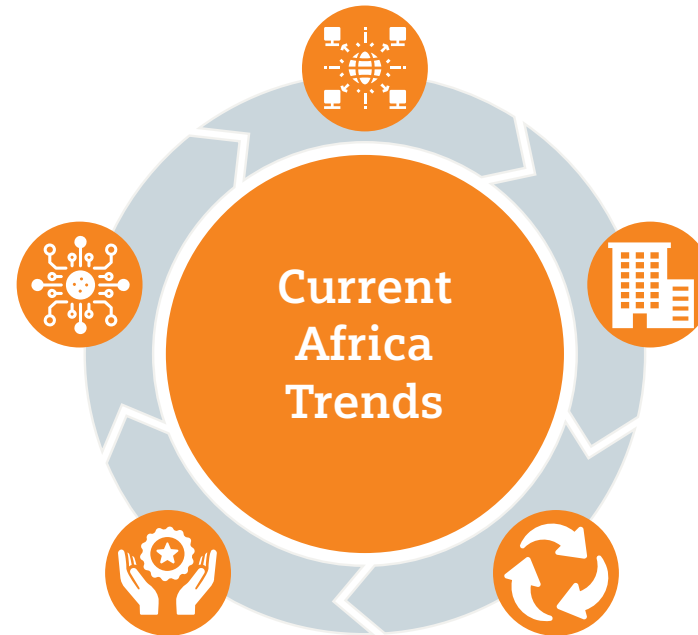**Raw and processed food** contributing **8% of total South Africa exports**

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Both the Food and Beverage sectors are still developing in Africa. The understanding of automation and how it can assist in process optimisation exists but the adoption rate is slow

Lowering commodity prices

Commodities such as coffee, sugar and tea have historically driven economies such as Kenya and Ethiopia. However, the price crash in 2015/16 hampered the agricultural sector's growth in Africa.

Policy facilitating growth of local manufacturing

High import duties, free trade agreements and rebates in the form of tax incentives are increasingly being adopted to drive local manufacturing growth.

Current Africa Trends

Increasing demand for FMCG

The urban population in Africa is expected to grow to 56% in 2050, from 35% in 2010. This rapid urbanisation combined with preference shifts towards formal retail will drive demand for FMCG products.

Skills shortages

Lack of skills at a local level in the industry have often resulted in a reluctance to adopt new technologies, due to operation, servicing and maintenance concerns.
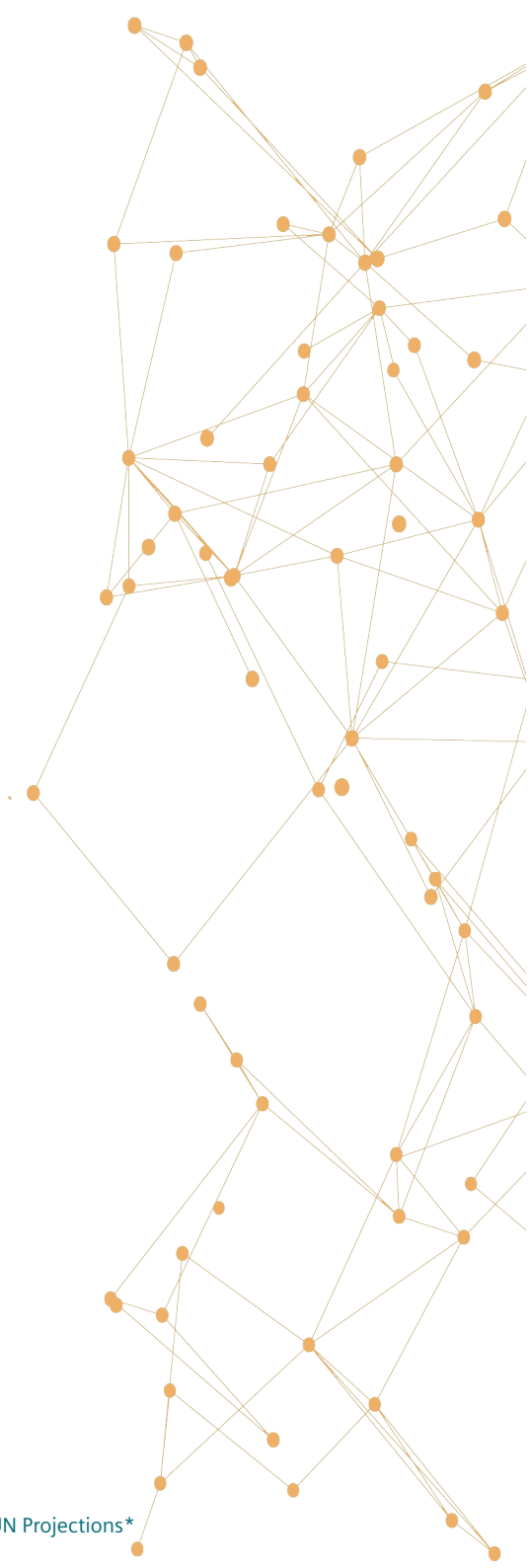
Increased competition from SMEs

