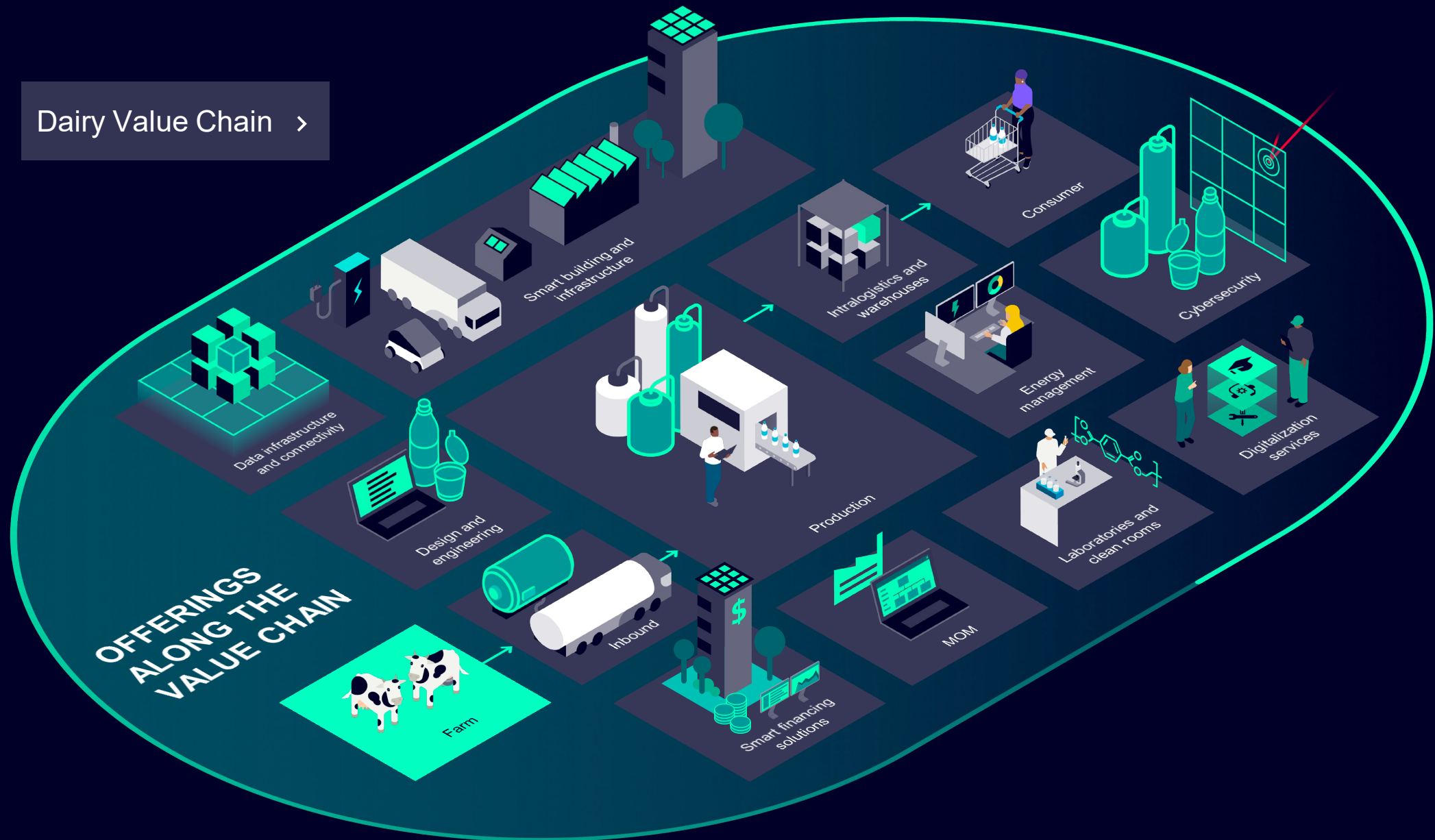




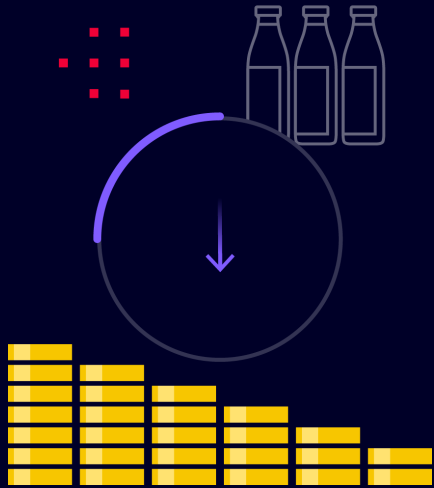
Dairy Value Chain

Mid-Level Presentation

Dairy Value Chain >



Today's challenges have a high impact on the dairy production



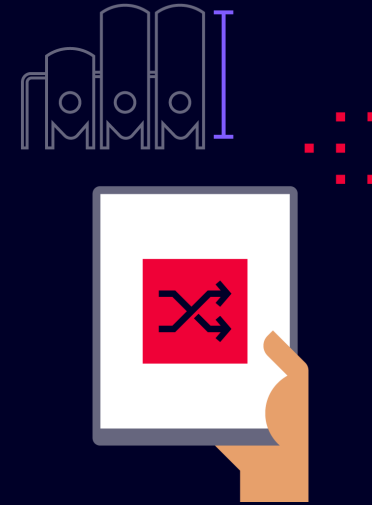
Rising **energy and labor costs** increase pressure, while high upfront CAPEX slows essential modernization.



Poor energy efficiency and inadequate **sustainability** reporting



Digital transformation requires invest across all production areas



Changing demand need flexible production and recipe adjustments



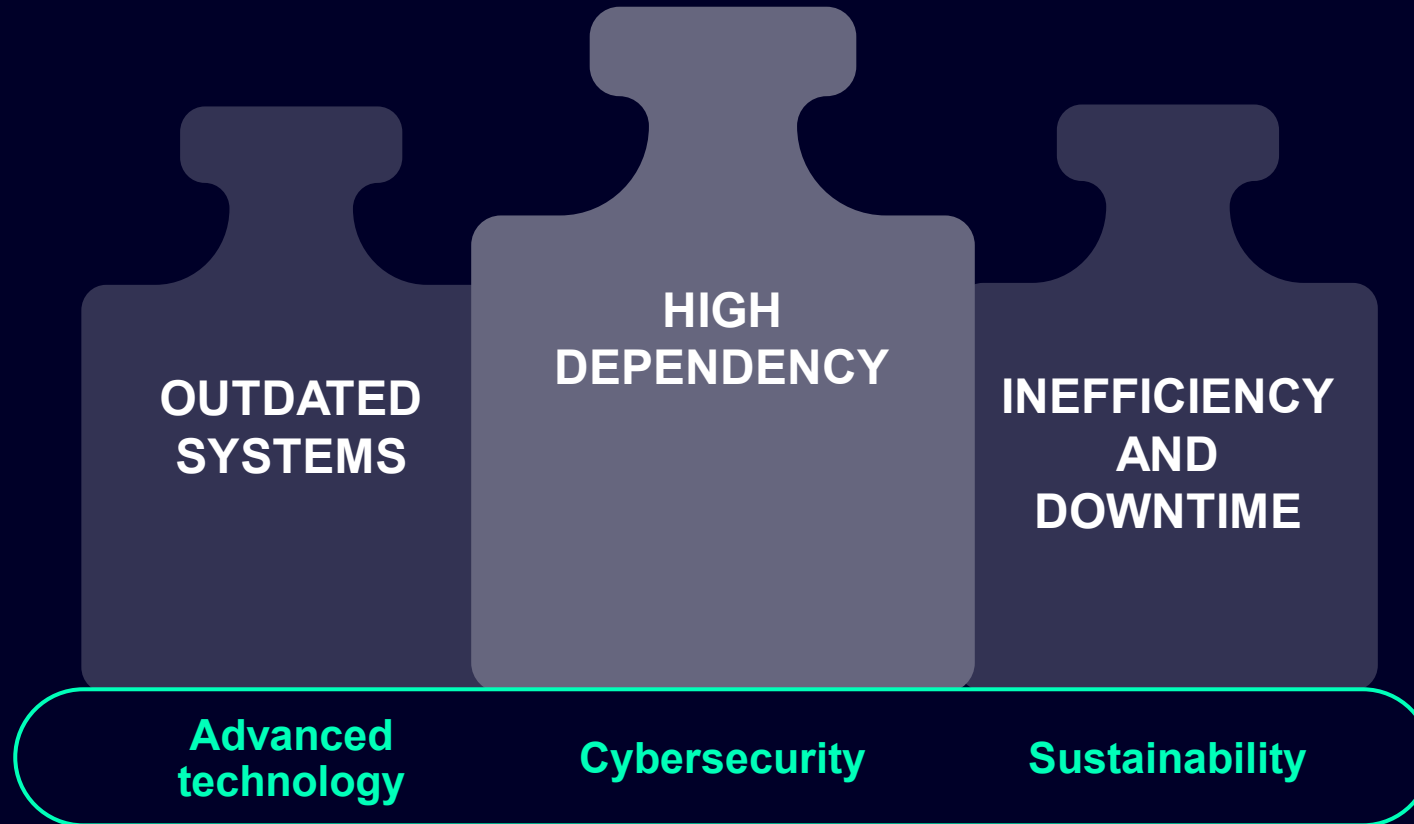
Traceability and compliance maintain **trust and food safety**



Two key aspects challenge the dairy producers

Market volatility

Have you accepted that low milk prices and high market volatility ...

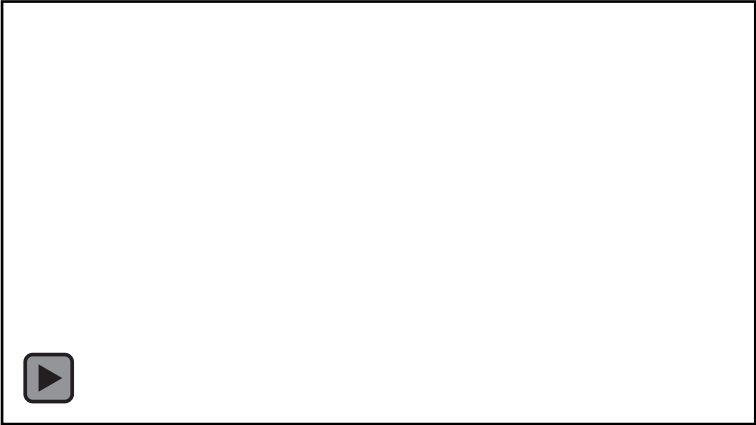
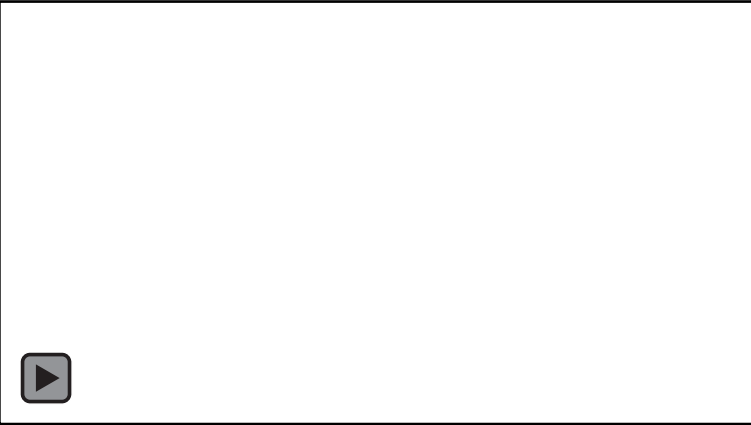
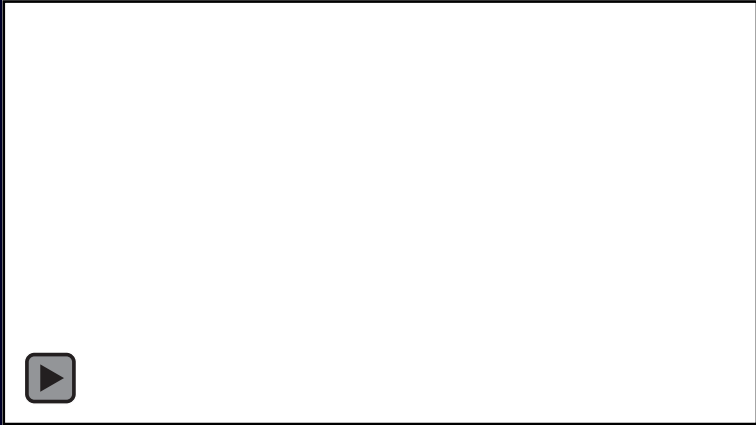


... hinder you from future investment and being more efficient?

Investing dilemma



Are you prepared for...?



Market volatility

Are your current processes optimized to cope with low milk prices?

Source: [Vesper](#)

Inefficiency and downtime

Are your operational costs optimized to sustain high price fluctuations?

Source: [Dairyproducer.com](#)

Cybersecurity

Are your plants secure from cyber attacks?

Source: [Check Point research](#)

Are you familiar with these situations?

Is your **Management** frustrated about bad numbers or non-compliance with regulations?

Is your “**knowledge base**” retiring soon?

How do **unexpected downtimes** affect you?

Do **investment barriers** prevent you from upgrading outdated systems?

How **depended** are you from single personal?

Do you have **outdated systems** with high manual effort and complex operation?

Are **high upfront costs** for modernization or new equipment slowing down your progress?

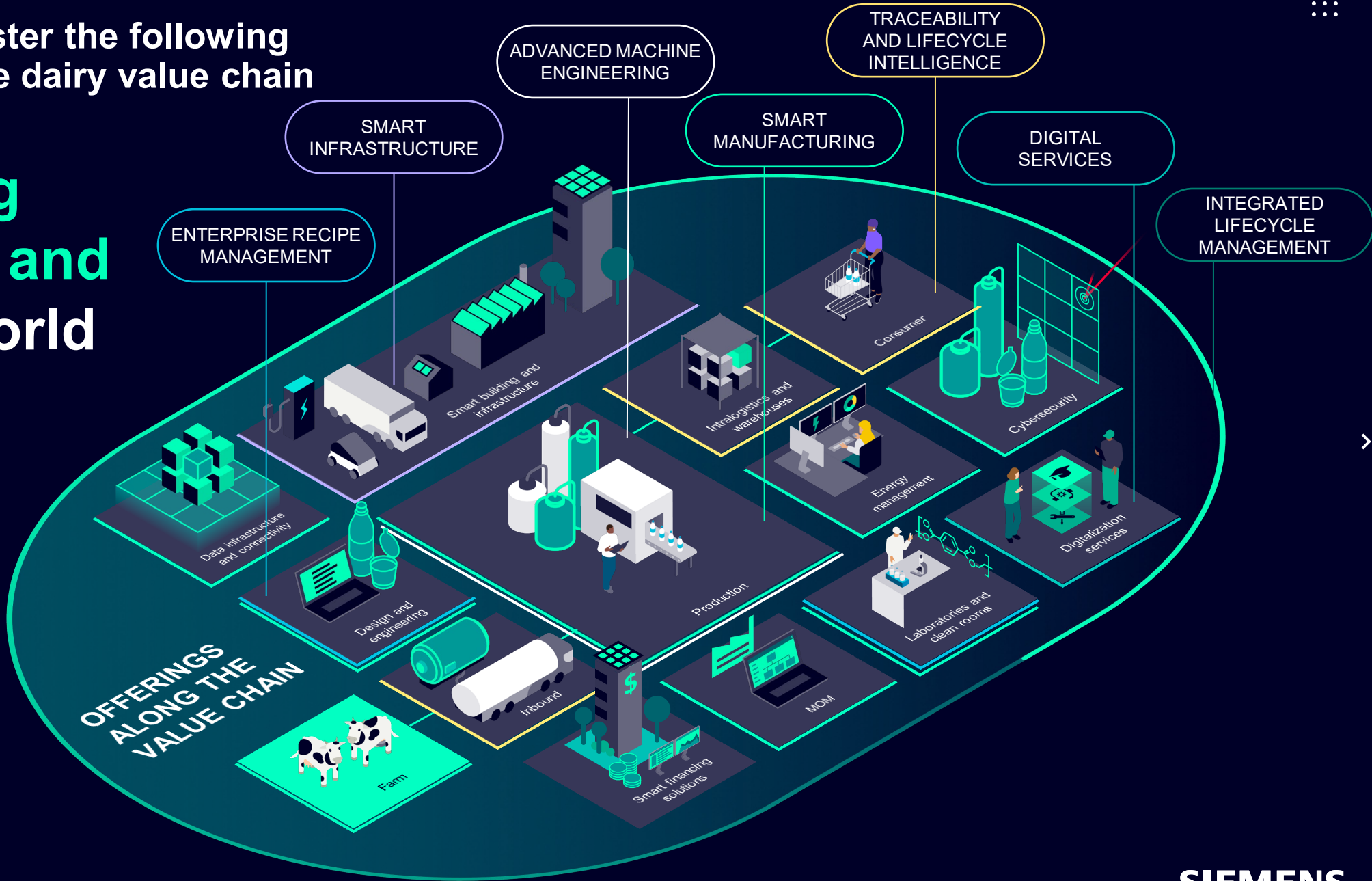




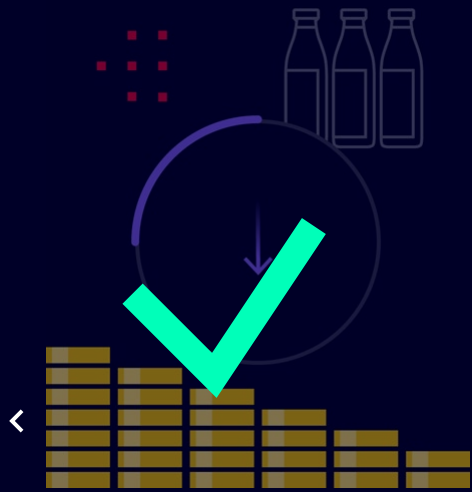


Together we master the following phases along the dairy value chain

Combining the digital and the real world

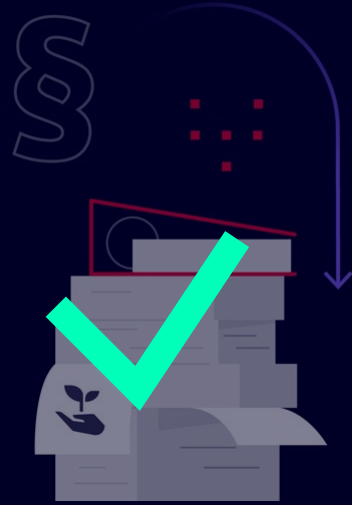


Together we master the challenges in the dairy production



Cost pressure

Optimize transportation, logistics, and production processes with automation, AI, and digital twins to cut costs and improve efficiency and overcome investment barriers with smart financing solution.



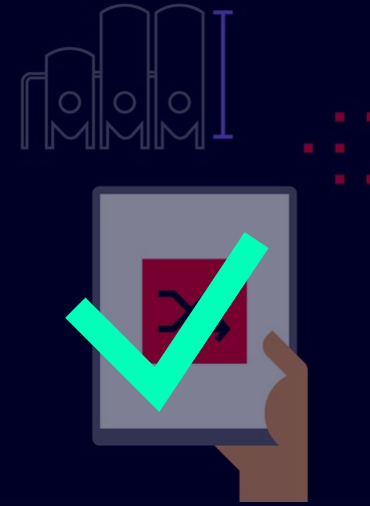
Sustainability

Implement circular economy practices, resource-efficient logistics, and energy optimization for eco-friendly operations.



Digital transformation

Use digital twins, 3D design, SCADA, and cybersecurity to enhance precision, innovation, and operational security.



Changing demand

Adapt production with AI, flexible planning and transparent data while using future-ready infrastructure to meet consumer expectations.



Trust and food safety

Ensure quality and compliance with integrated quality management systems, automated testing, and transparent data.

Smart Financing Solutions for the Dairy Industry

Siemens Financial Services



Challenges

- High investment requirements for modernization, automation, and digital transformation
- Rising pressure from sustainability regulations and energy costs
- Need for flexible, scalable production to react to changing consumer demand
- Seasonal cash-flow fluctuations

Solutions

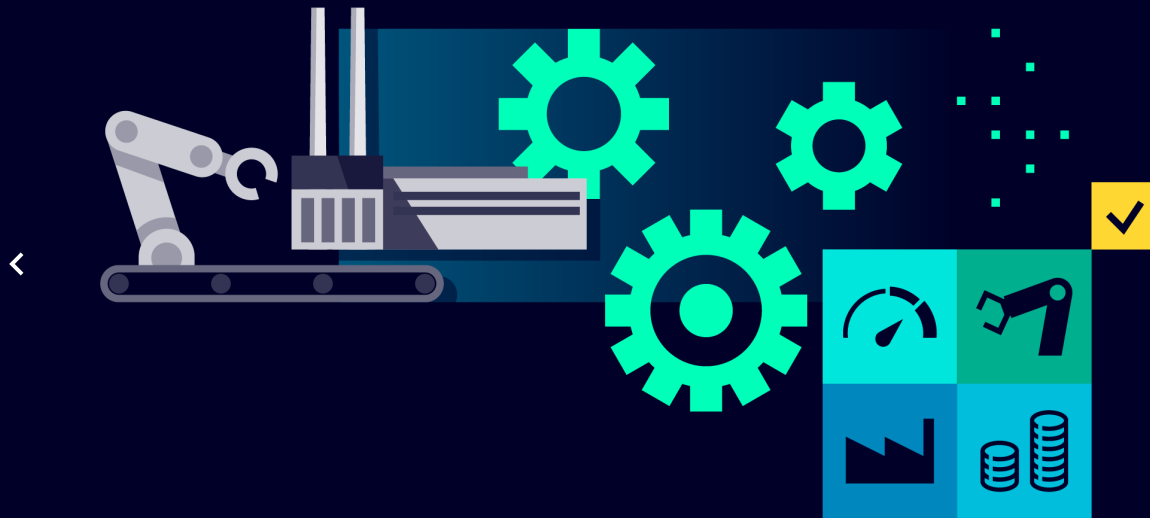
- Equipment & Technology Finance: Affordable financing for new machinery, automation, and modernization
- Working Capital Solutions: Strengthen liquidity with Extended Payment Terms (EPT) when purchasing Siemens equipment
- Partner Finance: Enabling OEMs, System Integrators, Distributors and Resellers to sell more machines to their customers
- Project Finance: Debt solutions for complex capital-intensive infrastructure projects
- Corporate Lending & Project Finance: Loans for modernization and expansion projects
- Equity Finance: Strategic capital to support innovation and projects
- Financial Advisory: Expert guidance to structure the right financing solution

Benefits

- Shift CAPEX to OPEX – Reduce upfront investment through flexible financing models
- Accelerate modernization – Boost efficiency, digitalization, and sustainability
- Increase financial flexibility – Align financing with production cycles and cash flow
- Strengthen competitiveness – Access the latest technology without tying up capital

Equipment and Technology Finance

Smart financing fuels growth and innovation



Challenge

Dairy manufacturers and suppliers face increasing pressure to invest in modern equipment and technology while protecting cash flow, preserving liquidity, and maintaining financial flexibility.

Solution

Smart financing solutions provide access to the required equipment and technology through tailored leasing models, usage based and outcome-based financing. With global reach, specialist sector knowledge, local financing expertise, and digital processes, we ensure smooth and efficient implementation of any financing solution.

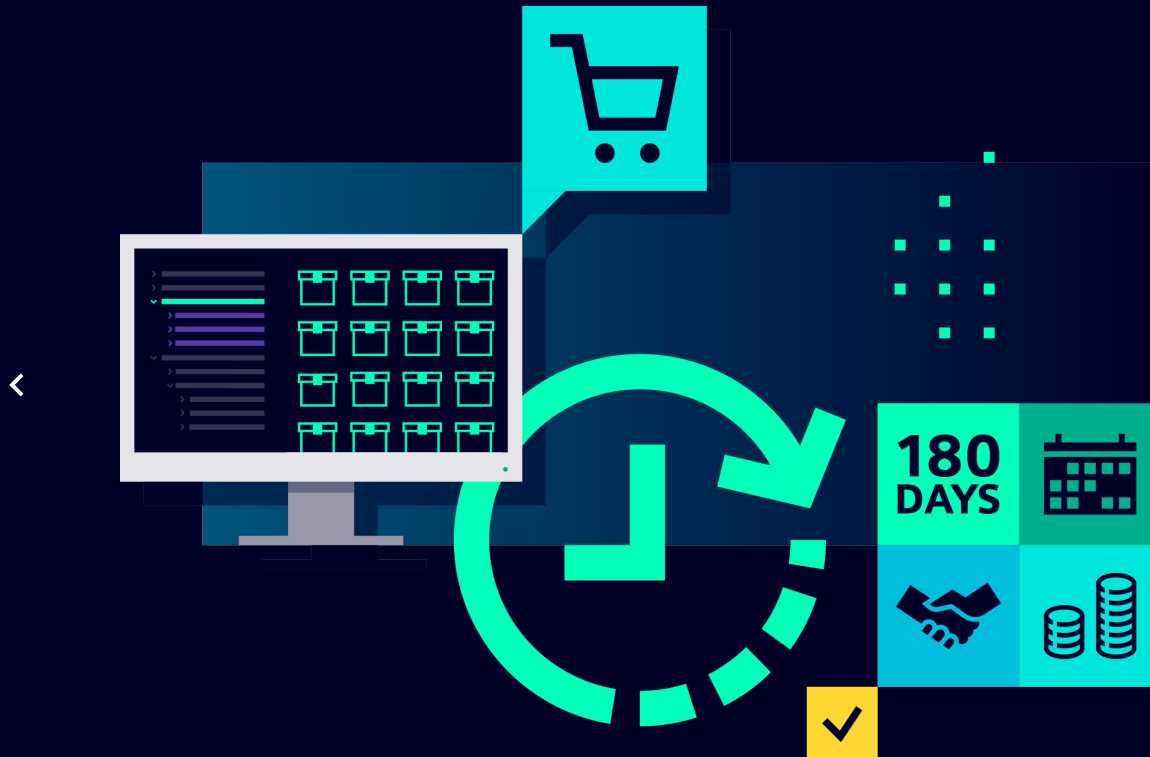
Benefits

Customers can invest without upfront CAPEX, optimize cash flow, enhance financial flexibility, support growth and profitability, and advance sustainability goals — empowered by financing models that fit their operational needs and strategic ambitions.



Extended Payment Terms (EPT)

Buy now. Pay later.



Challenge

Dairy manufacturers often need Siemens components while maintaining working capital or avoiding cash-flow gaps between delivery and payment.

Solution

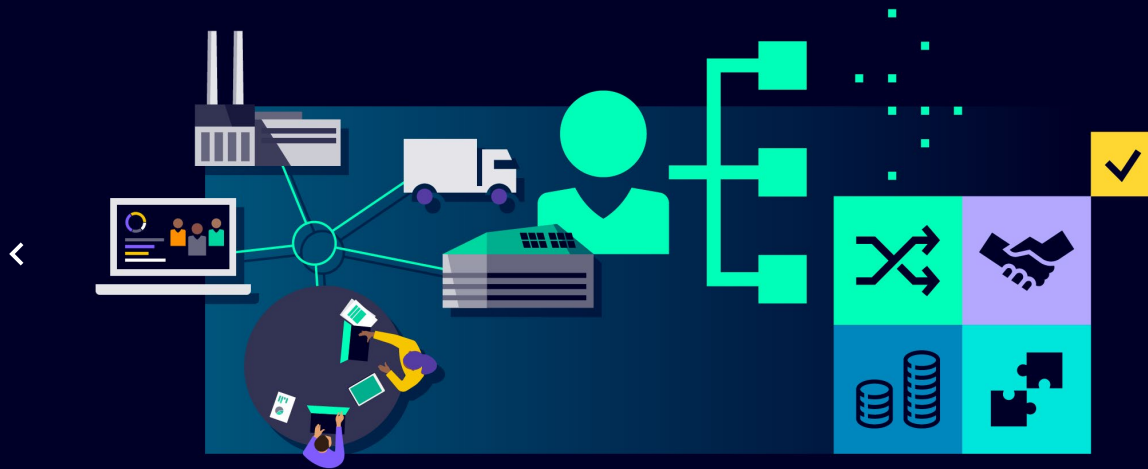
With Siemens' Extended Payment Terms, customers can purchase the components they need now and defer payment for up to 180 days. This option is available to Siemens channel partners and customers, subject to credit approval and local availability.

Benefits

Customers gain additional time to pay, improving liquidity management and financial flexibility. The solution can be activated whenever needed, remains fully independent of bank credit lines, and integrates seamlessly into the existing ordering process. All transactions are handled digitally, ensuring a simple, fast, and fully paperless experience.

Managed Service Solutions

An innovative financing option enabling business models



Challenge

Limited CAPEX prevents investment in new projects. Dairy producers need flexible, affordable payment plans and a reliable partner who provides both the solution and the accompanying service.

Solution

Siemens Financial Services provides flexible financing models for Managed Service Agreements, covering hardware, software, and services. This allows Siemens Industrial Business to deliver solutions as a service with predictable, periodic payments (e.g., monthly), while Siemens Financial Services manages the financial structure.

Benefits

Customers gain flexible payment plans tailored to their project's specific needs. Financing can cover complete solutions or components such as hardware, or services. Existing credit lines remain unaffected, preserving financial capacity. Transactions are handled seamlessly through Siemens' global network, supported by deep expertise in country-specific tax and legal requirements.



Project Finance

Funding for complex and capital-intensive infrastructure projects



Challenge

Customers must realize complex, capital-intensive energy and infrastructure projects but often struggle to secure appropriately structured financing that ensures project viability — from early development through long-term operation. They need partners who can manage financial complexity, handle risk, and support projects across global markets.

Solution

SFS combines deep industry know-how with specialized financing expertise to structure, underwrite, and hold tailored debt finance solutions for both public and private-sector projects worldwide. Beyond debt, SFS supports projects as a committed equity investor and acting as a project developer to enable long-term, bankable project structures.

Benefits

Customers gain access to financing models that enhance competitiveness, reduce risk, and unlock growth opportunities. With strong structuring capabilities and the ability to invest alongside partners, SFS helps ensure project success from early planning through operation — enabling projects that might otherwise be financially out of reach.



Corporate Lending

Maximizing Liquidity and Flexibility



Challenge

Dairy Companies need flexible, reliable financing to acquire, restructure, or grow their business while maintaining liquidity and managing cash flow.

Solution

SFS provides tailored lending solutions for acquisitions, mergers, LBOs, refinancings, and expansion. Asset-based lending strengthens cash flow, and innovative options like sustainability-linked loans, buy-and-hold lending, and multi-currency funding offer added flexibility.

Benefits

Customers gain the capital and financial agility needed to execute strategic moves, improve liquidity, and support long-term growth with a stable, trusted financing partner.



Equity Finance

Unlocking the value of infrastructure investment



Challenge

Rapid technological shifts and sustainability pressures are driving capital-intensive transformations in emerging and fast-growing industries. Dairy Companies face significant upfront investment needs for clean energy, next-generation industrial production, and digitalization initiatives, while traditional debt financing alone cannot bridge these gaps.

Solution

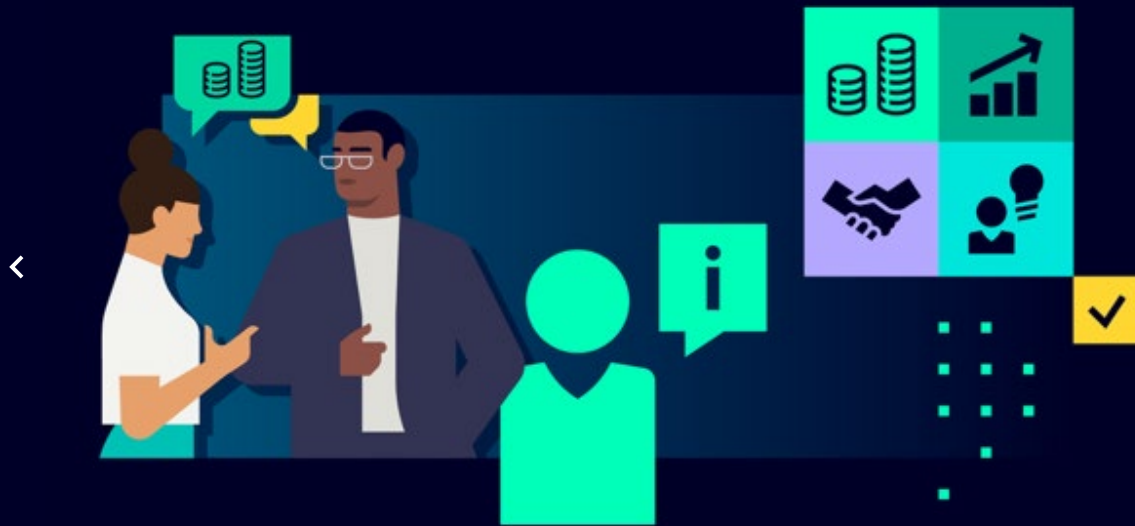
SFS acts as a focused technology growth investor, providing capital through growth investments, funds, project finance, PPPs, and platform structures. With deep industry and investment expertise, we support scalable technologies and build strong innovation ecosystems.

Benefits

Customers gain access to capital that accelerates technology development, strengthens ecosystems, and enables innovative business models—helping them address global challenges while benefiting from Siemens' combined technical and financial expertise.

Finance Advisory

Financing solutions for sales-related financing needs



Challenge

Siemens projects often require tailored financing and risk-mitigation concepts, yet customers face complexity in structuring and securing suitable financing early in project development.

Solution

Financing and advisory support is provided by structuring, arranging, and implementing tailored financing solutions along with appropriate risk-mitigation concepts for Siemens projects. Engagement typically begins in the early stages of project development, ensuring that financial and risk-related considerations are integrated from the outset.

Benefits

Customers benefit from early-stage financial clarity, tailored advisory from a single source, and well-structured financing that strengthens project viability and reduces risk — supporting smoother project execution and higher success rates.



Retrofit Finance

A smart way of financing Equipment and Technology modernizations



Challenge

Modernizing an existing machine offers significant long-term advantages — including energy savings, improved cost efficiency, increased productivity, and access to new markets. However, the main obstacle is not demonstrating the technical necessity or benefits of the upgrade. The real challenge is securing the required budget to move forward with the retrofit.

Solution

Our retrofit financing options address this challenge directly. We offer tailored financing models that align with your specific needs and the expected benefits of the upgrade. This makes retrofitting your machine easier, more affordable, and more accessible, enabling you to unlock the full value of modernization without the upfront financial burden.

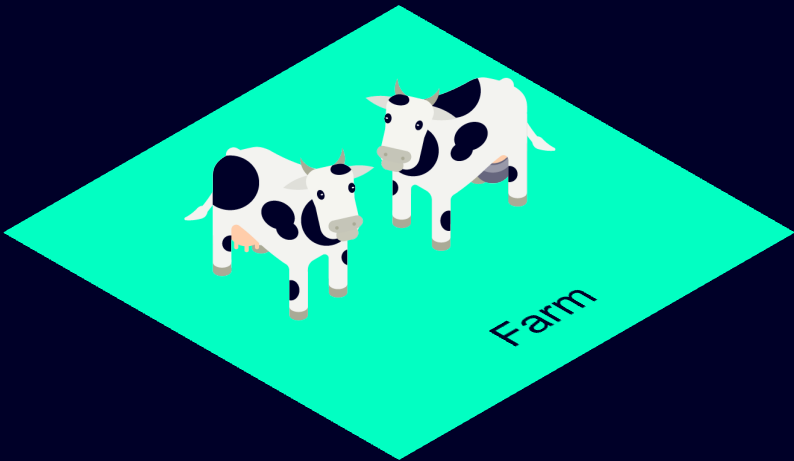
Benefits

Retrofit finance enables modernization with no upfront cash, protecting liquidity and freeing existing bank credit lines. It delivers a convenient single-source solution and supports circular-economy goals by extending equipment life and thus reducing waste.



Farm

Optimize carbon footprint and reuse organic waste



DT Smart Manufacturing

Business objective

Milk comes from cows and can be produced in a variety of environments, from modern, highly automated stables to traditional farmlands and even highlands. No matter where it's produced, Siemens is involved in many solutions that not only help in milk production but also in managing waste.

Key capabilities

Circular economy and resource efficiency by transforming waste into a valuable resource

Use cases

[Biogas plants](#)

Biogas plants

How can Biogas Technology reduce emissions from Dairy Farms?



Challenge

- Dairy farms produce a lot of biomass which massively impacts the product carbon footprint of the whole dairy production
- Cows produce methane, a greenhouse gas that is 28 times more potent than CO₂
- Livestock, including cows, are responsible for about 14,5% of global greenhouse gas emissions

Solution

- Use SET BGA a modular gas analyzer solution for biogenic process gases
- Biogas plants capture methane from manure, which would otherwise be released into the atmosphere
- Fermentation takes place in a heated reactor in which bacteria break down biomass under ideally created conditions
- Monitor and manage all critical input parameters and feeding times

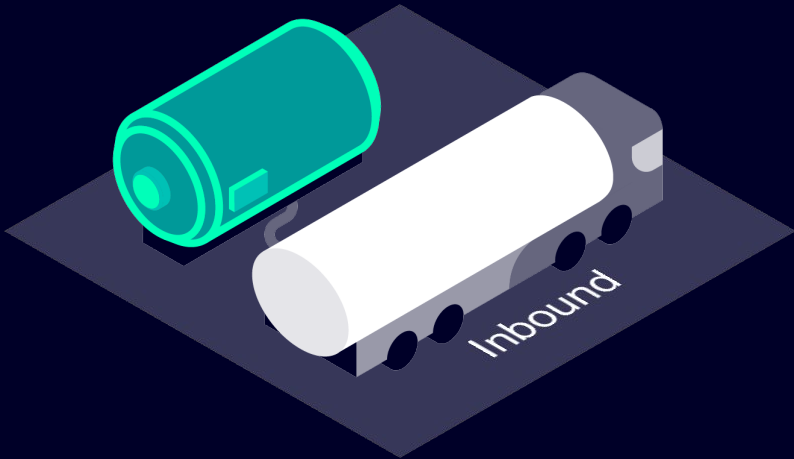
Benefits

- Reuse organic waste
- Optimize carbon footprint
- Reduce energy costs and generate additional income by selling excess energy



Inbound

Optimize routes to reduce freight costs



● DT Traceability & Lifecycle Intelligence

Business objective

Inbound activities focus on the activities before the milk is received at the plant.

Key capabilities

Optimizing transportation and logistics processes to achieve cost savings, resource efficiency, and sustainability

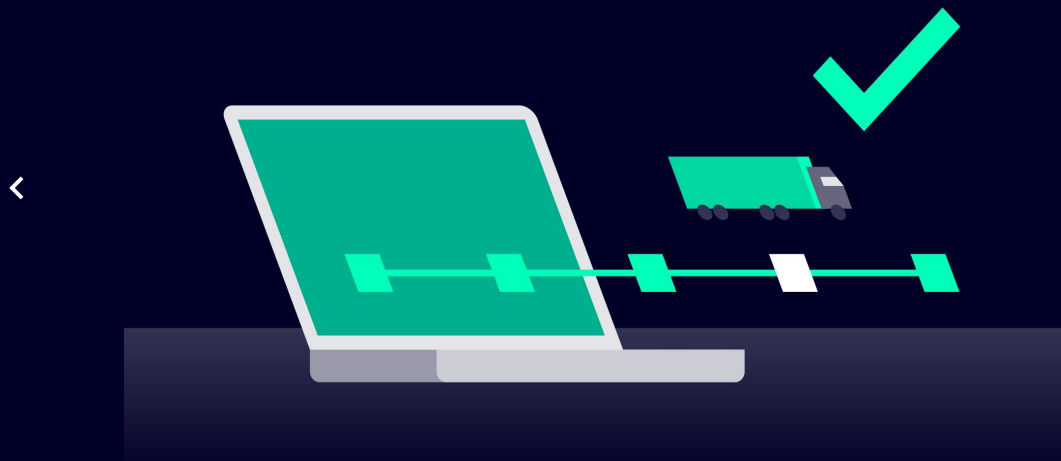
Use cases

[Transportation Planning & Optimization](#)



Transportation Planning & Optimization

How to optimize logistics processes to make logistics leaner, faster and more efficient?



Challenge

- Fleet of milk collection trucks needs to be managed while sometimes it is required to ship raw milk or milk products to other dairies for further processing
- Transports are a key component of scope 3 emissions (16%)
- Inefficient production planning due to missing delivery status information

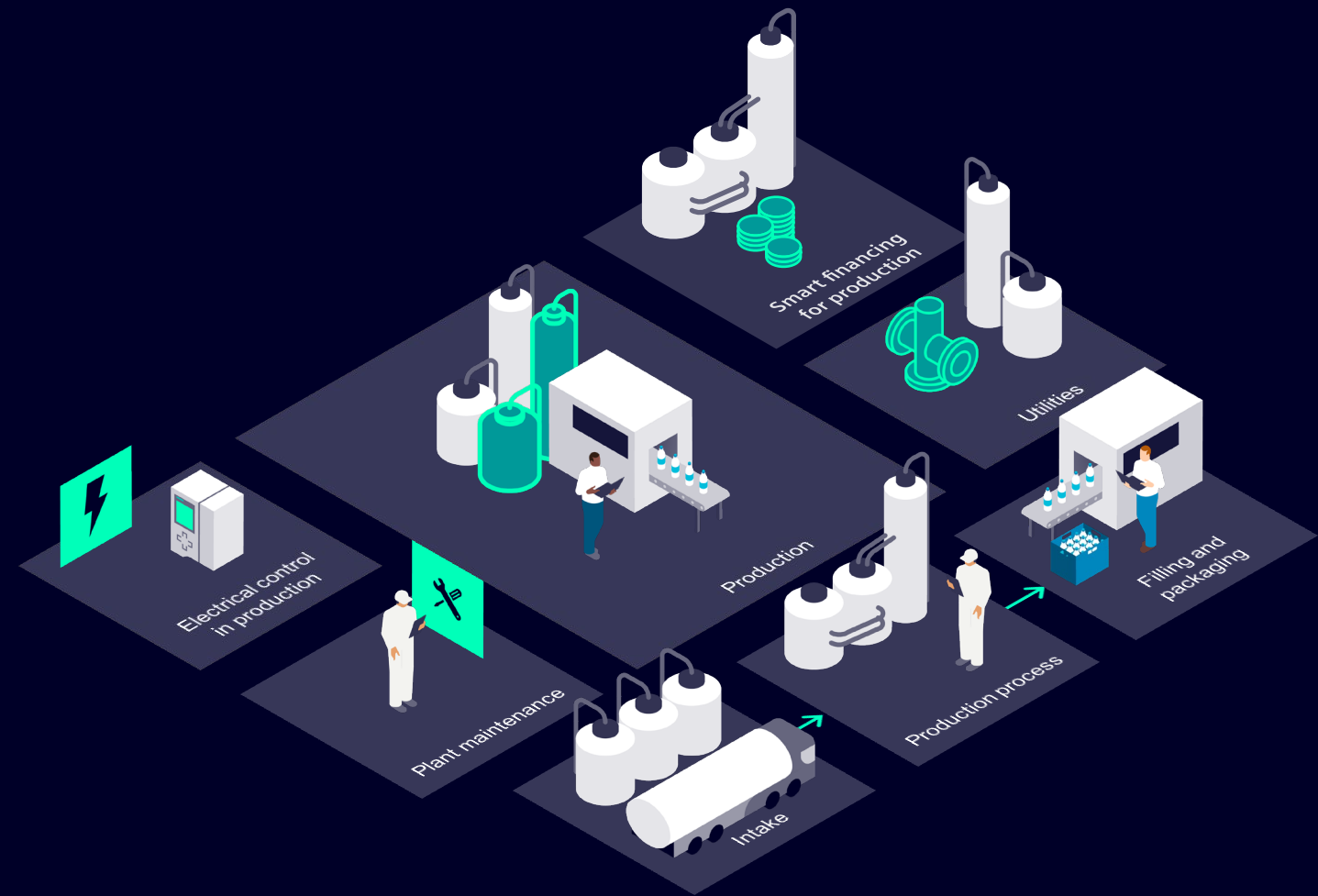
Solution

- Use Supply Chain Suite and AX4 to analyze site, fleet and customer data to find ideal routes
- Optimize transportation segmentation to reduce freight costs
- Optimize transportation capacity for supply and procurement tours
- Consolidate freight rates and contracts transparently

Benefits

- By optimizing routes and transportation segmentation, companies can significantly reduce freight costs
- Improved planning and optimization lead to more efficient use of transportation resources
- Track and reduce carbon emissions, promoting a more sustainable supply chain

Production



Modernize Dairy Production

Minimize CAPEX by smart financing



Challenge

- High investment needs for modern production, filling, and packaging technology
- Rising energy and operating costs
- Seasonal cash-flow fluctuations
- Need for flexible lines to handle frequent product and packaging changes

Solution (linking to our One pager)

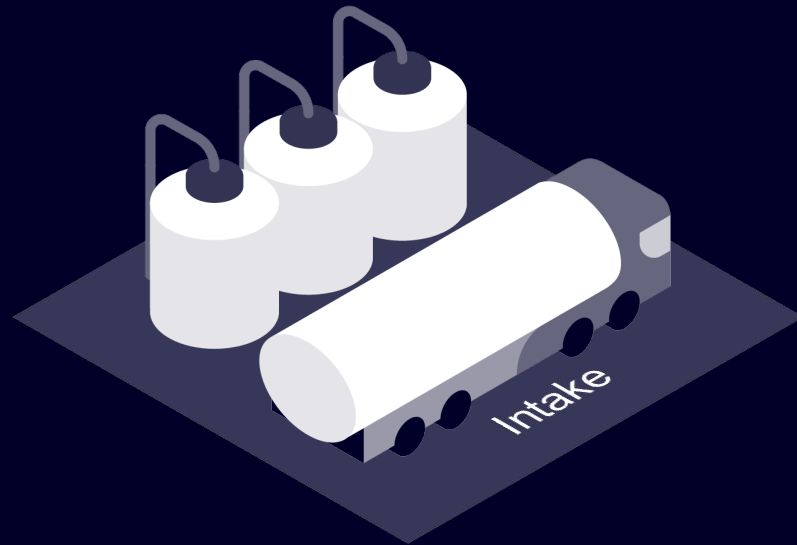
- Equipment and Technology Finance – Enables modernization of production, filling, and packaging lines without high upfront costs.
- Working Capital Finance – Eases cash-flow pressure during installation, commissioning, and ramp-up (EPT)
- Partner Finance - Enabling OEMs, Distributors and Resellers to sell more machines to their customers

Benefits

- Faster upgrade of production, filling, and packaging operations
- Improved energy and resource efficiency
- Higher flexibility for SKUs, formats, and changeovers
- Stable cash flow and reduced investment risk

Intake

Ensure quality and freshness of milk received at the factory



● DT Smart Manufacturing

Business objective

The raw milk is brought in many trucks to the production site where the quantity of the milk is determined, and the quality is checked. The untreated raw milk is constantly cooled and collected in storage tanks

Key capabilities

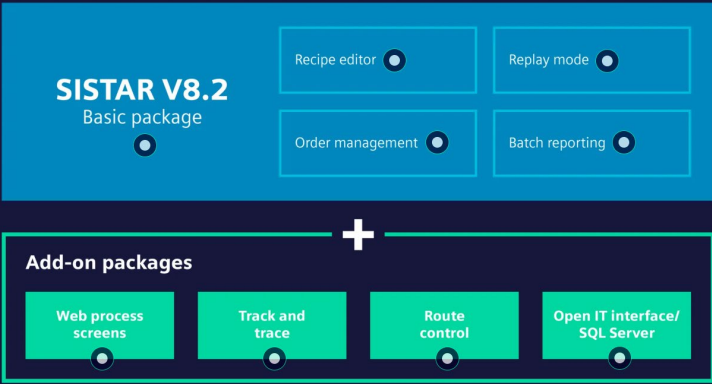
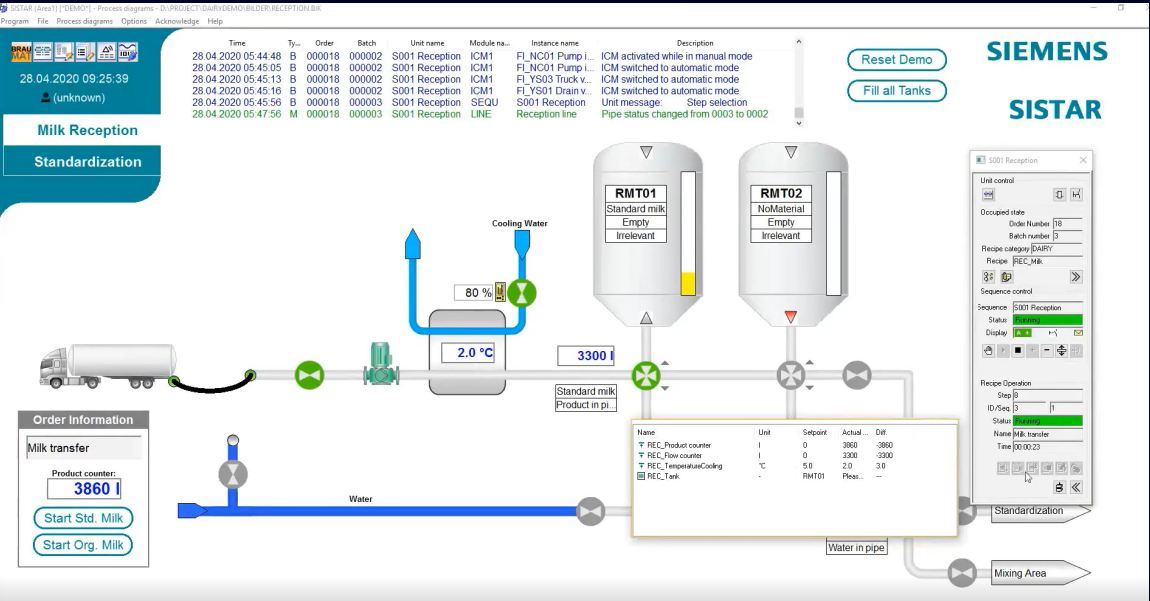
Supervisory Control and Data Acquisition technology to automate and monitor the sequential production of batches, ensuring precise control and efficient operation

Use cases

[Manage milk transfer in reception area](#)

Manage milk transfer in reception area

How can milk be transferred into tanks according to type?