Globally and in Africa, the industry has been dominated by large multinational players. Examples of local SMEs include microbreweries in the beverage industry, which has caused an increase in competition and a slight increase in price sensitivity due to these microbreweries catering to more niche products.

Continue

Source: Frost & Sullivan, World Bank**, IMF, SARS, UN Projections*

South Africa is the strongest positioned of the African countries on its digital journey, with the Food & Beverage sector showing higher propensity for advanced automation & digitalization

Digital Transformation & Industry 4.0

Businesses in South Africa have been investing steaadily to prepare for the impact of the fourth industrial revolution.

Value Added Manufacturing

Shifting focus from export of raw materials and mineral resources towards development of supply chains and industry that add value to these base commodities and raw materials.
However this shift will be slow.

Emerging Africa Trends

Give and take between automation and job creation

Unemployment has historically plagued African countries, and remains a key challenge. This has led to an abundance of low cost unskilled labour, thus slowing down the adoption of advanced automation in Africa.

Production Cost Optimisation

Manufacturing industries are increasing focus on resource and cost optimisation to improve production margins and competitiveness in the global markets.
While the current trend is towards utilisation of existing capabilities, investment in new facilities is expected to be gradual.

Increasing consumer spend

Africa's share in global consumer spend by region is expected to grow from 5% in 2012 to 7% in 2022, with spend on Food & Beverage products expected to be one of the key driving sub-segments of this increased expenditure. While there is an appetite for automation in Africa, market price sensitivity, low skills and a slow shift towards local value added manufacturing has led to a slow uptake of advanced automation technologies.
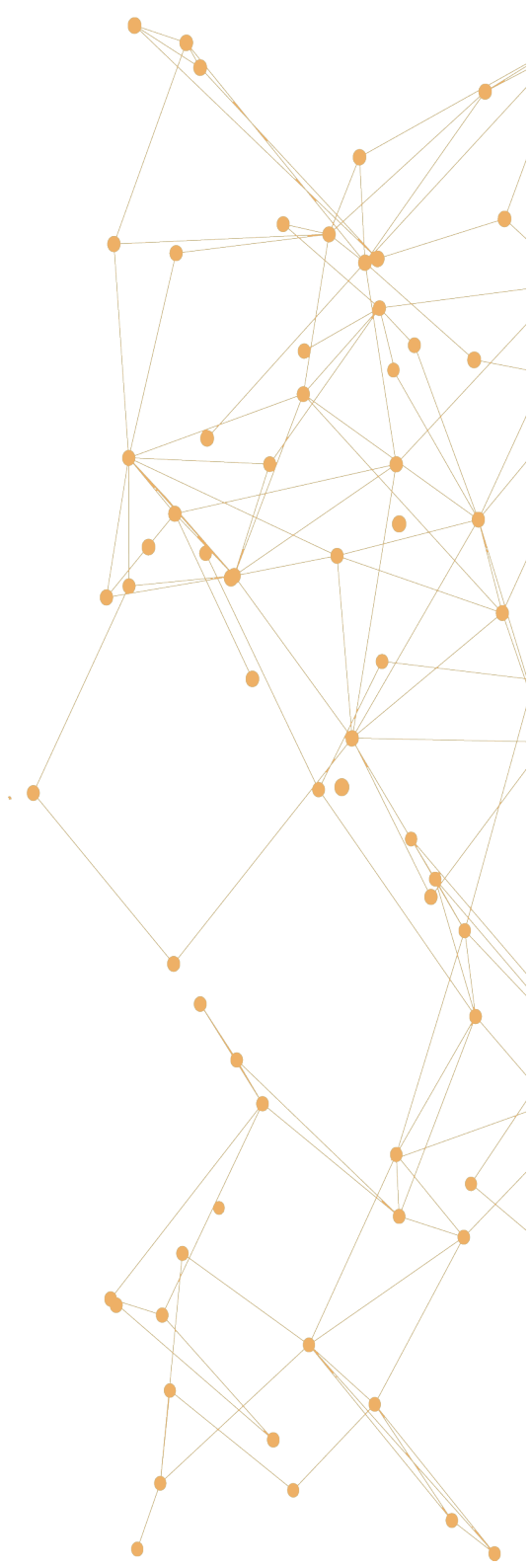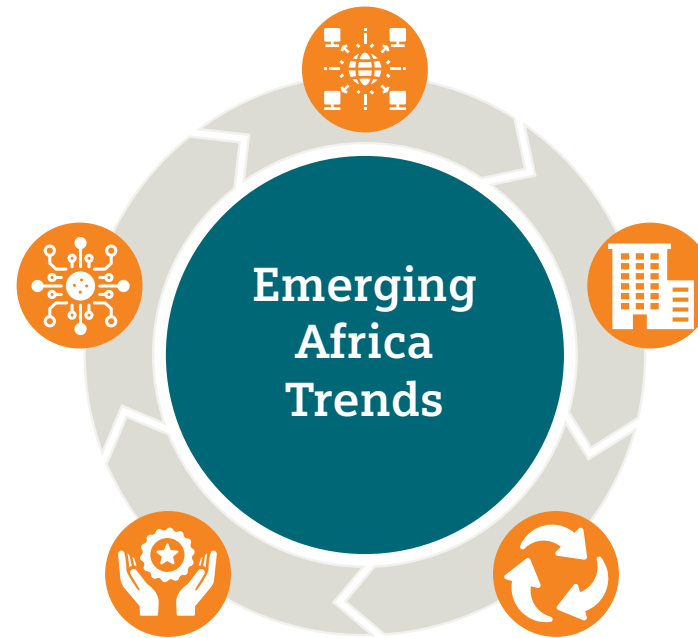
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Source: Frost & Sullivan

Automation and digitalization are ideal to tackle cost pressures and traceability limitations

High Product Standards for Food Safety

The F&B Industry is characterised by stringent standards that manufacturers are required to adhere to, automation can increase ease of conformation to these standards.

Need for Product Traceability

Product record management and traceability are vital challenges for the industry. Increased digitalization provides a means of remedying this challenge.

Volatile Market Demands

A key marker of the industry: extremely volatile and shifting consumer demands. Keeping up with these demand trends will be heavily reliant on ability to adapt, which can be aided through adoption of IIoT.

**Key Challenges in the F&B industry**

Variegated Regulations

Food regulations vary heavily from region to region: a key pain point for manufacturers to keep track of. Monitoring of conformity in complex organisations can be aided through adoption of IIoT.

Slow Product Innovation Cycles

Timely creation and movement of products across the supply chain with respect to aligning products to dynamic customer demands.

Supply Chain Complexities

Both traceability and labelling result in supply chain complexity. Stringent processes need to be followed regarding labelling and serialisation of products, while tracking products through the supply chain remains a critical issue.