Challenge

- Transport lines must be clean and not contaminated with different products
- Track material transfer
- Operate and control milk reception

Solution

SCADA based batch processing with BRAUMAT/SISTAR

- Transfer jobs automatically
- Traceability of transfer orders
- Material compatibility check during transfer execution
- Option Route Control for flexible adoption of Routes and reduction of engineering efforts

Benefits

- Avoid losses due to mixing or contamination of milk
- Quick overview of material in tanks
- Scalable solution

Production Process

Ensure quality of dairy products during production



● DT Smart Manufacturing

Business objective

A lot of dairy factories are specialized on a specific product, there is no topical process area that can be found in each factory. The equipment and their degree on complexity varies depending on the final product that will be produced. Therefore, this document is focusing on the typical processes that can be found in most of the dairies: Milk, Butter, Cheese and Powder.

Key capabilities

- Utilize physical science-based digital twins to accurately describe drying behavior
- Automation and process control system including recipe management and data analysis

Use cases

[Spray Dryer Optimization](#)

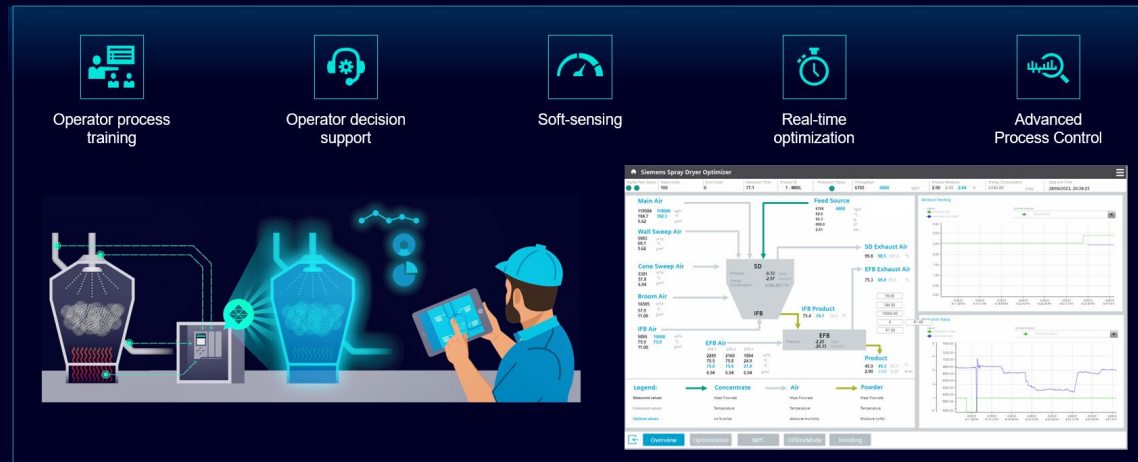
[Efficient & adjustable automated recipe control for batch-based operations](#)

[Digital visibility and transparency of plant floor processes for batch-based operations](#)

[Save resources & reduce environmental impact for batch-based productions](#)

Spray Dryer Optimization

How to optimize the process parameters of the spray drying process?



Challenge

- Time-consuming and expensive process due to many parameters
- Overcome rapidly changing market requirements
- Uplift product moisture

Solution

- Configure and calibrate physical science-based digital twin of spray drying process with gPROMS
- Deploy digital twin as a soft sensor using Live Twin & Industrial Edge on a plant within Advanced Process Control (APC) system
- Use WinCC Unified on Industrial Edge and Spray drying performance monitor for real-time optimization and control

Benefits

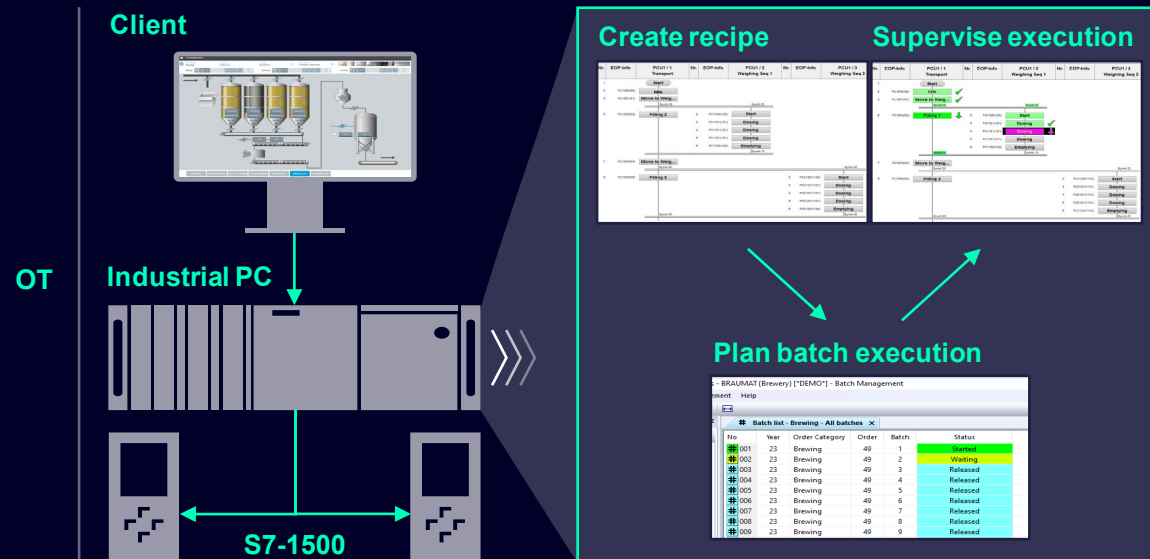
- Reduce energy consumption by up to 10%¹
- Determine precisely moisture content
- Increase product moisture content by 5%¹
- Reduction in product moisture variability by 30%¹

¹ Compared to previously employed data-driven APC at the factory

Efficient and adjustable automated recipe control for batch-based operations

How to easily adapt the production?

SISTAR/BRAUMAT



Challenge

- Demand for high/mix low volume production
- Demand high-quality and consistency in product composition (repeatability)
- Special know-how and high effort to adapt recipes and procedures

Solution

Out-of-the-box recipe control for batch processing with BRAUMAT/SISTAR, a process control system for batch applications

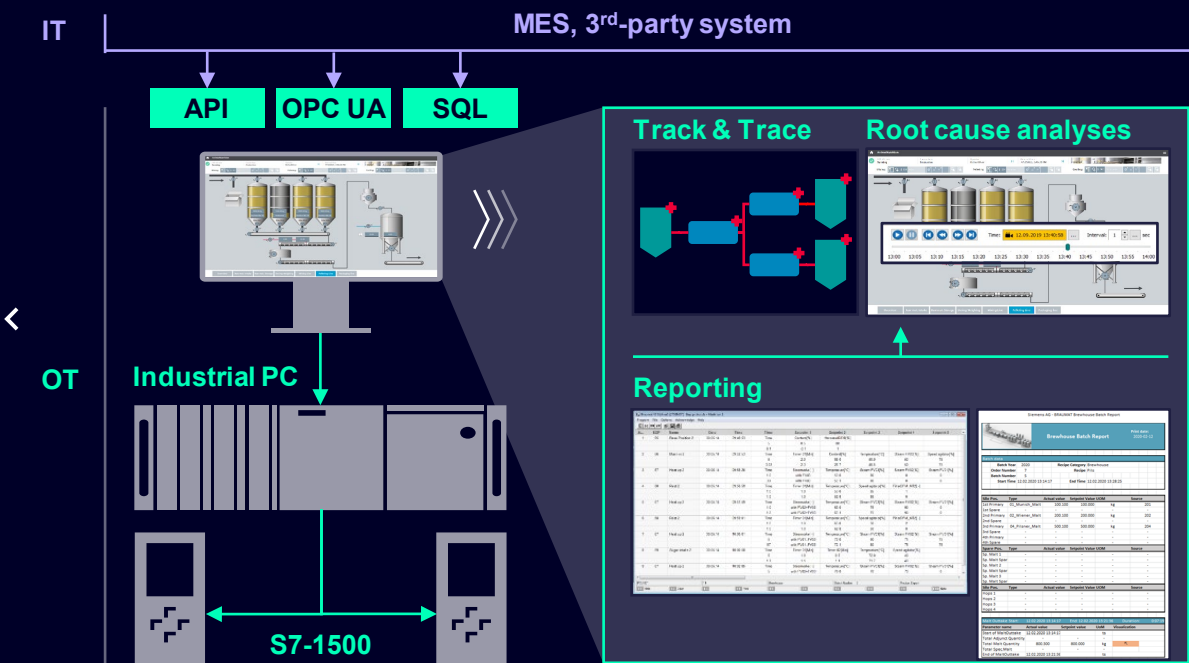
- Integrated recipe editor allows to easily create, adapt and supervise the execution of recipes
- Several units in one recipe procedure are intuitively synchronized via flexible synchronization lines
- Orders can be easily planned and scheduled with the integrated order management

Benefits

- Out-of-the-box functionality allows to easily find experts and service partners for maintenance and recipe adaptations
- Easily create and adapt recipes based on existing products
- Introduce new products in no time without adapt the PLC program
- All process relevant information is available at one glance ensuring a proper execution of the recipe and a consistent quality

Digital visibility and transparency of plant floor processes for batch-based operations

How to easily achieve plant transparency?



Challenge

- Strict legal requirements for documentation and quality control
- Increasing demand for traceability of supply chain and raw materials but low availability of required data
- Complex production process and fluctuating raw material quality complicate the root cause analysis in case of a production problem

Solution

SCADA based batch processing with BRAUMAT/SISTAR

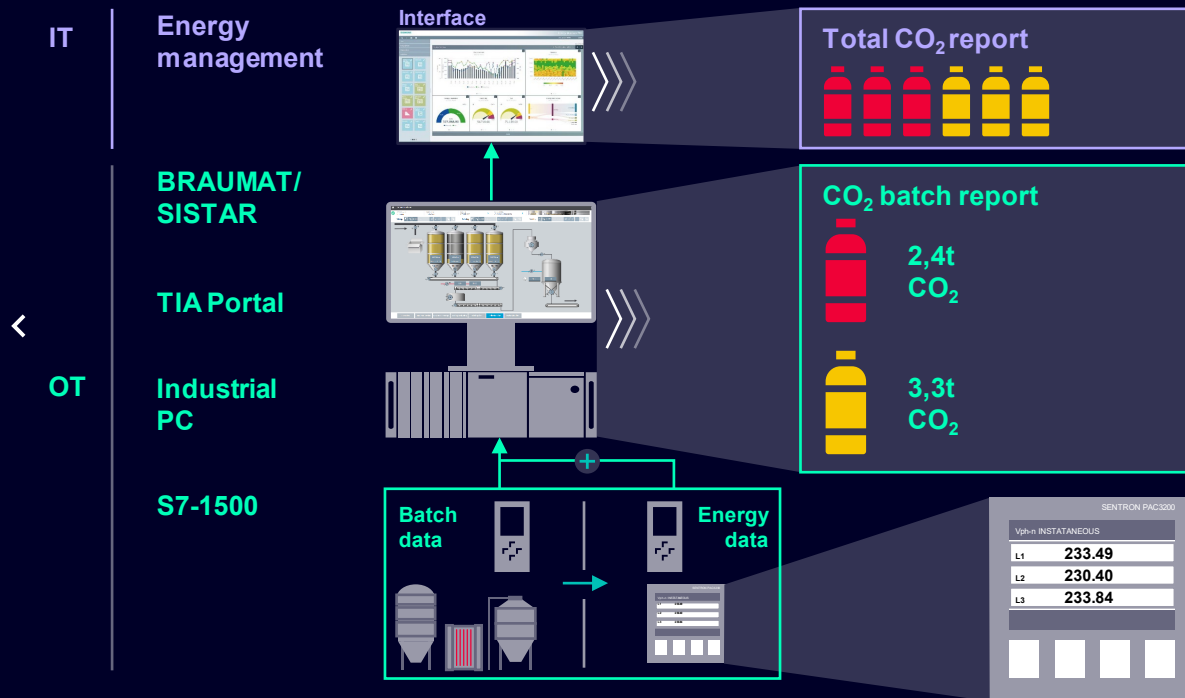
- Report for each produced batch including relevant process parameter
- Possibility to track materials and final products along the entire production process
- Process data recording allowing to observe historical data in context of the HMI operator screen

Benefits

- Full transparency about the production efficiency and all produced batches at any time
- Data from all process screens is recorded and can be replayed using the standard user interface
- The system can be easily integrated with 3rd-party IT systems via standardized databases and interfaces

Save resources and reduce environmental impact for batch-based productions

How to produce sustainably?



Challenge

- Missing relation between energy consumption and the way how to production is controlled
- Energy saving goals as a curial part of the overall cost efficiency
- Integration of existing and future legal requirements and regulations concerning user safety and environmental protection

Solution

SCADA based batch processing with BRAUMAT/SISTAR

- Possibility to integrate energy data easily via TIA Portal energy library
- CO₂ per batch via batch report
- Standard interface to Energy Manager PRO allowing to easily share data between the systems
- Possibility to define dashboards for overall energy usage

Benefits

- Calculate energy consumption per batch
- Easily compare different productions sites
- Identify energy losses quickly

Filling & Packaging

Maintain product integrity, ensure hygiene and safety and meet regulatory standards



● DT Smart Manufacturing

Business objective

The final product must undergo a sterile filling process to avoid introducing new impurities. Afterwards the individual products are collected and grouped together. A transport path takes the cartons to the palletizer.

Key capabilities

- Increased transparency of production line parameters by smart line visualization system
- Improved line performance & Machine OEE with strong KPI engine
- Efficient identification of root cause of inefficiency and loss due to individual parameter analysis

Use cases

[Central Line Supervision](#)

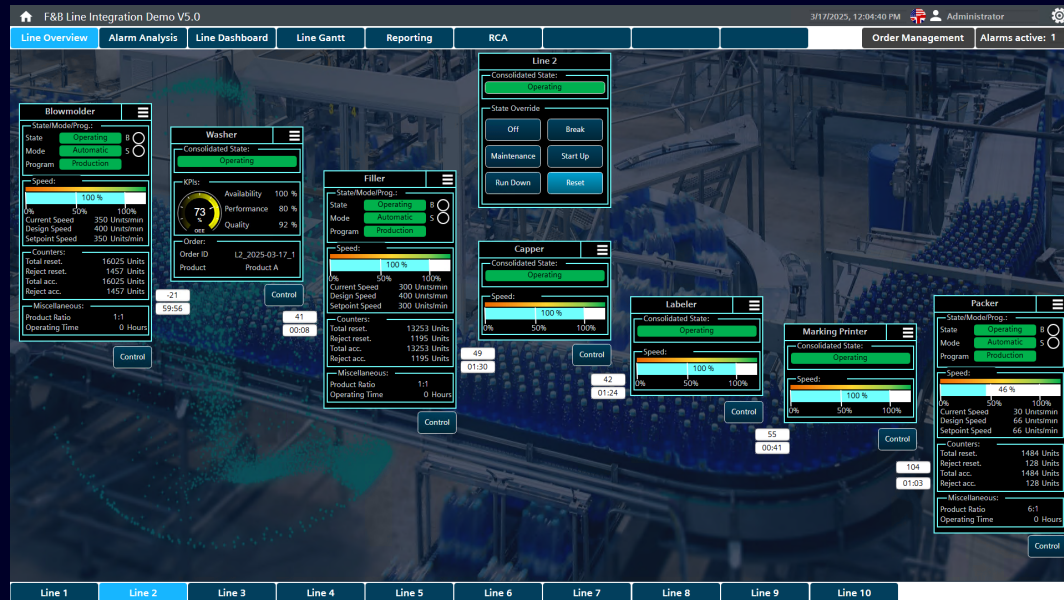
[Performance analytics on factory level](#)

[Line performance analytics](#)

Central Line Supervision

How to maximize line transparency and increase productivity?

F&B Line Integration Visualization Templates



WinCC Unified PC RT



Challenge

- Plant and line operators require to operate, visualize and monitor the process across the line by using a central supervision system (SCADA)
- Upper systems like IT/OT integration and MES need production line data to be shared centrally, often using SCADA systems for data exchange
- Increasing requirements to enable IT/OT integration and connect line to upper-level systems as Data Integration Layer or IT systems

Solution

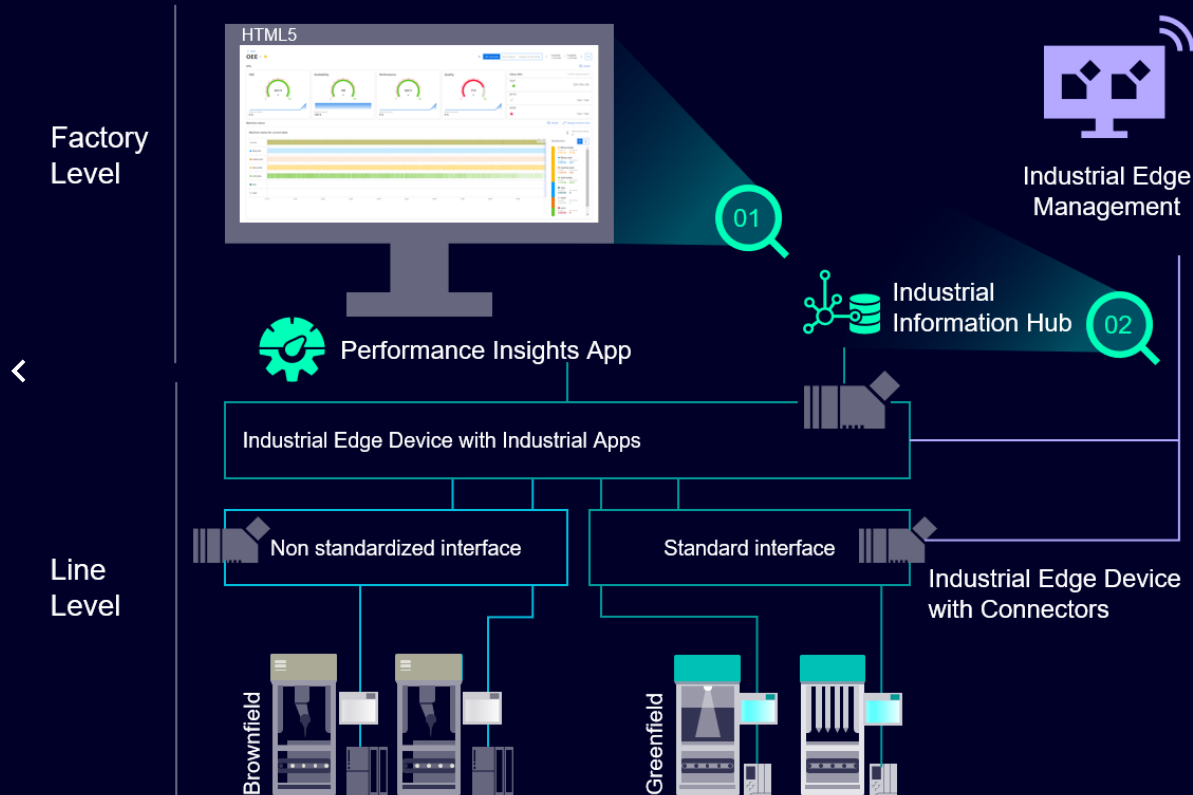
- Based on **WinCC Unified**, **Siemens F&B Line Integration** provides free preconfigured visualization faceplates to have a standardized look and feel for machine data visualization and machine operation for filling & packing lines
- The project template provides visualization for plant, line and machine level
- Basic analytic functionalities such as Alarm Statistics, Line V-Curve in accordance with machine information provide valuable information about the overall health of the filling & packaging lines

Benefits

- Flexible Connectivity: Integrate diverse machines and ensure secure data transfer
- Enhanced Transparency: Provide clear visualization and insights from untapped data
- Reduced efforts: Preconfigured project templates reduces engineering time

Performance analytics on factory level

How to get 360° transparency on machines and lines – all viewable from a central point?



Challenge

- Manufacturers seek an 85% and higher OEE rate
- Dashboard creation often leads to IT complexity
- Engineering often needs to be done by external partners

Solution

- Connection to brownfield and greenfield with Industrial Edge Devices and Connectors and the Industrial Information Hub for local data management
- Out-of-the-box KPI dashboarding including OEE monitoring for selected time periods with the Industrial Performance Insight App
- 3rd-party open-source visualization software can be used with Industrial Edge

Benefits

- Easily get transparency over production performance
- Leverage technology and domain know-how from open ecosystem
- Cost-efficient and productive roll-outs

Line performance analytics

How to measure the effectiveness of the filling and packaging process?



Challenge

- Central overview of a machine within the line required
- Difficult measurement of line improvement activities
- Consideration of different working times (e.g., shifts)

Solution

- SIMATIC WinCC Unified Option Performance Insight: Powerful tool for configuration of time models and key performance indicators (KPIs)
- SIMATIC WinCC Unified Option Calendar: Configuration of working times, e.g., shifts and working days. It also allows the configuration of productive and non-productive times (e.g., maintenance, cleaning, breaks)

Benefits

- Reduced downtimes of the line and increased production yield
- Improved transparency by tracking the impact of continuous improvement
- Modify logged data to correct erroneous information

Utilities

Essential services and resources required to support the operation of a dairy facility



Business objective

Utilities are crucial for smooth operation and the production of high-quality dairy products. It contains for example: Cleaning processes; Cooling and chiller systems; Energy, water, steam and compressed air supply.

Key capabilities

- Efficient energy management
- Water-saving measures
- Simulation of processes to optimize production

Use cases

[Monitor and optimize cleaning process](#)

[Chiller plant optimization](#)



● DT Smart Manufacturing

Monitor and optimize cleaning process

How to optimize the CIP process by getting transparency and optimization indicators?



Performance Insights
App with CIP
Monitoring Add On

Challenge

- Cleaning in Place (CIP) process is very resource consuming
- Different opinions on when is it clean enough
- Optimize CIP without risking negative impact on product quality
- Not clear what exactly to optimize

Solution

Use a system that provides CIP Monitoring to get Transparency

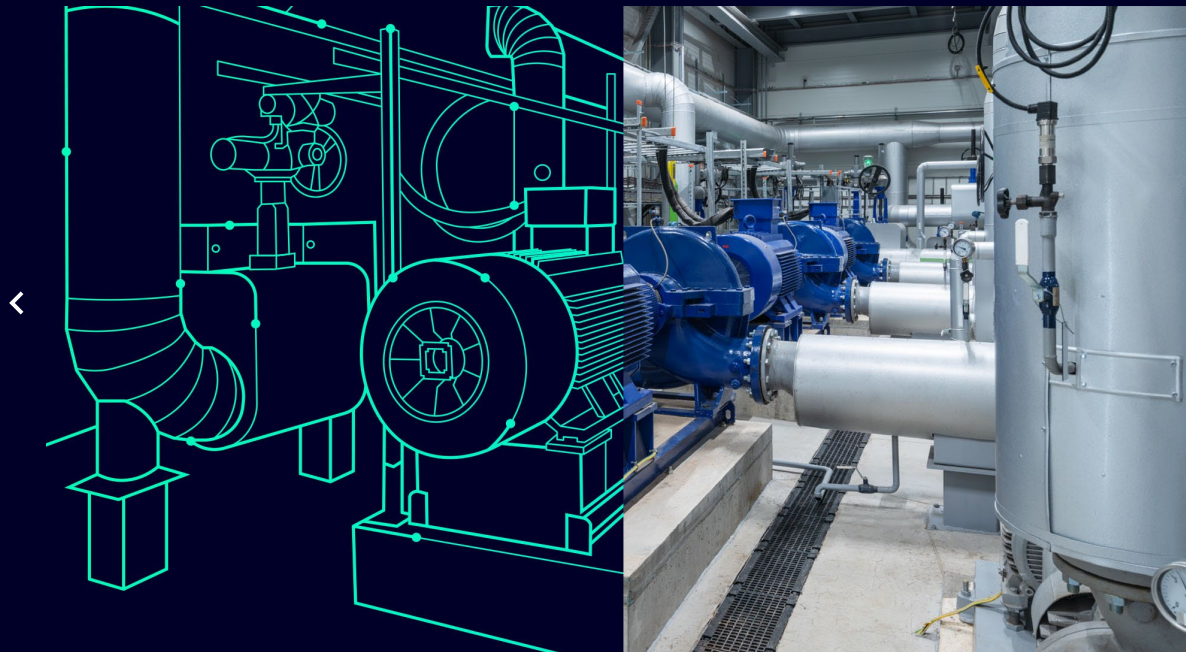
- The user should be guided how to optimize the efficiency and guard the effectiveness of a CIP process and optimize the usage of water, temperature, electricity, chemicals (lye, acid), time
- Industrial Edge based to be independent of the existing automation system and to have the possibility to expend it with further use cases like AI based optimization

Benefits

- Make sustainability goals measurable
- Various connectivity options of Industrial Edge makes it independent of the customer automation system

Chiller plant optimization

How to optimize annual electricity consumption?



Challenge

- Chillers not operating as per design temperature splits, run manually at fixed speed with lack of transparency
- Chiller sub system running with limited control and without synchronization

Solution

Connect your chiller plant and select essential data points of your chiller

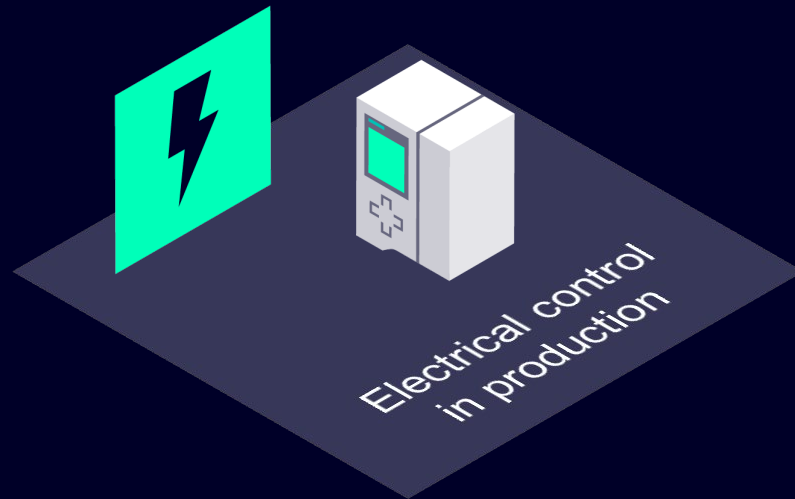
- The connectivity leads to creating a Digital energy twin, that optimizes energy efficiency
- Demand Flow enables the reduction of maintenance costs, mitigates the risk of downtime, and improves the life cycle of the plant
- Flexible business model (Pay as you Save) integrating SFS as a financing partner for embedded deferred payment solution

Benefits

- Auto operation of chiller plant in synchronization with its sub system
- Higher deliverable capacity of the chillers, near to its design efficiency
- Direct energy savings, cost reduction and carbon emission reduction bringing sustainability to customer

Electrical control in production

The Role of Electrical Control Systems in Modern Production



● Smart Infrastructure

Business objective

Implementing advanced electrical control systems in production processes, aiming to enhance operational efficiency, improve product quality, and reduce downtime, thereby increasing overall productivity and competitiveness in the market.

Key capabilities

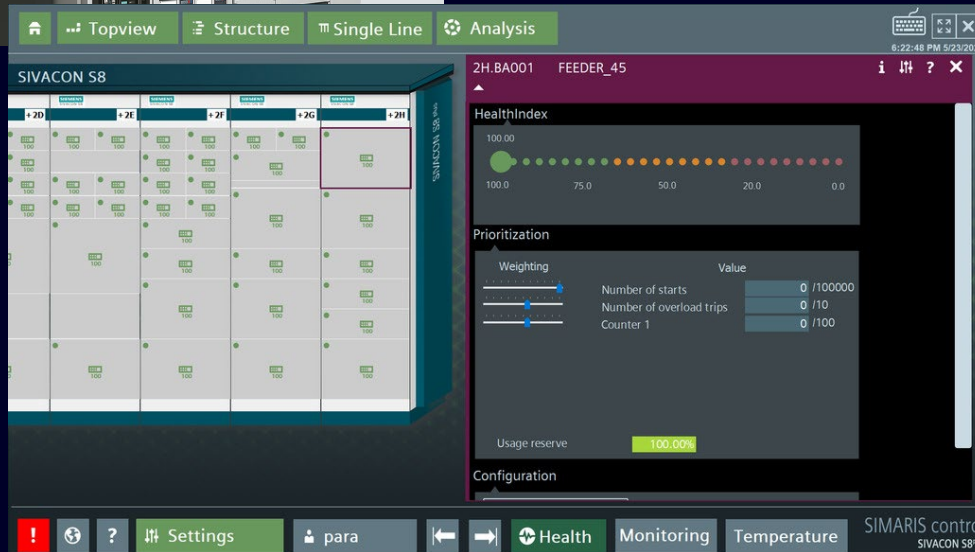
- Integration of Advanced Control Systems: Implementing state-of-the-art electrical control systems to automate and optimize production processes, ensuring consistent quality and reducing human error
- Real-Time Monitoring and Analytics: Utilizing real-time data collection and analytics to monitor production performance, predict maintenance needs, and swiftly address any issues, thereby minimizing downtime and enhancing overall efficiency

Use cases

[Smart Motor Control Center](#)

Smart Motor Control Center

How to design, operate and manage a smart motor control center?



Challenge

- Aging Infrastructure: Upgrading outdated systems is necessary
- Integration Complexity: Merging new technologies with existing
- Safety Regulations: Complying with stringent safety standards

Solution

The Smart Motor Control Centers from Siemens offer a comprehensive solution with SIVACON S8 designed to enhance operational efficiency and safety in industrial environments.

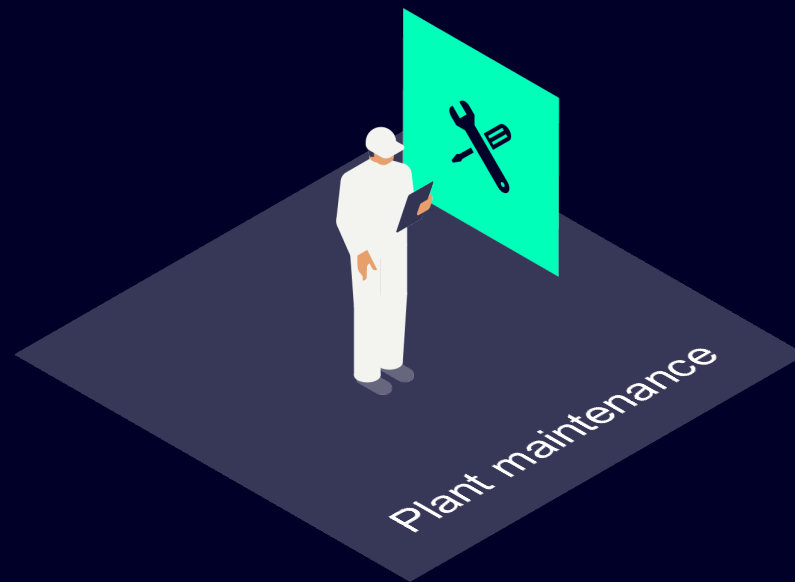
- Advanced monitoring and control capabilities, allowing for real-time data collection and analysis
- The modular design ensures flexibility and scalability, while the robust construction guarantees high reliability
- Seamless integration with automation and control systems, providing a unified platform for managing motor operations and improving overall productivity

Benefits

- Energy Efficiency: Reduces operational energy consumption
- Compact Design: Saves space with high-density configurations
- Enhanced Safety: Protects against electrical hazards
- Smart Technology: Integrates advanced monitoring and control

Plant Maintenance

Maximizing operational efficiency and minimizing downtime



● DT Smart Manufacturing

Business objective

By implementing effective maintenance practices, dairy producers can ensure the production of safe and consistent dairy products while maximizing operational efficiency and minimizing downtime

Key capabilities

Artificial Intelligence solutions for predictive maintenance, anomaly detection and detailed condition monitoring

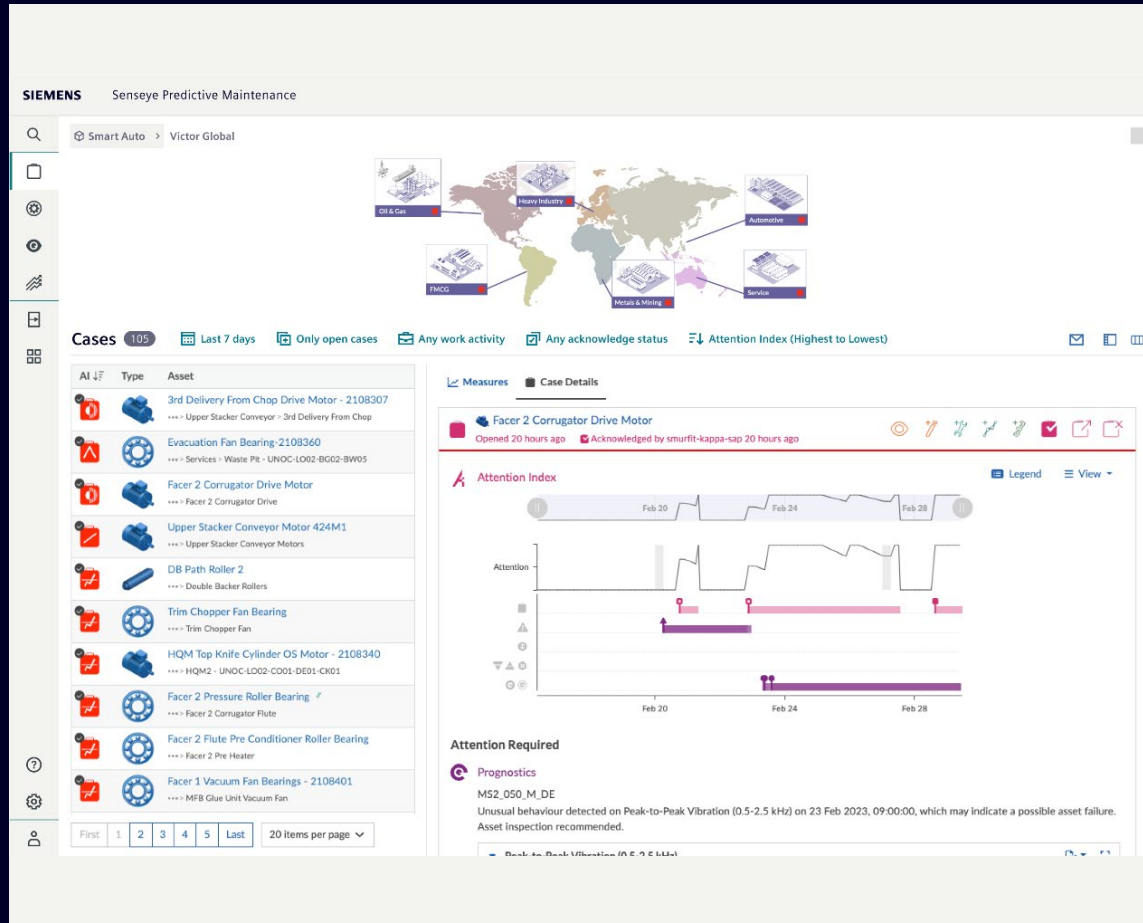
Use cases

[Predictive Maintenance in production](#)

[Smart Condition Monitoring for mechanical plant equipment](#)

Predictive Maintenance in production

How to run the plant as efficiently as possible?



Challenge

- Existing maintenance solutions focus on single use cases and require manual onboarding of assets
- Data siloed across different systems creates knowledge gaps and a lack of collaboration
- Low adoption of technology

Solution

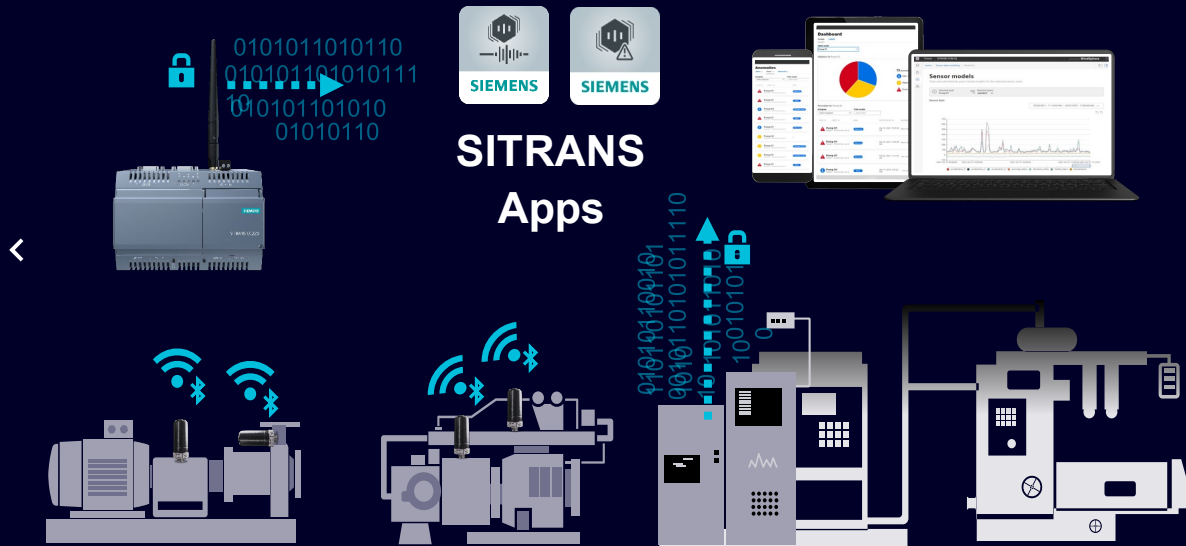
- Senseye related Services, a cloud-based Software as a Service (SaaS)
- Use of AI to automatically learn from machine and maintainer behavior
- Asset & sensor agnostic (all kinds, not just rotating, etc.), use of existing data & infrastructure
- Open APIs, proven integrations & partnerships with industrial leaders for integrating key systems

Benefits

- Rapid ROI (less than 12 months)
- Up to 50% reduction in unplanned downtime
- Up to 55% increase in maintenance staff productivity
- Up to 40% reduction in maintenance costs

Smart Condition Monitoring for mechanical plant equipment

How to prevent unplanned downtime of mechanical assets?



Challenge

- Unexpected failures of mechanical assets can lead to expensive plant downtimes
- No effective analysis tool available
- No condition data available or limited use of available data

Solution

- Predictive maintenance, anomaly detection and detailed condition monitoring based on AI is made easy with SITRANS SCM IQ
- Monitor the condition of your plant's mechanical components at any time
- Use wireless SITRANS MS200 multisensors or directly connect existing machinery data to machine learning algorithms in SITRANS SCM IQ
- The system reliably issues warnings of potential asset failures in due time and thus prevents unexpected plant downtime and optimized planning of maintenance activities

Benefits

- Increased plant performance by avoiding unplanned downtime
- Optimized, event-driven maintenance management
- Secure, open ecosystem – quickly adaptable to new business challenges
- Low investment and operating costs



Intralogistics & Warehouses

Facilitate efficient storage, inventory management, distribution and quality control



● DT Traceability & Lifecycle Intelligence

Business objective

Manufacturers must prioritize productivity and flexibility to meet market demands. Holistic solutions including advanced simulation capabilities allow businesses to optimize workflows, simulate different scenarios and refine operations.

Key capabilities

- Software solution to increase planning efficiency, ensuring a seamless multi-vendor fleet integration and compliance of safety standards
- Data-driven workflow optimization to enable an end-to-end transparency over logistics

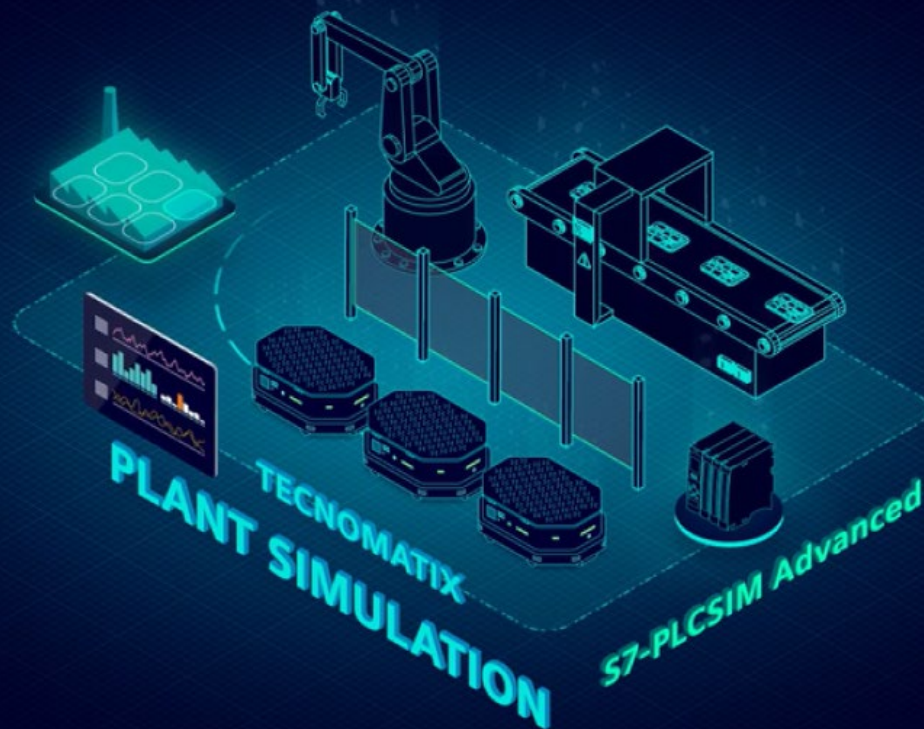
Use cases

[Optimizing AMR/AGV fleet size, layout and material flow](#)

[Open IT Integration for fleet management systems](#)

Optimizing AMR/AGV fleet size, layout and material flow

How to leverage data for planning, validation, and commissioning of AMR fleets?



Challenge

- Decisions based on intuition and experience in layout and resource allocation can inflate costs
- Validation of fleet control systems often happens post-implementation, risking costly changes during commissioning and impacting project profitability
- Due to constraints like time, expense, and practical limitations, heightening risks during on-site commissioning affecting fleet performance

Solution

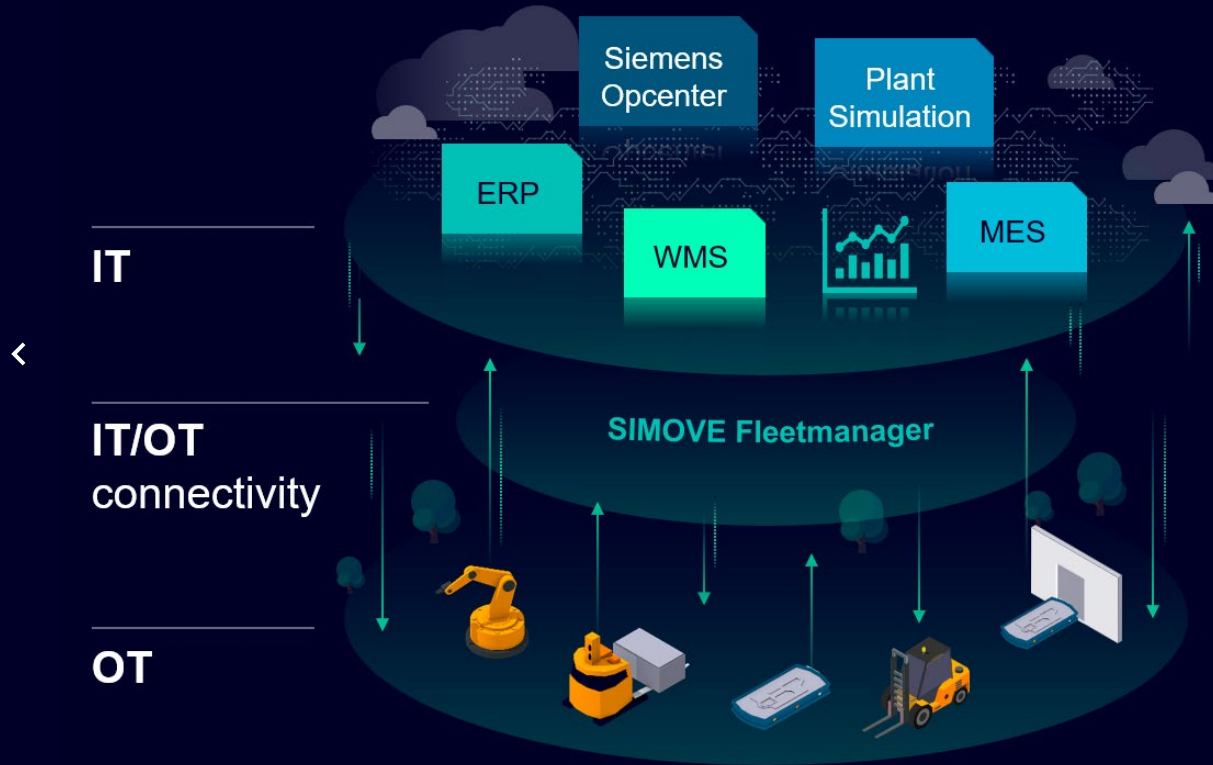
- A production plant is modeled with the help of Tecnomatix Plant Simulation, a simulation tool for accurate and holistic planning, regardless of the traffic control system
- This model is used to check whether the required production cycle times are met, investigate the impact of different fleet sizes and layouts on achievable throughput, validate the setup, program and parameters of the fleet control system
- The simulation environment can be reused during development of the fleet control system, when defining efficient algorithms for traffic rules

Benefits

- Informed investment decision
- Risk reduction
- Fast commissioning

Open IT Integration for fleet management systems

How to ensure an efficient workflow management?



Challenge

- Diverse IT environments (e.g., MES, ERP, WMS) often lack standardized interfaces, complicating seamless integration for effective material flow management
- Coordinating material flow between various shopfloor components, such as SCADA systems, machines, and conveyors, poses challenges due to inconsistent communication protocols with fleet management systems

Solution

- A standardized interface between the fleet control system and IT systems, such as MES, WMS, or ERP, enables efficient and reliable interoperability
- SIMOVE Fleetmanager simplifies and streamlines the process by offering a consistent, scalable interface, reducing development time and ensuring seamless communication across systems

Benefits

- Seamless integration
- Real-time data synchronization
- Maximized efficiency



Consumer

Provide a convenient and accessible platform for purchasing dairy products



● DT Traceability & Lifecycle Intelligence

Business objective

Supermarkets are the primary point of sale for dairy products. They connect dairy producers with consumers, ensuring product quality and safety, educating consumers, and responding to market demands and trends in the dairy industry.