Continue

Source: Frost & Sullivan
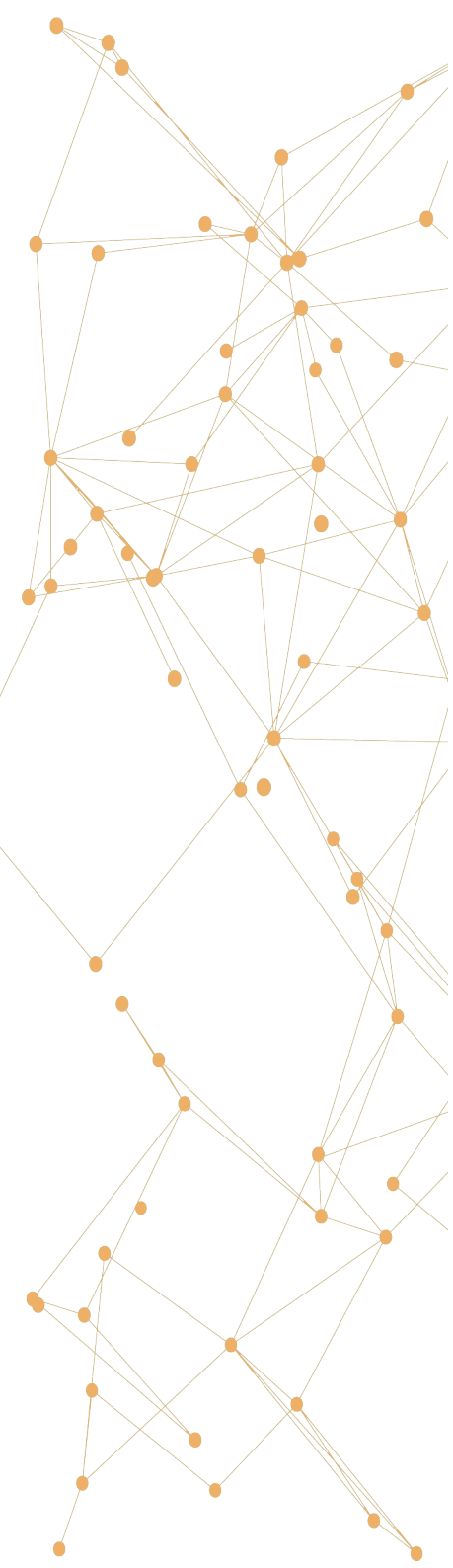
Tracking and monitoring of products within the Food & Beverage industry presents great potential for the implantation of digital solutions

Appetite for Technology Adoption 2018

Sector	South Africa	Kenya	Ethiopia	Ghana
Food	Developing	Early	Early	Early
Beverage	Mature	Developing	Early	Developing

■ Early   ■ Developing   ■ Mature

The beverage sector in South Africa is mature in comparison to the rest of Africa, due to the presence of multinationals such as Coca-Cola and In-Bev, who utilize South Africa as an export hub into the rest of Africa.

South Africa and Kenya are expected to be at the forefront in adopting digital platforms for manufacturing. Adoption in South Africa will however happen at a much faster rate than in Kenya.

The Food Sector in Kenya, Ghana and Ethiopia are still in a nascent stage, with a strong focus placed on agriculture and cultivating raw products. There is still little focus on agro-processing in these countries, however these sectors are growing

"With the transformation of the industry through industry 4.0, IOT offerings and Digitalization, we are seeing changes in demands from end users, with similar adaption to meet these demands from suppliers. Furthermore, increased digitisation is something I expect to see much more of in Africa."

– A Leading OEM

"With increasing knowledge on the benefits of automation and digitisation in Africa we're seeing a shift from like-for-like replacement to replacement with the best possible product which also meets technical specifications. Industry margins are low, hence high efficiency is becoming increasingly important."

– An Automation Solution Provider

"In my experience this has not always been the case, but with more and more pressure to innovate in the industry I feel we will see greater enthusiasm to adopt IIoT solutions."