Key capabilities

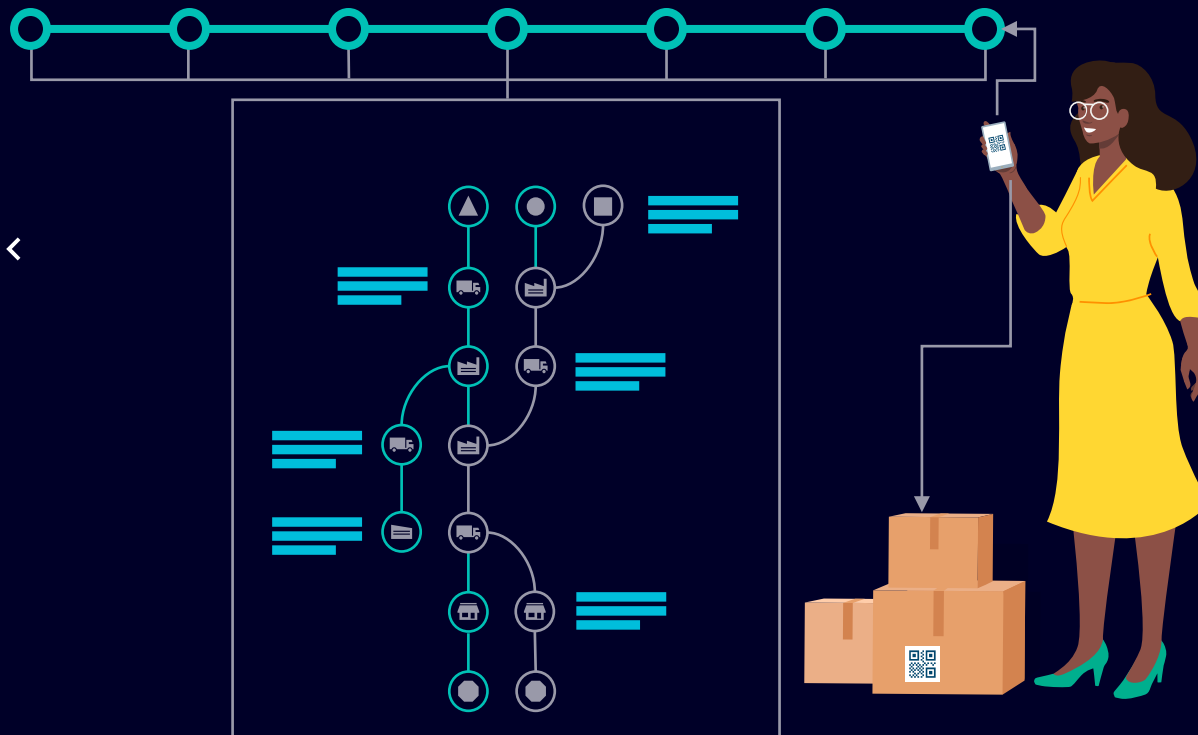
Transparency and accessibility of data

Use cases

[Traceability](#)

Traceability

How to ensure auditability of products?



Challenge

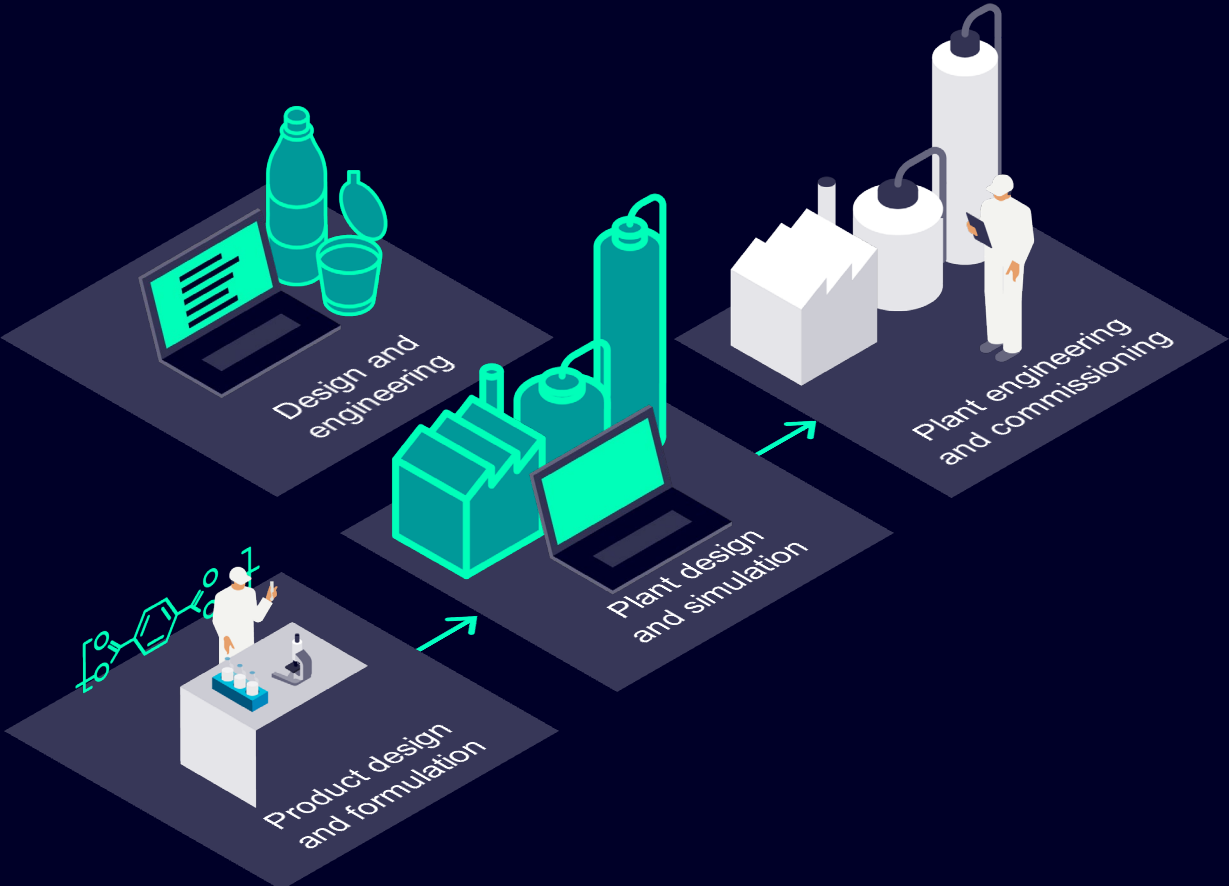
- Lack of transparency in own value chain regarding environmental footprint
- Quicker and more precise reactions in case of recalls
- Fulfill governance law and legal regulation

Solution

- Traceability with Opcenter EX links meta-data from your production and the whole value chain to make data quickly accessible through the built-up genealogy
- It utilizes a managed blockchain system, connectivity elements to required data sources and a user application for information retrieval

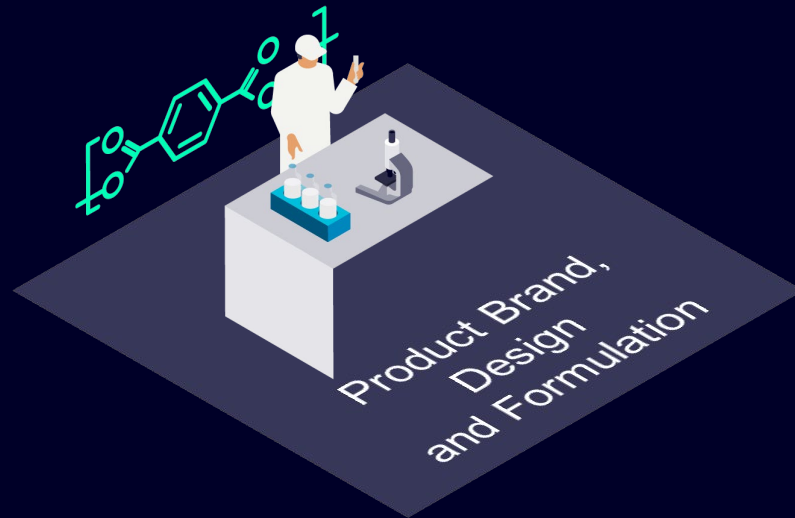
Benefits

- Create transparency and data accessibility across the complete value chain
- Save time and costs by creating knowledge of lifetime history of a product and efficiently tracing down quality issues
- Speed up recalls to comply with governmental regulations and consumer safety to avoid costs and reputation loss



Product Brand, Design & Formulation

Constantly checking and improving product recipes through laboratory testing and analysis



- DT Integrated Lifecycle Management
- DT Enterprise Recipe Management

Business objective

Product recipes are constantly checked and improved. In laboratory environment various tests are conducted to find optimization possibilities which enhances the final product quality.

Key capabilities

- Simulated product design for a streamlined development process
- Digital lab capable of providing optimal formulation conditions

Use cases

[Manage product specification](#)

[Deliverable Driven Planning](#)

[Digital twin of plant-based protein formulations](#)

[Recipe Lifecycle Management](#)

[1-click transfer to shopfloor system](#)

Manage product specification

How to handle product specification and requirement management?

Challenge

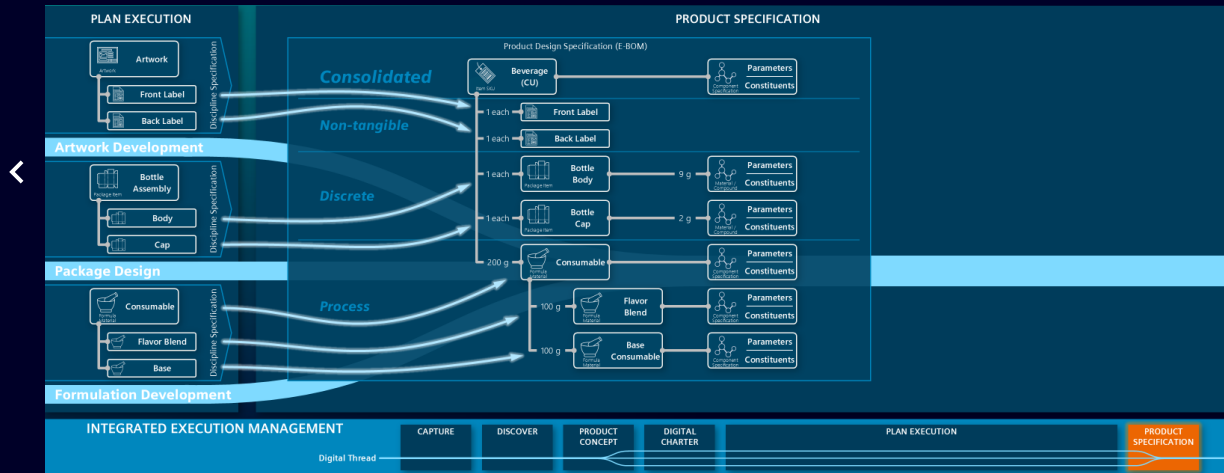
- After an idea for a new product has emerged, requirements come from a variety of sources: governmental regulations, industry standards, company mandates, market needs, contractual commitments, and consumer expectations
- Keep up with the ever-changing internal and external requirements, update and share product requirements within your product development, manufacturing teams and supply chain

Solution

- Teamcenter ILM provides centralized data and process management that enables design, development and production teams to work together using a single source of information

Benefits

- Capitalize on creativity by funneling captured ideas into successful products
- Ensure to capture all context during the initial stages of development
- Identify product strategy and define possible product variants
- Define and approve all requirements for feasibility and manufacturability



Deliverable Driven Planning

How to optimize the launch of new products?

Challenge

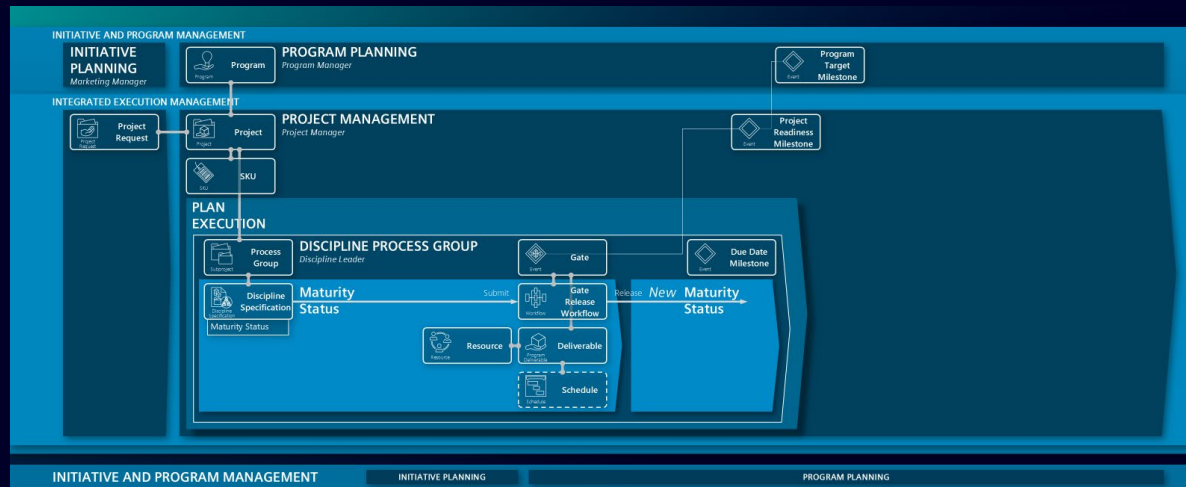
- Launch new product initiatives in the food and beverage industry faster
- Increase the number of products launched to the market

Solution

- Teamcenter ILM to Implement advanced planning that enables deliverables to be completed in parallel rather than sequentially
- Teamcenter ILM enables you to use agile execution methodologies of plans for product introduction

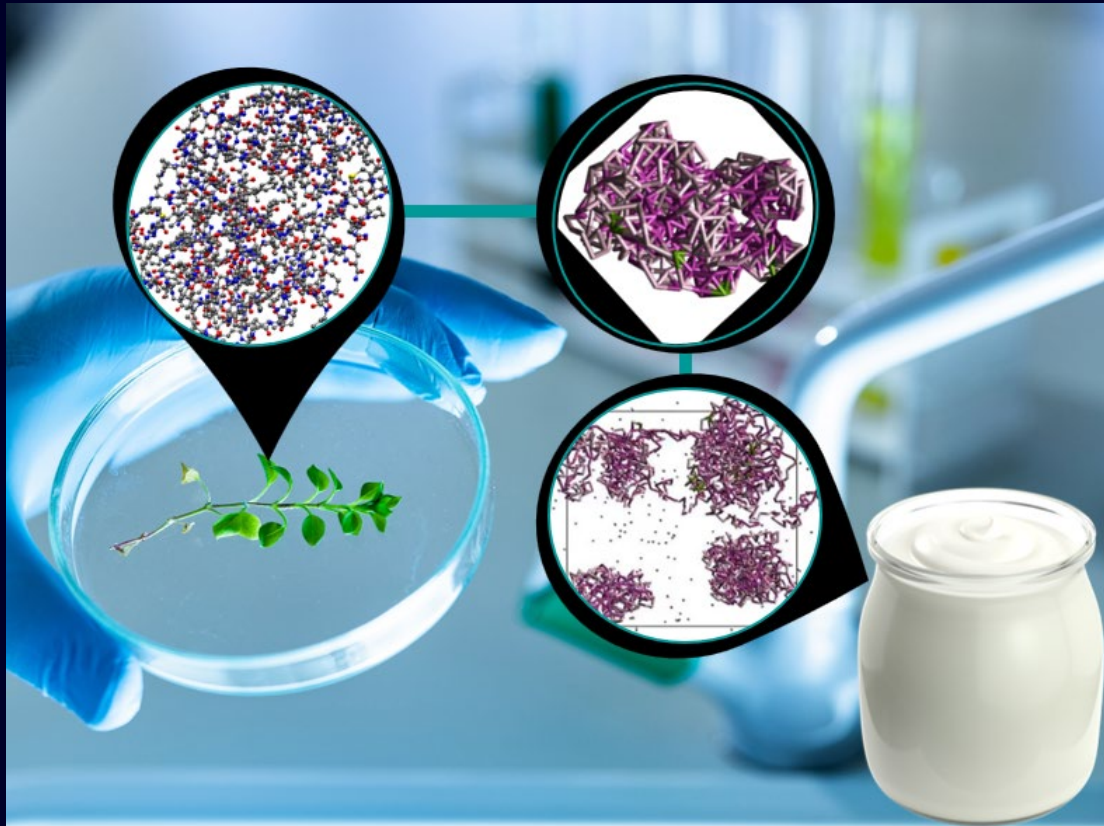
Benefits

- Navigate from brand to related campaigns and check opportunities from programs associated with campaigns
- Raise and monitor new project requests to commercialize opportunities and define windows of opportunity
- Demonstrate visibility to program planners, check progress on new product development and capture/communicate outbound requirements and claims



Digital twin of plant-based protein formulations

How to accelerate the development of sustainable food formulations?



Challenge

- Control the formation and the properties of the viscoelastic gluten network
- Solubilize the highly viscous wheat protein formulations
- Prevent wheat protein aggregation in early discovery phase to mitigate processing problems in plant-based protein formulations

Solution

Use Simcenter CULGI to create a digital lab capable of providing optimal formulation conditions (i.e., surfactant/additive chemistry and concentration)

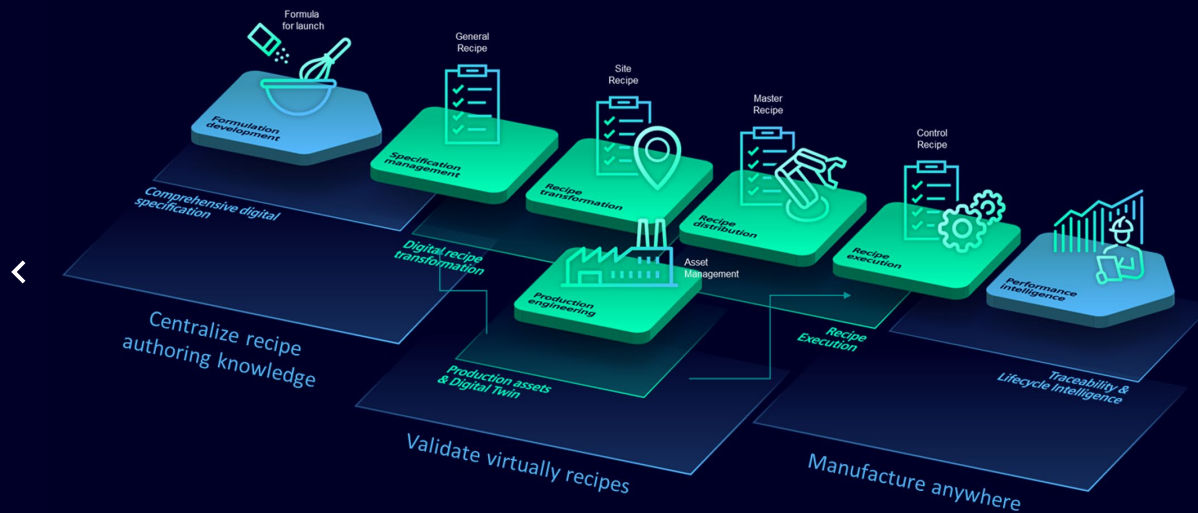
- Chemical simulations to solubilize wheat protein (viscosity decrease)
- Solubilize wheat protein to enhance process development and dough mixing strength

Benefits

- Rapidly identify optimal formulation conditions without costly experimentation

Recipe Lifecycle Management

How to optimize the capability in the manufacturing factories?



Challenge

- Food and Beverage companies need to know the status and capabilities of all their manufacturing facilities, plants, lines, cells and machines.

Solution

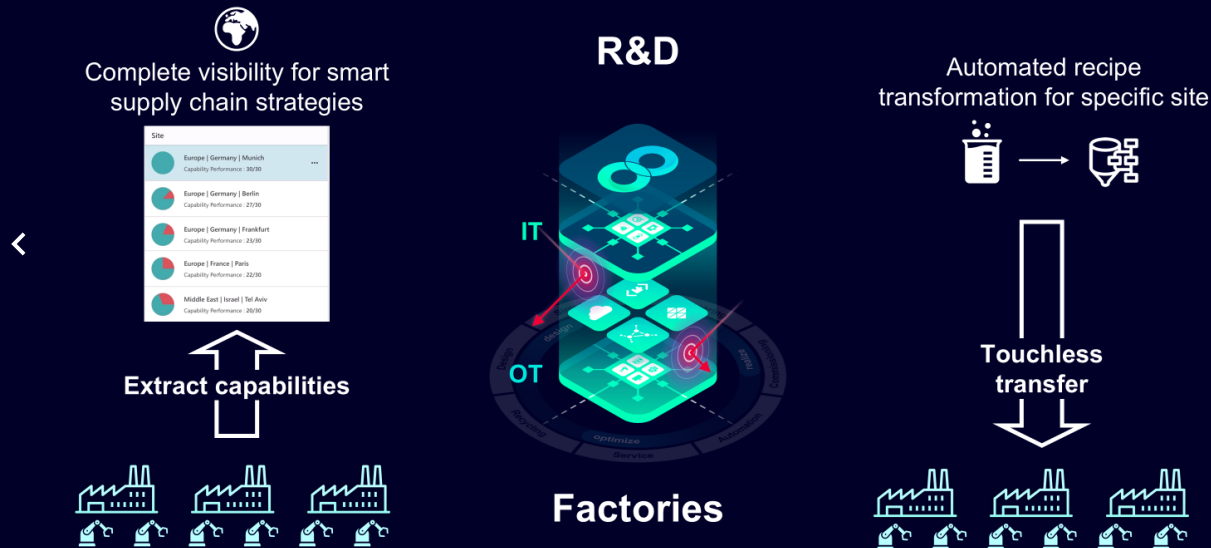
- Teamcenter manufacturing asset management identifies and stores equipment skills, status and all relevant engineering information about the manufacturing assets
- This information is used to check the manufacturing feasibility of a recipe and to transform automatically the recipes

Benefits

- Effectively manage all plant resources and their lifecycle
- Understand the equipment capabilities and operating ranges
- Can be synchronized with asset in-service information

1-click transfer to Shopfloor system

How to optimize the transferring of recipes to other plants?



Challenge

- Food and Beverage company need to scale-up recipes from R&D laboratory to manufacturing in order to produce a new product in an existing or new plant.

Solution

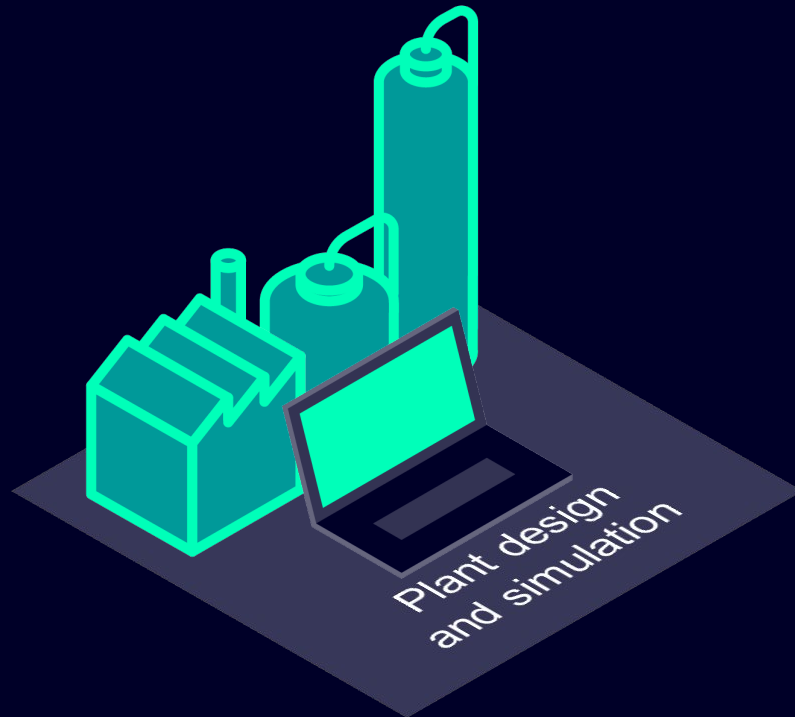
- Teamcenter Enterprise Recipe Management digital platform centralizes all recipe authoring knowledge automatically modifying them for scale-up across plants based on pre-defined rules.

Benefits

- Standardized process to define the manufacturing recipe and automate scale-up based on plant-specific capabilities
- Possibility to validate virtually recipes in a fraction of time to reduce trials
- Ability to Manufacture Anywhere to help you to proactively look for the best manufacturing options, anywhere in the world

Plant Design & Simulation

Implement systematic planning and design principles based on simulation



- DT Smart Manufacturing
- DT Advanced Machine Engineering

Business objective

Systematic planning and design of the manufacturing processes and infrastructure is required to produce dairy products. It involves the design and layout of the entire dairy plant, including the equipment, machinery, utilities, and facilities needed to process milk and transform it into various dairy products. Use simulation as an important lever to minimize risk and keep production timeline and budget.

Key capabilities

- Simulate behavior of complete dairy plant
- Design and optimize production line layouts in a 3D environment

Use cases

[Validate and optimize plant performance](#)

[Design and validate production line layouts](#)

[Reduce efforts and shorten time-to-market of the drive system](#)

Validate and optimize plant performance

How to evaluate production strategies through virtual commissioning?



Challenge

- Errors detected on-site can be very costly and time-consuming to resolve
- High efforts for coordination and integration of involved departments regarding concepts, handshakes, code quality etc.

Solution

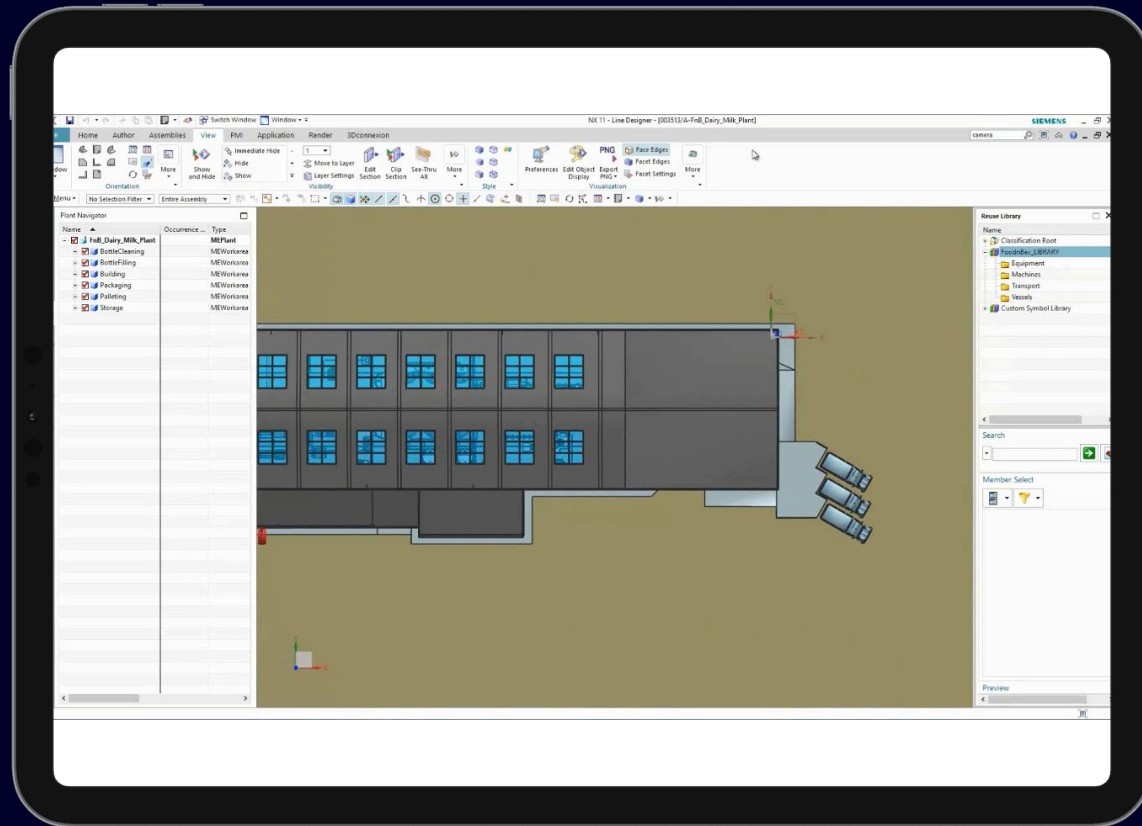
- The behavior of complete plants is modeled with Tecnomatix Plant Simulation
- This simulation model is then connected to S7-PLCSIM Advanced running the automation code
- With Tecnomatix Plant Simulation various scenarios like changing loads or random failures can be simulated

Benefits

- Informed investment decisions for evaluation and optimization of full system behavior
- Increase plant performance by easy identification of logic issues
- Reduced ramp-up times through simulation for virtual integration of PLC systems with higher controls systems

Design and validate production line layouts

How to explore if planned production lines fit into the existing infrastructure?



Challenge

- Increasing complexity in manufacturing leads to more complex production line layouts
- Utilizing the available factory space in the best possible way

Solution

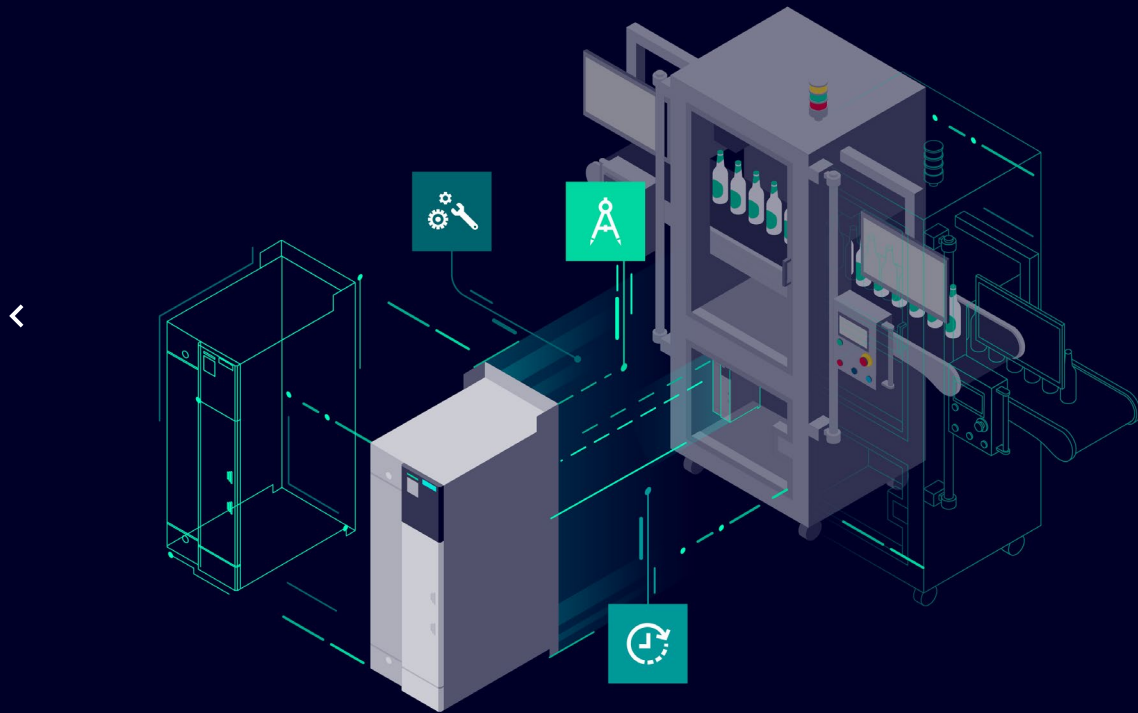
- Siemens NX Line Designer is a powerful tool used for designing and optimizing production line layouts in a 3D environment
- Design and visualize layouts of production lines quickly and associate them with manufacturing planning, without the need for additional software
- Access a fully classified equipment library that can be managed with Teamcenter

Benefits

- Design better production lines faster
- Optimize factory space and maximize capital resource utilization by digitally configuring factory layouts

Reduce efforts and shorten time-to-market of the drive system

How to simulate and optimize drive sizing and engineering?



Challenge

- Long development and engineering phases and unknown behavior of the drive system during physical commissioning and testing
- Delays from identifying issues during or after the physical commissioning

Solution

- Simulation, adaptation and optimization of drive systems with DriveSim Design / Engineer and TIA Portal (Startdrive)
- Virtual commissioning and engineering prior to purchasing or building the machine with SIMIT, Process Simulate, PLCSim Advanced
- Communication between PLC and drive can be verified and validated during the planning phase with TIA Portal (Startdrive), TST SIZER

Benefits

- Reduced testing efforts, time and costs with a higher efficiency
- Faster commissioning, reduced downtime and better productivity
- Shorten time-to-market with Digital Twin and no simulation expert at customer site required

Plant Engineering & Commissioning

Ensure the efficient and safe operation of processing facilities



● DT Smart Manufacturing

Business objective

Plant engineering and commissioning involves setting up dairy processing facilities, installing equipment and ensuring regulatory compliance. Commissioning involves testing and verifying equipment functionality and training staff. It ensures efficient and safe operation, leading to high-quality dairy products.

Key capabilities

- Comprehensive software platform for the entire lifecycle management of dairy plants
- Easy tool to test, validate and report the operation of the automation solution with repeatable quality

Use cases

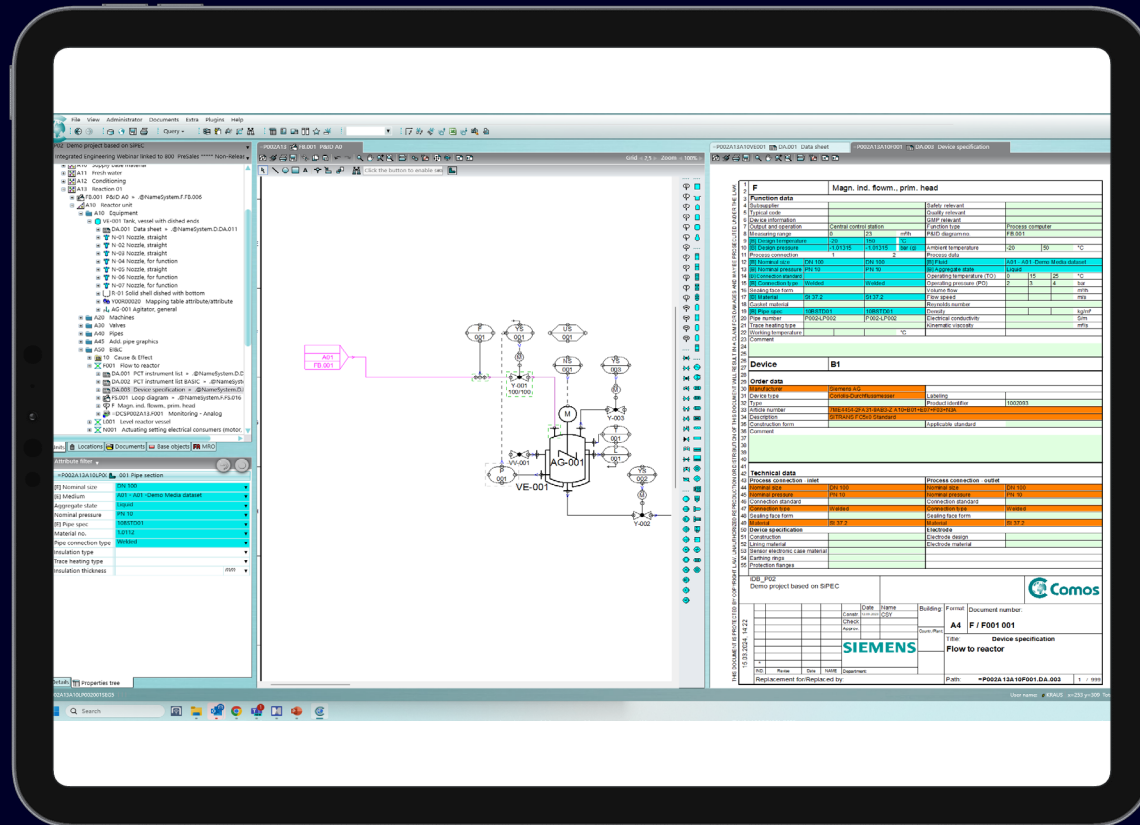
[Integrated basic engineering for P&ID & Equipment design](#)

[Integrated basic engineering for instrumentation & electrical design](#)

[Virtual Commissioning of Automation for Process Plants](#)

Integrated basic engineering for P&ID & Equipment design

How design plant layouts & specify asset requirements?



Challenge

- Data synchronization between engineering disciplines
- Redundant data entries in engineering documentation
- “Silo mentality” between engineering departments

Solution

Use COMOS Platform with additional options: COMOS Web, COMOS SAP Toolkit Library, COMOS P&ID, COMOS ME, SiPEC

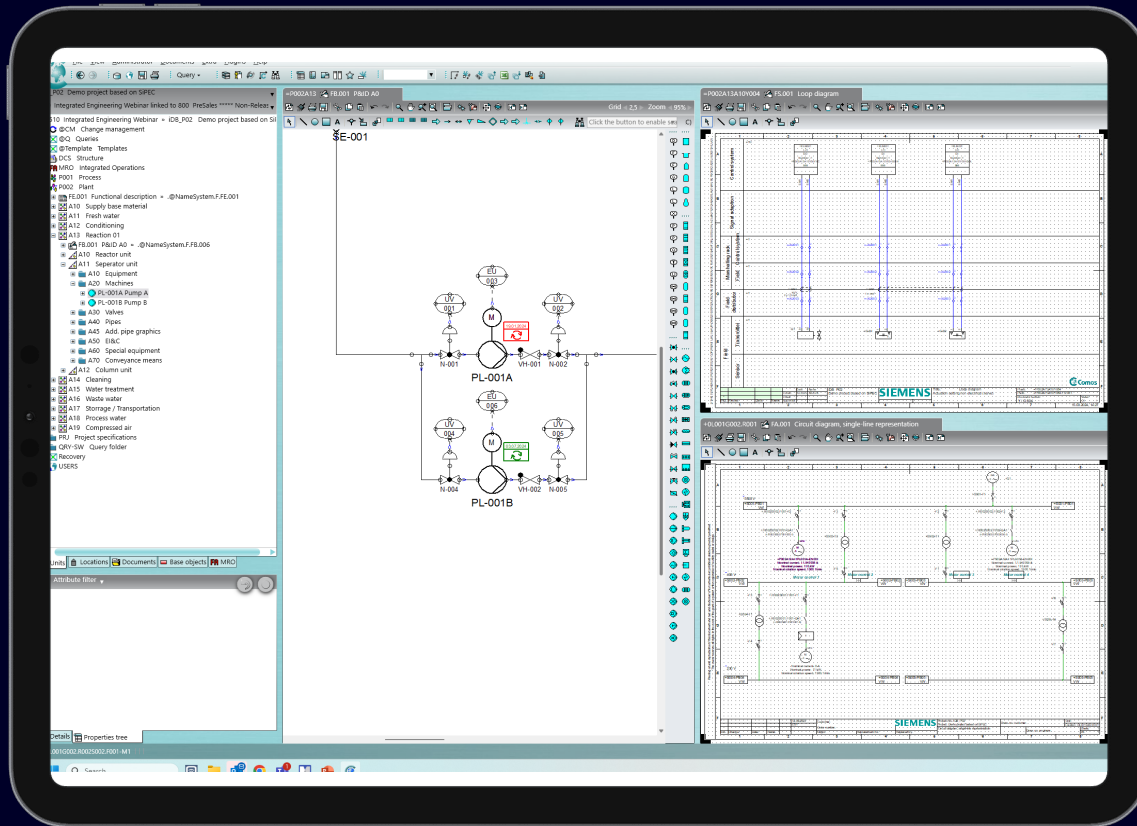
- Basic engineering based on a standardized data model with high level of majority
- Predefined engineering workflows between mechanical engineering, instrumentation and piping
- Template-based engineering (Modularized Engineering) based on design ruleset

Benefits

- Data consistency
- Single-source-of-truth (SSOT)
- Reduction of manual work
- Parallelization of engineering workflows between disciplines and lifecycle phases
- Minimization of errors

Integrated basic engineering for instrumentation and electrical design

How to design plant control from P&ID and specify hook-ups?



Challenge

- Data synchronization between engineering disciplines
- Redundant data entries in engineering documentation
- “Silo mentality” between engineering departments

Solution

Use COMOS Platform with additional options: COMOS E&IC, COMOS ME, SiPEC

- E&I engineering based on a common data model with high level of transparency on requirements from process engineering
- Predefined engineering workflows for efficient instrumentation and electrical engineering based on integrated process engineering data
- Template-based engineering (Modularized Engineering) based on design ruleset

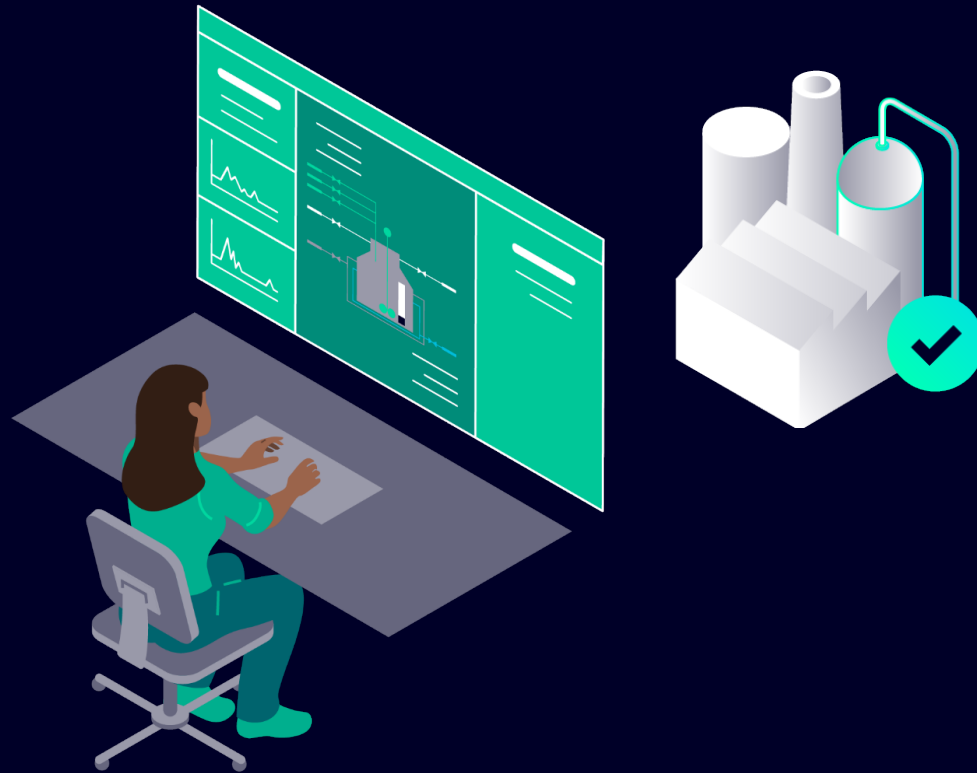
Benefits

- Data consistency
- Single-source-of-truth (SSOT)
- Reduction of manual work
- Parallelization of engineering workflows between disciplines and lifecycle phases
- Minimization of errors

Virtual Commissioning of Automation for Process Plants

How to test and validate processes in a virtual environment?

<



Challenge

- High operational risks during real commissioning; loss of between 2 – 6 % of production capacity due to commissioning tests and operator errors
- Pressure to meet time to market deadlines while guaranteeing quality
- Ensure that the plant operates safely and complies with regulatory and sustainable standards

Solution

- SIMIT Simulation Software enables you to reuse planning and design data to automatically build a simulation model due to tight integration of the entire tool chain
- The simulation model allows the testing of all automation functions stepwise prior to actual commissioning
- Test, validation and reporting the operation of the automation solution with repeatable quality is enabled by SIMIT

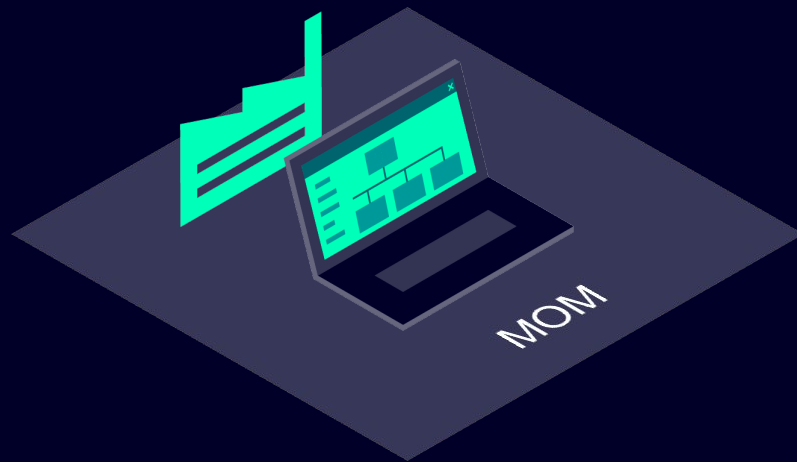
Benefits

- Up to 60%-time reduction for commissioning enables faster time-to-market
- Significantly reduced risk for errors and accidents
- Increased project quality even enhanced by the separation of engineering system and test system



MOM

Streamline operations and achieve operational excellence



● DT Smart Manufacturing

Business objective

To optimize production processes, ensure product quality, comply with regulations, and drive operational excellence, a MOM system is essential. It enables dairy producers to deliver high-quality products to meet customer demands.

Key capabilities

Production planning and scheduling

Use cases

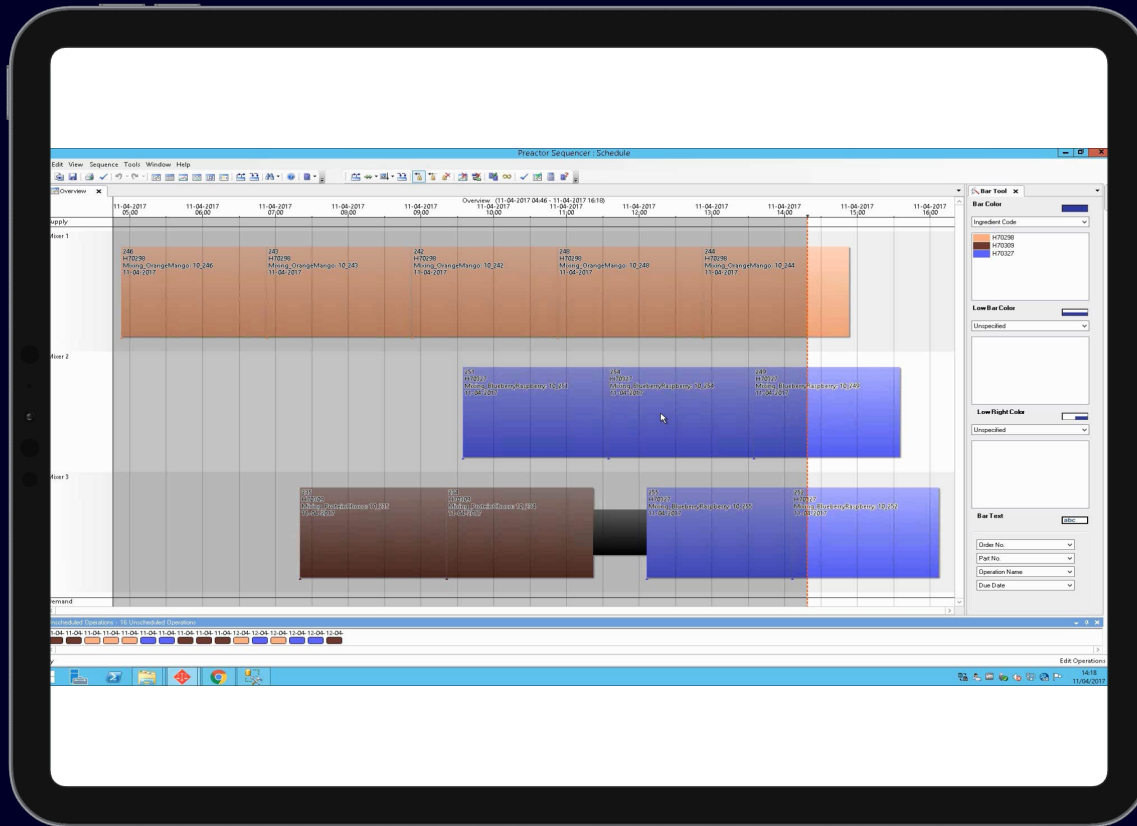
[Dynamic optimization of production order sequences](#)





Dynamic optimization of production order sequences

How to reduce or eliminate nonvalue-added activities?