– A Beverage Plant Head

Continue

Source: Frost & Sullivan
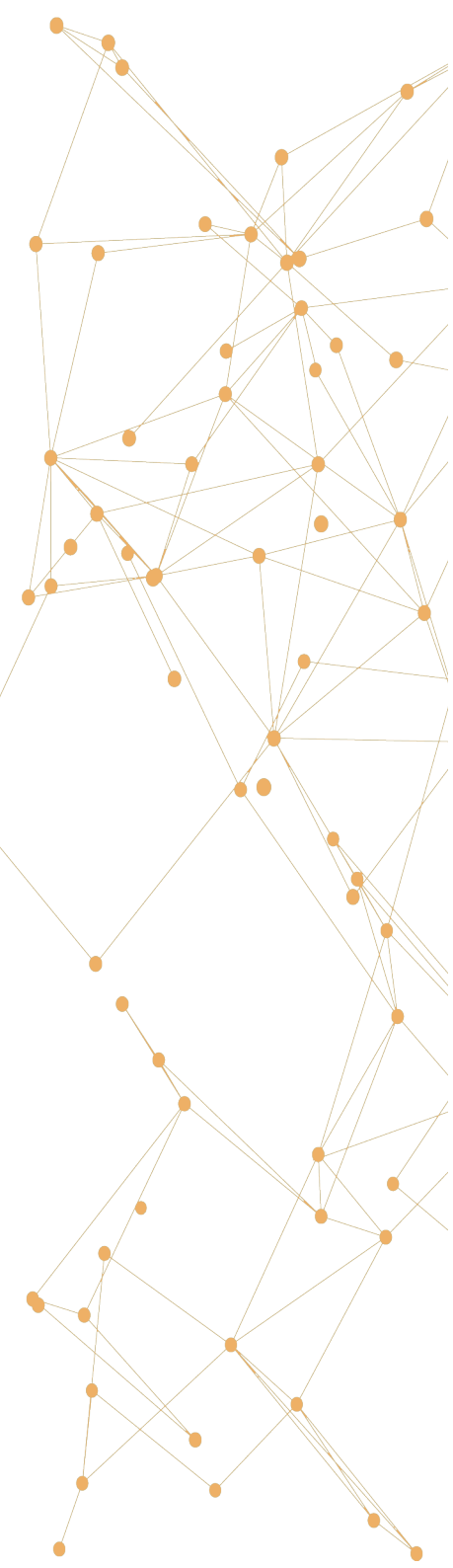
Addressing Industry Requirements.
Siemens Solution: SIMATIC PCS 7 with BRAUMAT craft brewing libraries

Features

- Designed for the beer industry.
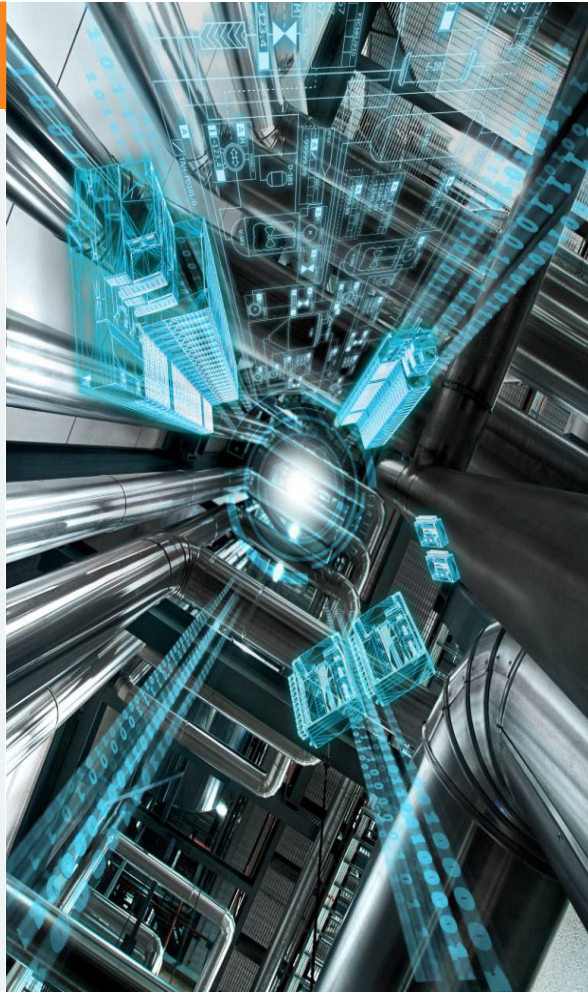- Monitoring of brew quality enabled through automatically stored production data and analysis tools.
- Integration of BRAUMAT libraries and SIMATIC PCS 7 process control system can optimally run any size brewery.
- Active Interface.
- Reporting and trending capabilities.
- SIMATIC HMI operator interface