Challenge

- Manual re-scheduling is introducing performance and efficiency losses
- Scheduling Know-how is limited to a few people
- Respond to shorter lead times

Solution

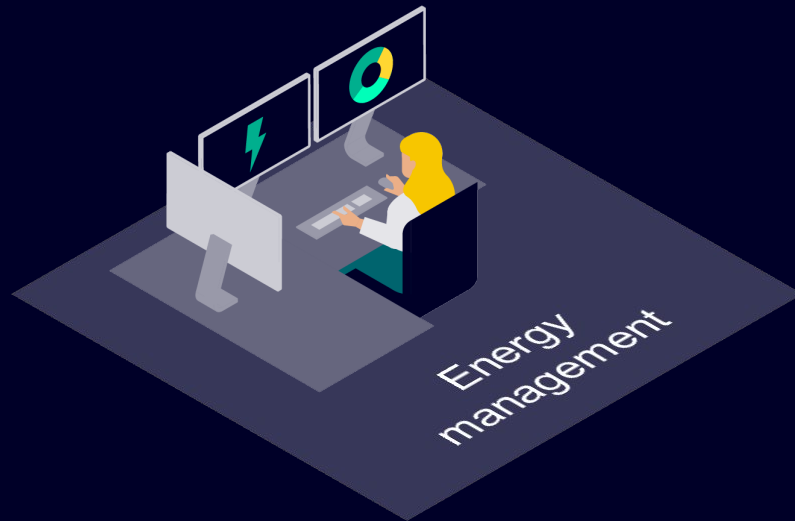
- Opcenter APS helps to meet demands made by customers and beat the increasingly global competition
- Due to the flexible data model and scheduling logic, Opcenter APS products can be set-up to meet a company's planning and scheduling needs no matter what they are
- After planning has released the schedule, the production floor can be controlled with to-the-minute accuracy

Benefits

- Increased time delivery, less waste, increased overall capacity of plant
- Visibility of all orders enables efficient communication and dynamic response for change requests
- Reduced working capital

Energy Management

Support cost savings, sustainability efforts, regulatory compliance, performance optimization and stakeholder engagement



● DT Smart Manufacturing

Business objective

Energy management is essential for cost reduction, environmental sustainability, regulatory compliance, resource conservation and meeting consumer expectations. By optimizing energy usage dairy producers can achieve economic and environmental benefits.

Key capabilities

- Standardized exchange of Product Carbon Footprint data along the supply chain
- Corporate energy management dashboarding with consideration of energy supply
- Energy usage forecasting and efficient measure tracking

Use cases

[Energy Prognosis](#)

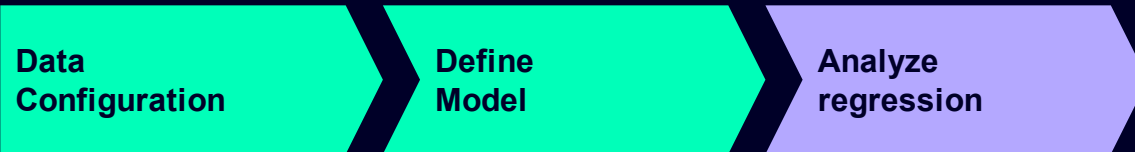
[Measure Tracking](#)

[Machine Transparency](#)

[Analyze carbon footprint](#)

Energy Prognosis

How to foresight your consumption to generate sustainability?



Challenge

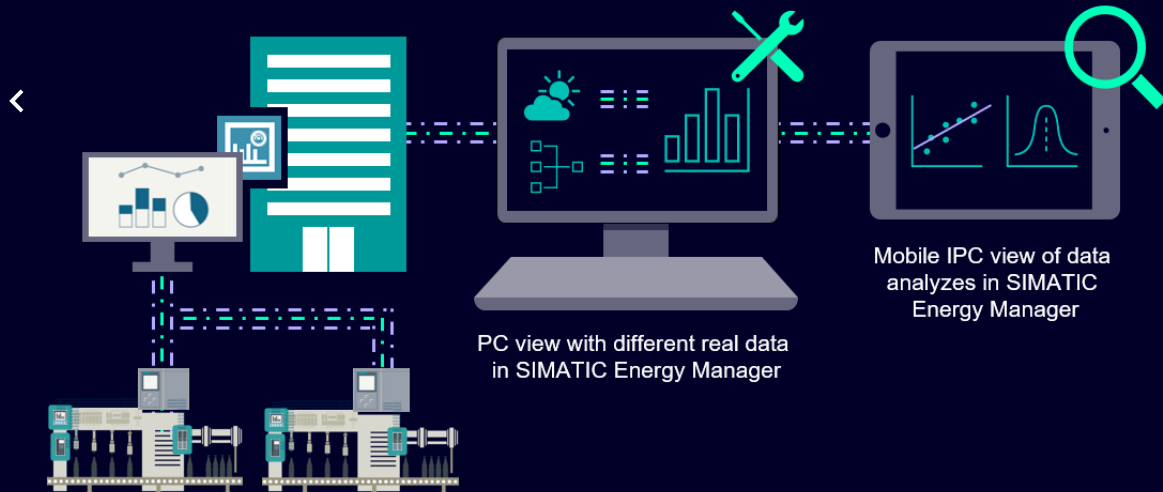
- Create meaningful Energy Performance Indicators
- Get information out of raw data
- Predict future consumption of mediums

Solution

- In the SIMATIC Energy Manager a Multi Variable regression analysis (MVRA) widget can be used to validate data and prognose based on influence factors
- Define the relevant datapoints for the regression analysis to configure a data model based
- Compare baseline forecast and deviation, analyze influence factors to your consumption

Benefits

- Get full transparency over the media consumption per status and per produced piece
- Analyze the optimal production based on consumption baseline
- Identify potential and monitor the effectiveness of efficiency measures



Measure Tracking

How to proof continuous improvement of an efficiency measure?

Implement Energy
Efficiency View

Define
Measures

Compare and
document
with actual data



Challenge

- Track costs and improvements of an efficiency measure
- Reduce the number of tools for documentation, acquiring and calculating costs and measures
- Verify and proof an efficiency improvement to pass an audit

Solution

- Use Energy Efficiency View module in SIMATIC Energy Manager to compare current and demanded measures
- Track the performance of different goals e.g., CO2 savings
- Compare costs and demanded measures to calculate amortization based on real data. Reports can be sent automatically
- View the actual performance in Web Client of SIMATIC Energy Manager

Benefits

- Track and documents costs and improvements of an efficiency measure
- Document future measures and the costs, to decide the right time for the investment
- Track the performance over time

Machine Transparency

How to visualize the sustainability and efficiency of your machine?



Challenge

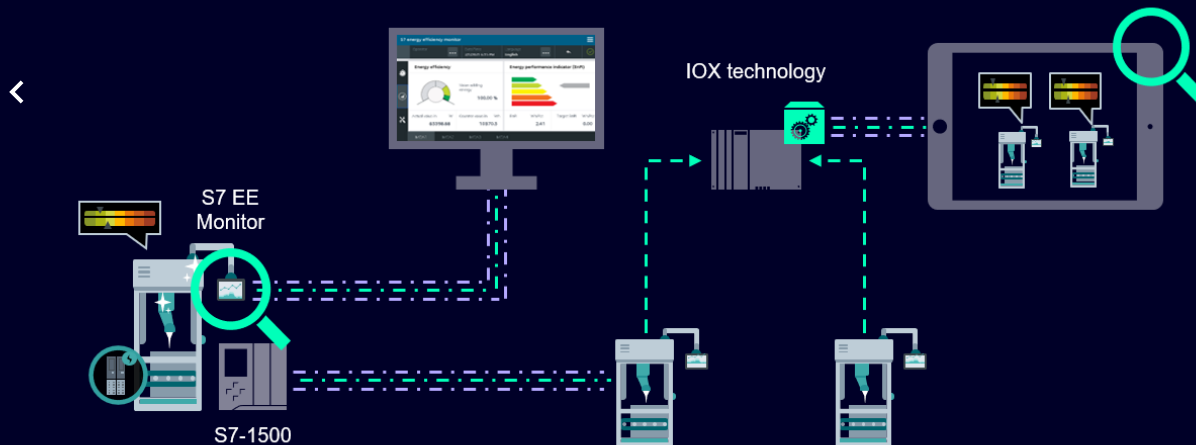
- Comparable consumption data over all machines
- KPI calculation based on value-add consumption and production
- Device independent visualization for office employees

Solution

- Measuring of machine data using the Energy Efficiency Monitor on the PLC and connecting the datapoints
- Visualization of consumption data on the machine panels
- Visualize consumption data to energy and sustainability managers and other stakeholders outside the factory level

Benefits

- Track the performance of a machine over time
- Monitor the effectiveness of efficiency measures
- Compare similar machines from different vendors
- Media consumption during non-value adding times is shown



Analyze carbon footprint

How to make the CO₂ footprint of products transparent and available?



Challenge

- Calculation of the Product Carbon Footprint for each produced good: no standardized way to exchange data with supply chain
- Complex calculation of the Corporate Carbon Footprint

Solution

- SiGREEN: Standardized way to exchange Product Carbon Footprint data along the supply chain, automated tool for calculation for produced goods
- SIMATIC Energy Manager: Corporate Carbon Footprint dashboarding, consideration of energy supply

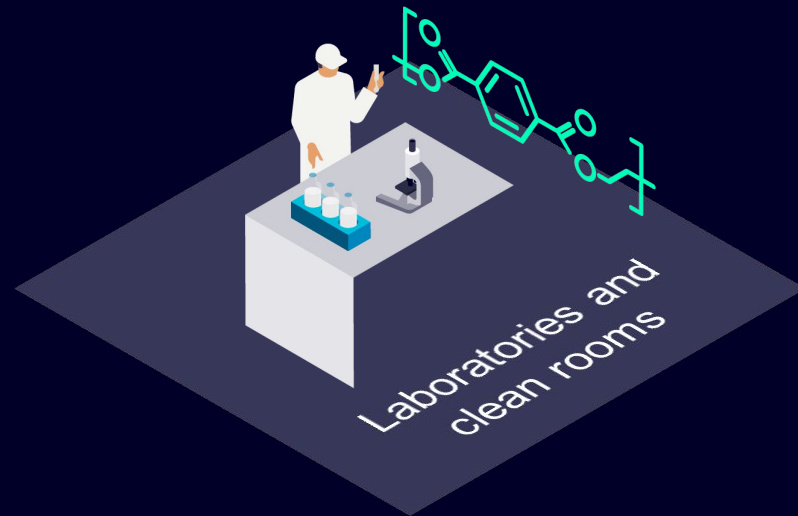
Benefits

- Simplified, automated calculation
- Standardized way of exchanging data
- Up-to-date data visualization for transparency and tracking



Laboratories & Clean rooms

Maintain high standards, comply with regulations



● DT Enterprise Recipe Management

Business objective

Ensure the quality and safety of dairy products. This involves conducting tests to meet quality standards and regulatory compliance, optimizing production processes by analyzing samples and supporting product development and shelf-life testing.

Key capabilities

Quality data management with integrated quality sampling and laboratory equipment integration

Use cases

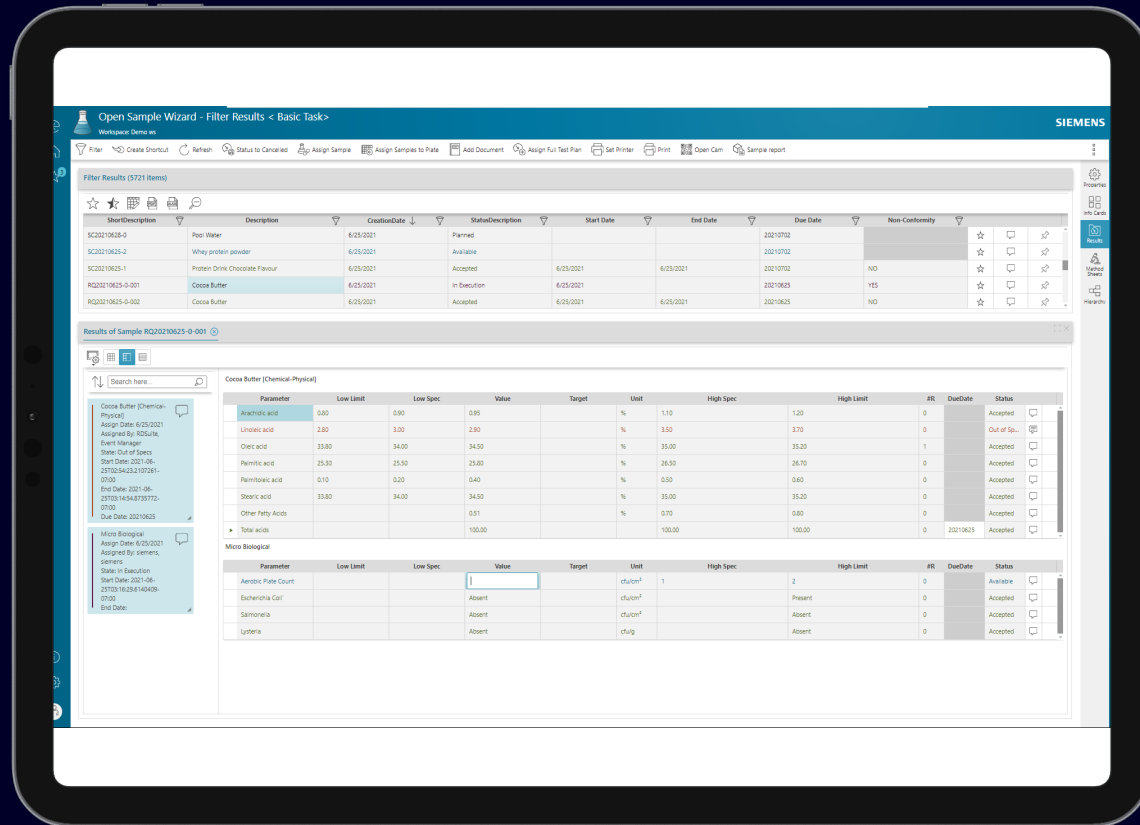
[Assure product quality with the integrated Laboratory Information Management System](#)

[Smart Financing for Laboratories and clean rooms](#)



Assure product quality with the integrated Laboratory Information Management System

How to ensure product safety and meet regulatory compliance?



Challenge

- Consistent quality of finished product must be ensured at all time
- Clear quality specifications need to be established
- Management of supplier product quality

Solution

Manage product quality data with the Laboratory Information Management System (LIMS) from Opcenter RD&L

- Streamline quality data collection, analysis and reporting
- Manage workflows, instrument calibration and maintenance
- Comprehensive documentation and automated validation checks

Benefits

- Increased efficiency in data quality checks due to automated and standardized laboratory workflows
- Increased product safety by ensuring accurate and reliable testing of raw materials and finished product
- Following regulatory compliance by using automated validation

Smart Financing for laboratories and clean rooms



Challenge

- High CAPEX for modern lab and clean-room equipment
- Rising regulatory requirements and need for accurate quality testing
- Outdated systems slowing compliance and product release

Solution

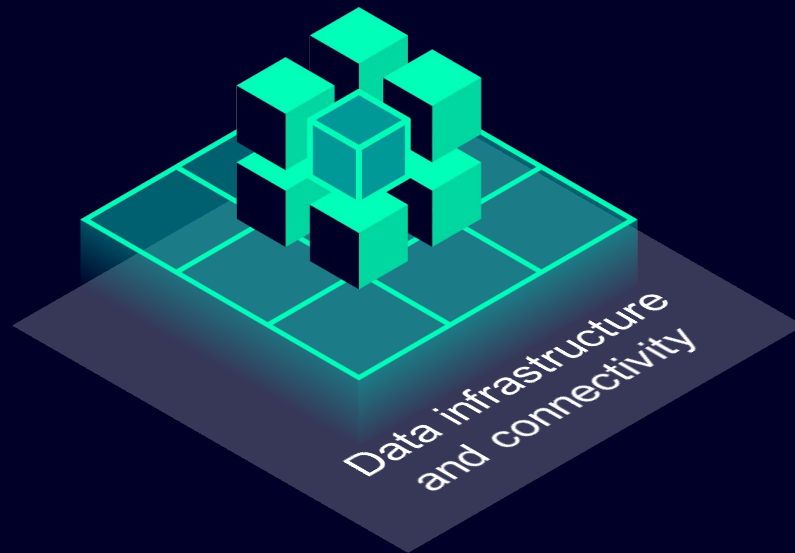
- Equipment & Technology Finance for lab instruments and monitoring systems without upfront investment
- Working Capital Finance to support validation and commissioning
- Corporate Lending: Loans for modernization and expansion projects

Benefits

- Faster compliance and improved product safety
- Predictable costs with reduced CAPEX burden
- Scalable, future-proof quality infrastructure

Data infrastructure and connectivity

Collect, store and analyze data



● DT Smart Manufacturing

Business objective

Secure end-to-end communication between IT and OT is crucial for digitalization and automation. Data transparency is needed to bridge the gap between the real and digital world, allowing for customization.

Key capabilities

- Robust and secure networking solutions for industrial applications to ensure reliable and efficient communication in industrial environments
- Efficient and reliable data exchange between legacy devices and IT systems using a data broker with various connectivity protocols

Use cases

[Network commissioning in discrete industries](#)

[Network operation and optimization in discrete industries](#)

[Maximum transparency for industrial networks](#)

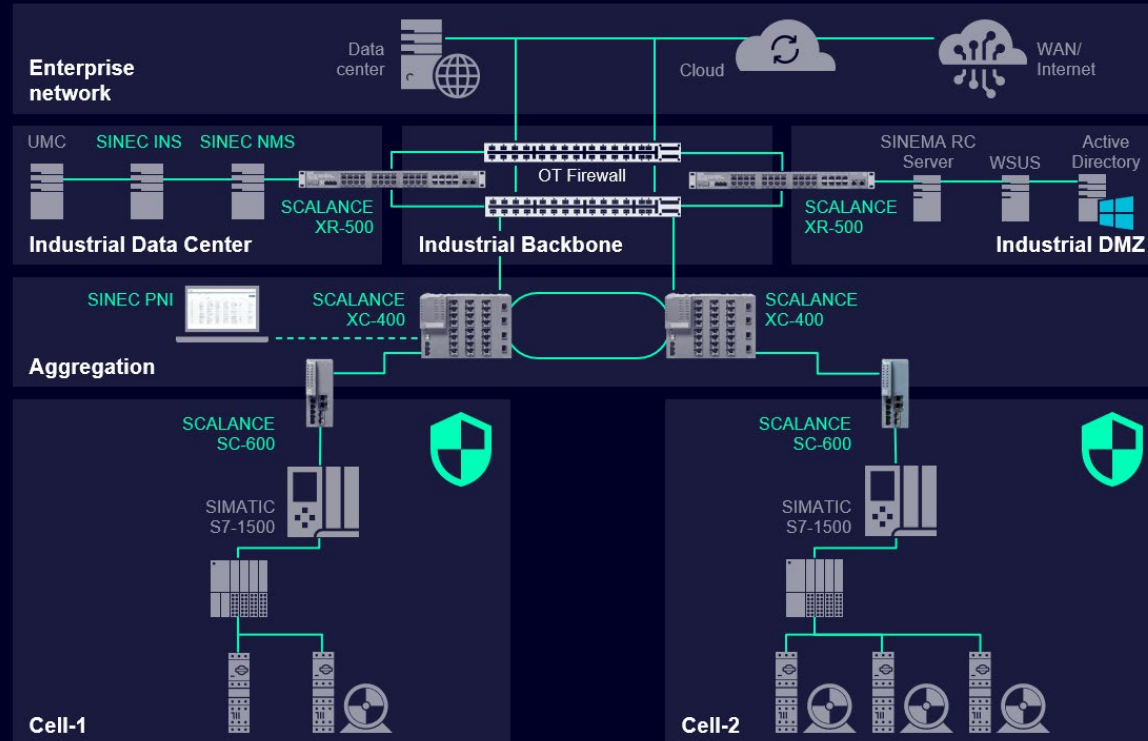
[Easy remote access](#)

[Shopfloor connectivity](#)

[Managed IT/OT Infrastructure](#)

Network commissioning in discrete industries

How to ensure efficient configuration of the network components?



Challenge

- Short-term adaptations during implementation due to local conditions
- Poor documentation and testing
- Lack of resources and knowledge

Solution

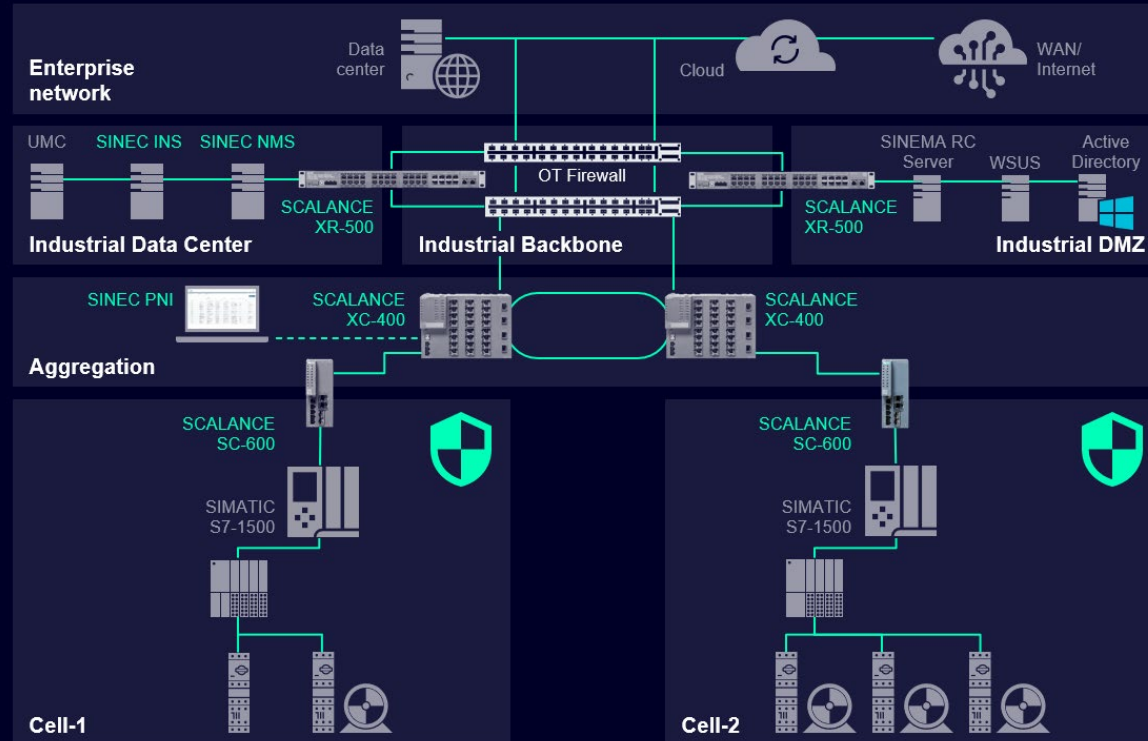
- Easy configuration, commissioning, and integration of SCALANCE network components as well as SINEC software tools
- Configuration interfaces for each target group depending on the application
- On-site and remote implementation services of SCALANCE X/S network components as well as SINEC software by Siemens Professional Services for all network layer

Benefits

- Minimize risks of malfunctions and outages for critical deployments, preventing errors
- Reduced on-site installation times, easy adaption
- Scalable approach of services offerings, verified and documented network commissioning

Network operation and optimization in discrete industries

How to ensure easy optimization and maintenance of the industrial network?



Challenge

- Fast troubleshooting during operation
- Avoid cyber attacks and production downtimes
- Complexity of industrial networks, lack of knowledge and resources

Solution

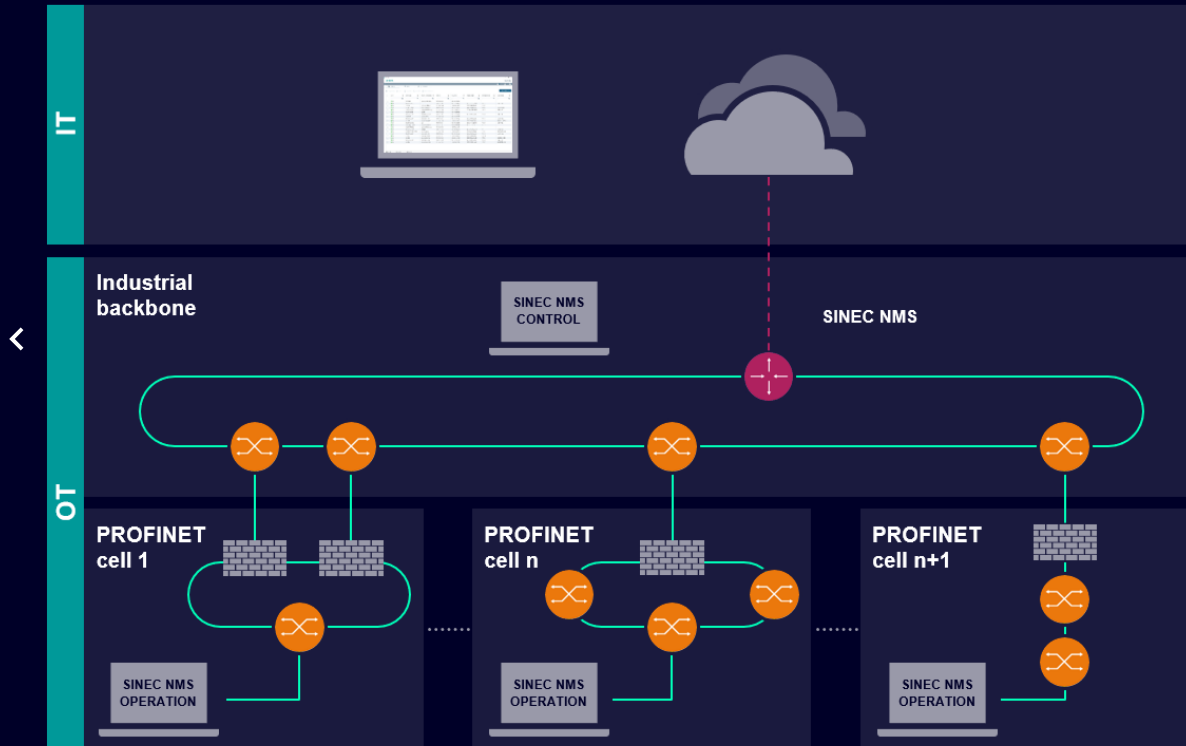
- Convenient topology view in SINEC NMS Operation offers a network overview with all network components
- In case of event or fault, you can quickly react based on fault management function in SINEC NMS
- Monitoring is available for 3rd-party devices based on common standards

Benefits

- Enable high availability through real-time communication and quick response times
- Ensure proven quality and investment protection: 5 years warranty for all SCALANCE products
- Provide early detection of potential upcoming communication issues

Maximum transparency for industrial networks

How to ensure a quick fault detection and a clear documentation?