Benefits

- Increased production with no further staffing requirements.
- Improved quality, repeatability and consistency. This is done by automating labour-intensive tasks which have historically been done manually.
- Automation of temperature control to optimise cooling efficiency.
- Reduced energy use related to heating and cooling.
- Production scheduler helps you easily manage your Production Order List and CIP orders.
- Integrated, user-friendly system for monitoring, control, and planning is designed explicitly for the craft brewer.
- Allows operators to focus on ensuring quality, not on juggling all of the tasks required to get the job done.

Continue

Source: Siemens / Frost & Sullivan

Using Siemens technology Gruppo Campari created a unified repository for all product specifications and increased efficiency of manufacturing

Until 2012, Gruppo Campari's approach to management of product specification remained unstructured

Challenge

- With Gruppo Campari's rapid expansion (more than 20 acquisitions in the spirit industry globally in the past 20 years), there was a constant requirement to integrate new products, plants, and assets into its operation management systems.

- A need to standardise and streamline data acquisition while offering an accelerated response to product information requests from consumers and/or regulators.

- Previously this was done using Microsoft software such as Word documents or Excel spread sheets, with no standard workflow or authoring.

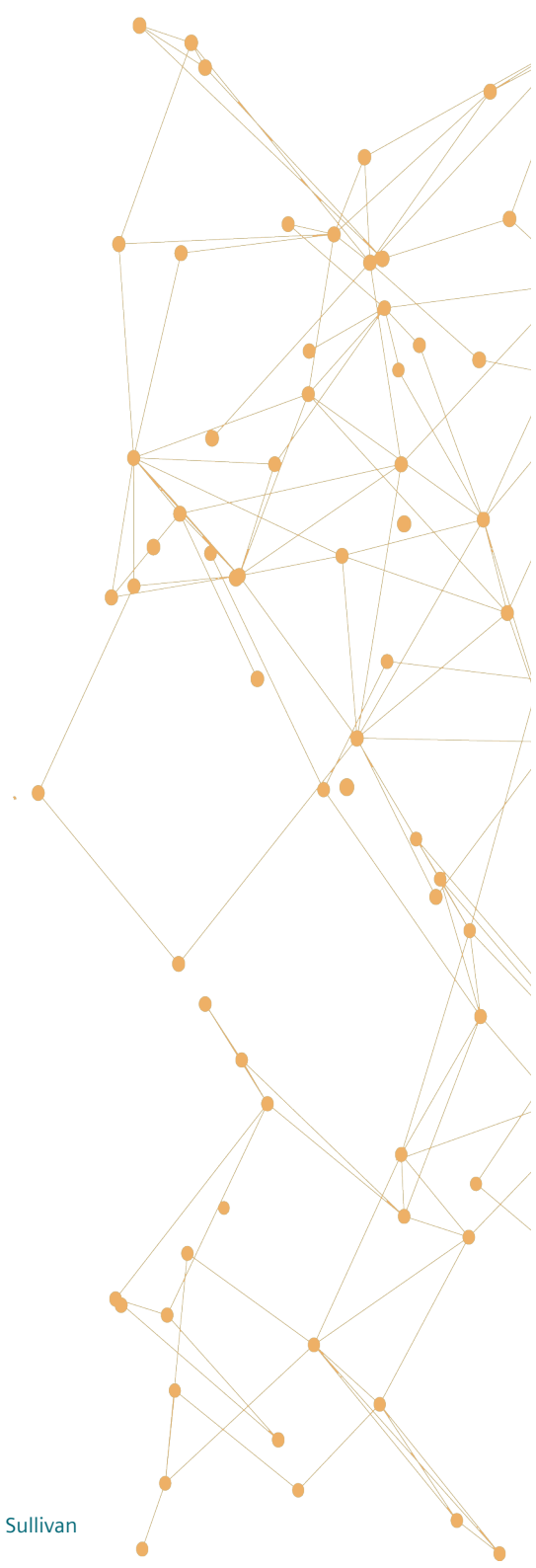- In 2012 as a result of the complex growth of the organisation, it launched an extensive digitisation process.

Solutions

- Gruppo Campari adopted Siemens SIMATIC IT Interspec from Siemens PLM Software, which is a configurable solution for product specification management in process industries.

- This allows the company to develop, configure and manage all production specifications (raw materials, intermediate and finished products as well as packaging materials).

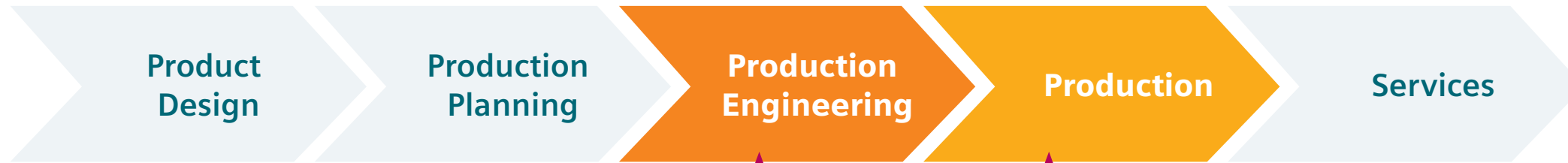- This stores all specifications in a single, controlled data repository.

Benefits

- SIMATIC IT Interspec was selected for its flexibility and operation independence.

- According to Campari Global QHSE Content Manager, Marco Rocca:

"We can configure the systems independently, add properties, create new frames, and edit contents – virtually everything can be configured with no customisation.

"Alternative solutions were more rigid and required a system engineer to do that. With SIMATIC IT Interspec, it was enough to attend a short training course to be virtually independent. The tool has been around for a few decades, so it's proven, tested and stable."

Continue

Product Design → Production Planning → Production Engineering → Production → Services

Improve the plant efficiency for beer Industry – SIMATIC PCS 7 with BRAUMAT craft brewing libraries

Designed for the beer industry. Monitoring of brew quality enabled through automatically stored production data and analysis tools. Advantages include increased production with no further staffing requirements. Improved quality, repeatability and consistency. This is done by automating labour-intensive tasks which have historically been done manually.

Increase the manufacturing efficiency of liquor giant – SIMATIC IT Interspec

It is a key component of the R&D Suite but can also be implemented as a stand-alone system for global specification management in process industries. This allows the company to develop, configure and manage all production specifications (raw materials, intermediate and finished products as well as packaging materials).This stores all specifications in a single, controlled data repository.

Automates and intelligently control bottling lines - Leading soft drinks manufacturer

One of the largest carbonated soft drink bottling plants in South Africa is using Siemens PLC's at each filling line. Siemens technology supported ~79% of total local production of 4.2bn litres in 2016.

Unified Repository for Product Specifications - Leading Italian liquor giant

Company adopted Siemens SIMATIC IT Interspec from Siemens PLM Software, which is a configurable solution for product specification management in process industries. Using Siemens technology, Italian Liquor Giant created a unified repository for all product specifications and increased efficiency of manufacturing.