Challenge

- Lack of transparency due to the increasing number of connected devices
- Huge management and configuration effort
- Data transfer is not monitored or controlled

Solution

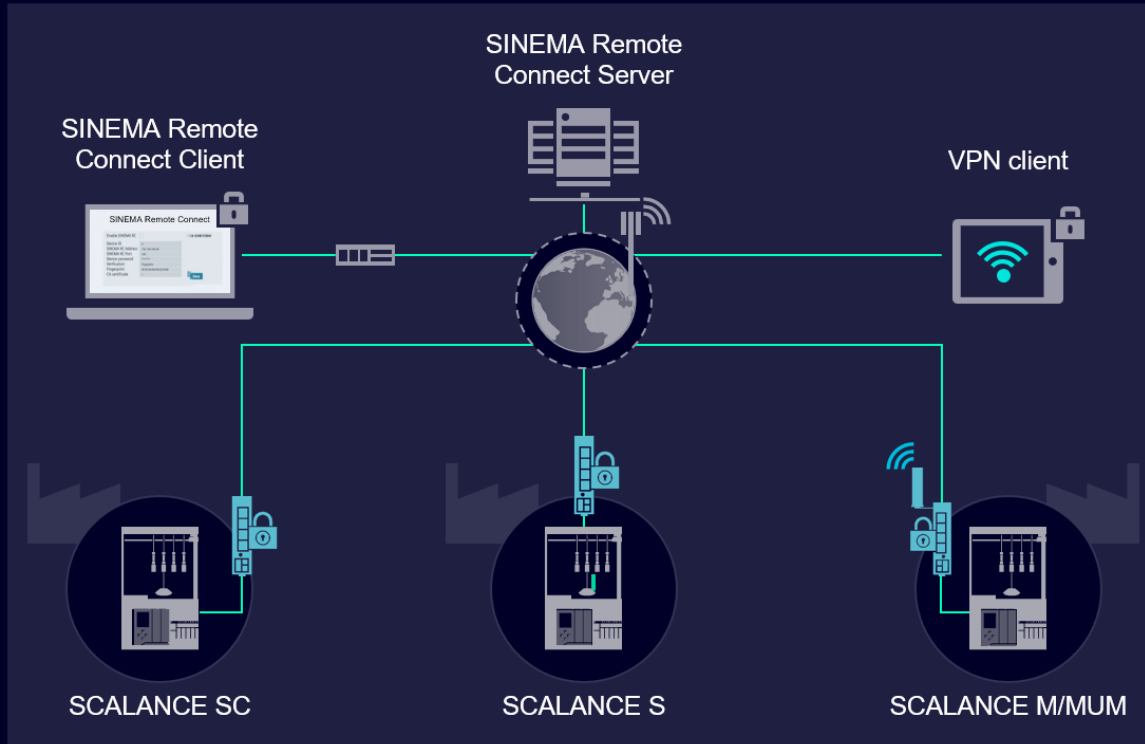
- The SINEC NMS Network Management System is divided into two levels to efficiently manage large-scale networks
- As the central entity, the Control level quickly displays a clear view of the network's overall status
- The SINEC NMS Operations are also managed in the SINEC NMS Control
- The operation levels, in turn, are distributed throughout the network

Benefits

- Achieve complete transparency in your network to react quick
- Increase your adaptability with central network management and initial configuration in a single step
- Benefit from more cost-effective operations and scalability as the network grows

Easy remote access

How to improve configuration and maintenance to avoid downtimes?



Challenge

- Long response times in the event of machine failure
- High travel costs and logistical effort for on-site support
- Production and machine failure leads to expensive production downtimes

Solution

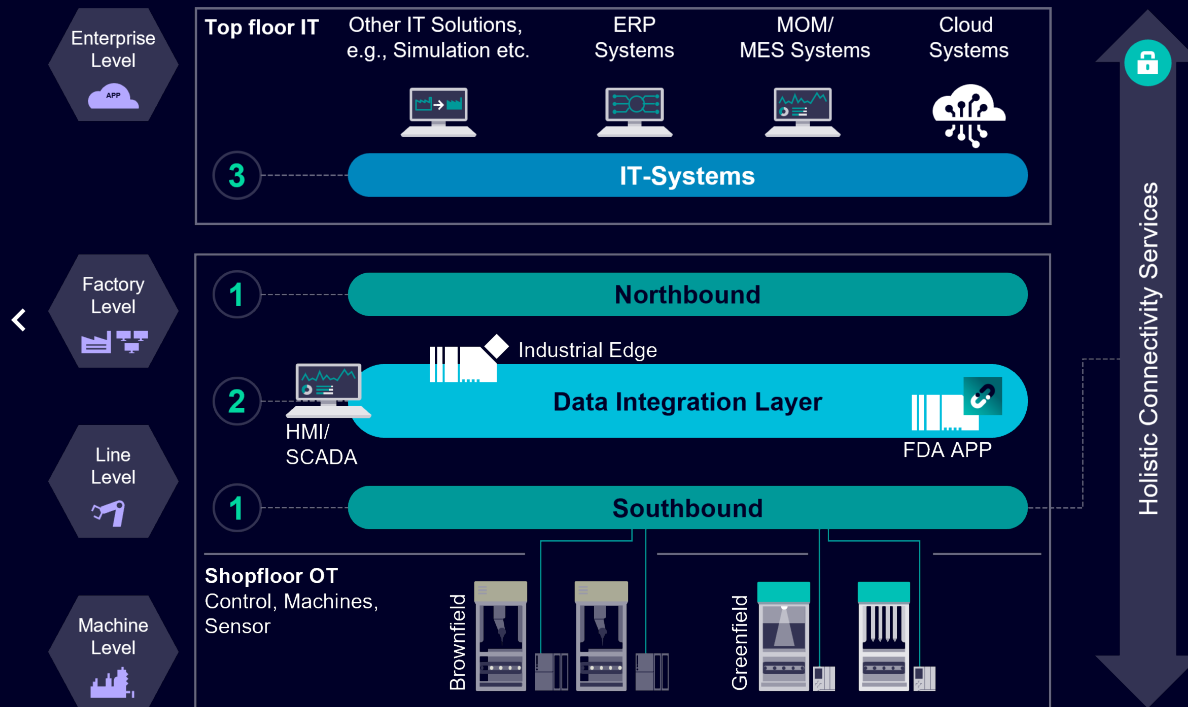
- SINEMA Remote Connect and SINEMA Remote Connect as a Service are management platforms for easy and secure access to remote plants or machines
- Secure connection set-up via certificate-based VPN tunnel between SCALANCE device and SINEMA Remote Connect Server
- Full access to devices in the underlying network to realize remote service support

Benefits

- Flexible operation in virtualized environment or in cloud systems
- Reduce complexity for all users, time savings for service technicians
- Minimize CO₂ footprint thanks to less traveling to perform service in different plants for various locations around the globe

Shopfloor connectivity

How to get data from shopfloor systems?



Challenge

- High effort to connect legacy systems with outdated protocols from different automation vendors
- Lack of convergence between the data generated on the shop floor in the OT environment and the abilities to process and analyze data in IT systems

Solution

- Solution 1: Connectivity solution with Industrial Edge
- Solution 2: Connectivity solution with SCADA
- Solution 3: Connectivity solution with Field Data Enabler PN App
- Solution 4: Industrial Connectivity Services

Benefits

- Enhancing machine transparency by enabling data collection from a broader palette of sources at machine level
- Enabling better machine connectivity and easy integration into new or existing production landscapes
- Allowing IT/OT integration to boost productivity & sustainability by accessing and leveraging all data sources, while also enhancing production transparency at plant level overall

Exemplary: Architecture with connectivity options and technical possibilities

Managed IT/OT Infrastructure

How to run production on a managed IT/OT infrastructure?



Challenge

- Increasing complexity of IT and OT systems
- Lack of skilled workforce
- Unplanned downtime through cyber attacks or failures
- Being compliant with OT security requirements, e.g., NIS 2

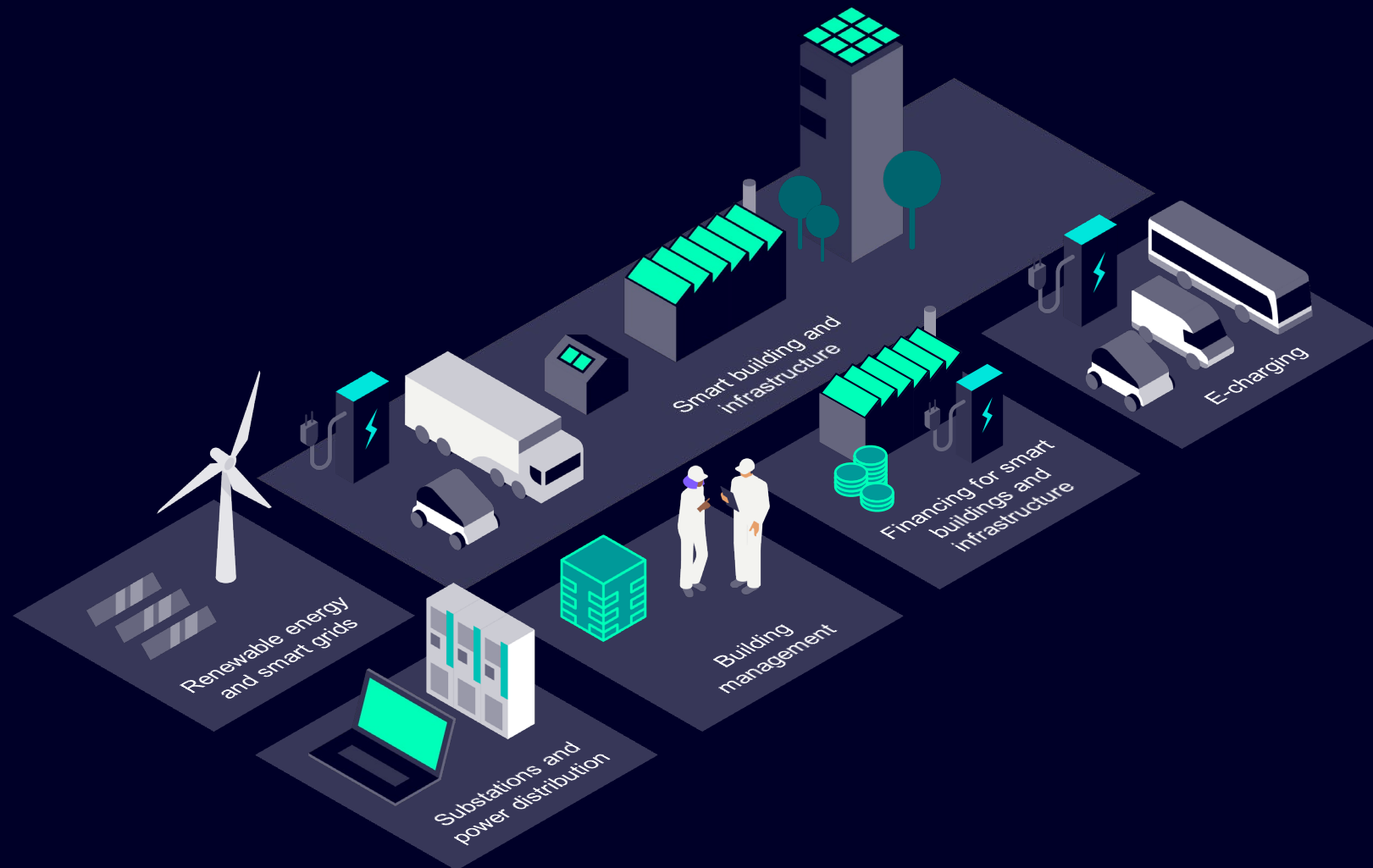
Solution

- Industrial Automation Datacenter – Ready-to-run tailor-made IT infrastructure for OT
- SIMATIC Virtualization as a Service – Future-proof modernization of control systems with a pre-configured virtualization platform
- SIMATIC DCS/SCADA Infrastructure – Pre-configured IT infrastructure for optimized data handling (archiving, backup and restore)
- Industrial DMZ Infrastructure – Secure data exchange between IT and OT based on IEC 62443
- Remote Industrial Operations Services – Remote monitoring and management of your IT/OT infrastructure by IT/OT

Benefits

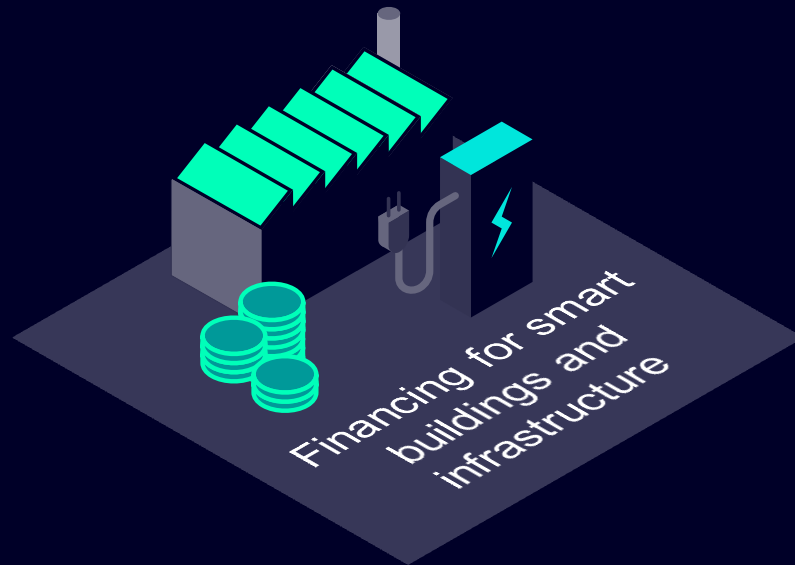
- Ready-to-run infrastructure with system-tested, pre-configured components
- Hyper-convergent IT infrastructure for high performance computing
- Cybersecurity by design
- High energy efficiency and space savings

Smart Building & Infrastructure



Removing Financial Barriers for Smart Building Modernization

Smart Financing Solutions



Challenges

- High upfront investment for energy-efficient buildings and infrastructure
- Pressure to meet sustainability and emission-reduction targets
- Need for resilient, digital, and future-proof systems
- Limited budgets delaying modernization

Solutions

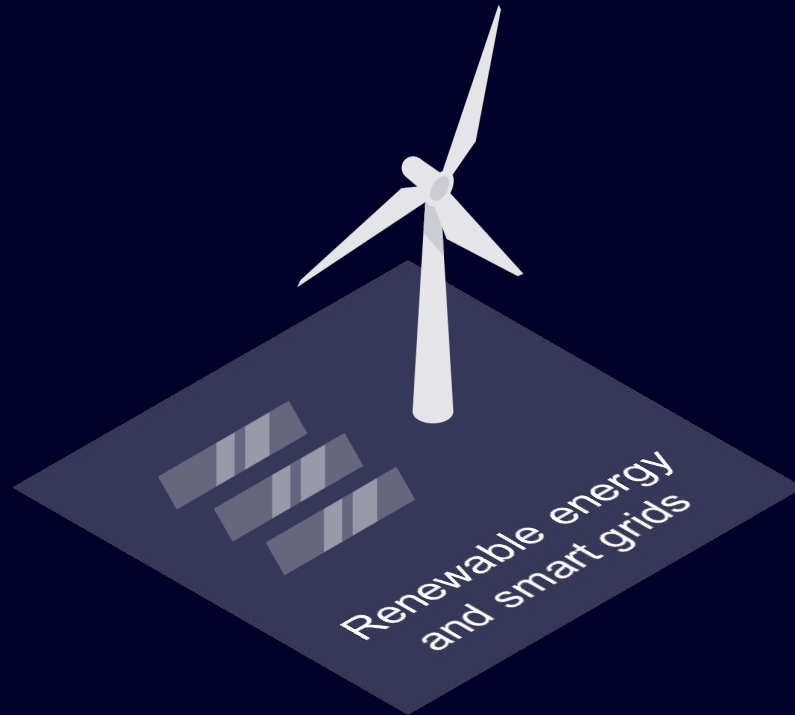
- Decarbonization-as-a-Service – Performance-based models enabling upgrades without CAPEX
- Equipment & Technology Finance – Modernize building automation, energy systems, and EV-charging with OPEX-based payments
- Project & Structured Finance – Bankable solutions for complex energy, microgrid, and infrastructure projects

Benefits

- Accelerated modernization and decarbonization
- Predictable costs and improved cash-flow flexibility
- Lower energy consumption and emissions
- Scalable, future-ready infrastructure

Renewable Energy & Smart Grids

Seamless Integration of Renewable Energy with Smart Grid Technology



● Smart Infrastructure

Business objective

Enhancing efficiency, reliability, and sustainability of energy distribution by integrating renewable energy sources with advanced smart grid technology, thereby reducing carbon emissions, lowering operational costs, and providing consumers with more resilient and adaptive energy solutions. Creating a smart mix of energies used to lower grid fees and overall energy cost.

Key capabilities

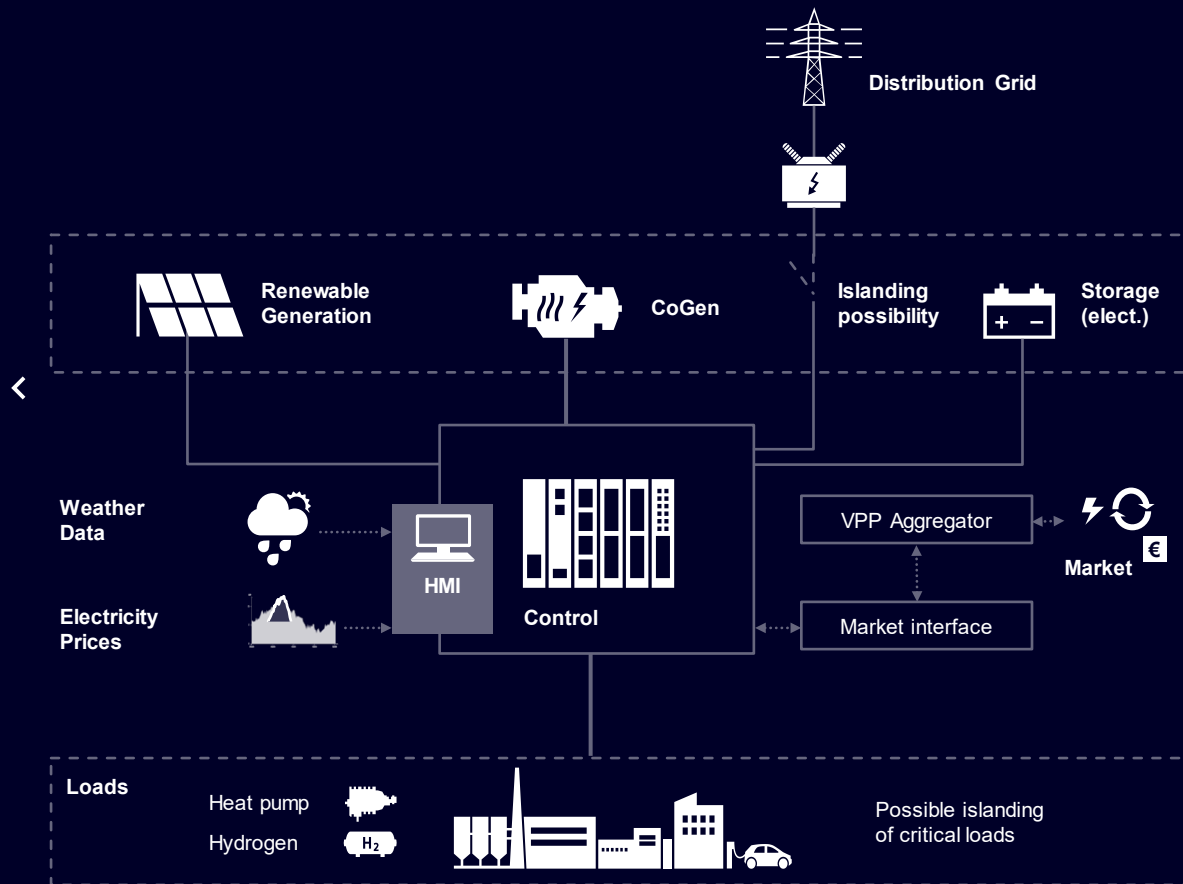
- Optimized Energy Distribution: Implement smart grid technology to efficiently manage and distribute renewable energy, ensuring a stable and reliable power supply while minimizing energy losses and energy cost
- Enhanced Sustainability: Integrate diverse renewable energy sources into the grid, reducing carbon emissions and promoting a cleaner, more sustainable energy ecosystem

Use cases

[Integration of renewable energy source](#)

Integration of renewable energy source

How to integrate renewable energy source efficiently and reduce energy costs?



Challenge

- High energy prices
- Unclear usage of power from the grid
- When to use what kind of energy source

Solution

By integrating renewable energy sources with SICAM Micro grid control and management, Siemens can enable a smart load management to reduce operational cost long term and boost sustainability efforts:

- Smart control logic to use the perfect energy sources on the right time
- Power from the grid usage minimized and reduction in the cost of the grid energy due to peak shavings

Benefits

- Transparency of energy consumption
- Up to 90% reduction of grid connection fees
- Integration of renewable energy sources to your factory

Substations & Power Distribution

Ensuring Reliable Power: The Vital Role of Substations in modern power distribution systems



● Smart Infrastructure

Business objective

Enhancing reliability and efficiency of power distribution networks by upgrading and maintaining substations with advanced technology. Ensuring uninterrupted power supply to residential, commercial, and industrial customers through robust infrastructure and proactive management. Supporting sustainable energy initiatives by integrating renewable energy sources into the power distribution system.

Key capabilities

- Standardized solution to provide energy from the grid to the consumer – prefabricated ready to be connected
- Intelligent and communicative installations to be aware of the power quality or usage and prevent possible interruptions

Use cases

[Power Distribution – from grid to machine](#)

[Premanufactured power distribution system](#)

[Comprehensive transparency from infeed to final circuit](#)

[Easy set-up of energy monitoring system](#)

Power Distribution – From grid to machine

How to distribute power from the grid to your machines for optimal performance?



Challenge

- Aging Infrastructure needs upgrading
- Reliable operation of machines
- Ensuring safety of existing systems

Solution

Siemens offers innovative SF6 free Medium voltage power distribution system that enhance efficiency, reliability, and sustainability across various applications as well as a Holistic app suite to monitor, control and track your entire installation from grid to socket.

Benefits

- Enhanced Energy Efficiency: Reducing operational costs and consumption
- Improved Reliability and Safety
- Seamless Integration of Renewables
- Advanced Monitoring and Control: Providing real-time insights for optimization
- Scalability: Adapting to growing energy demands easily

Premanufactured power distribution system

How to approach power distribution modular, fast, flexible and easy?



Challenge

- Rapid Deployment: Enable quick installation and commissioning
- Space Constraints: Operating in limited or difficult environments
- Aging Infrastructure: Upgrading outdated systems is essential

Solution

Siemens E-House solutions provide modular, pre-assembled power distribution systems that enhance efficiency and flexibility for various applications:

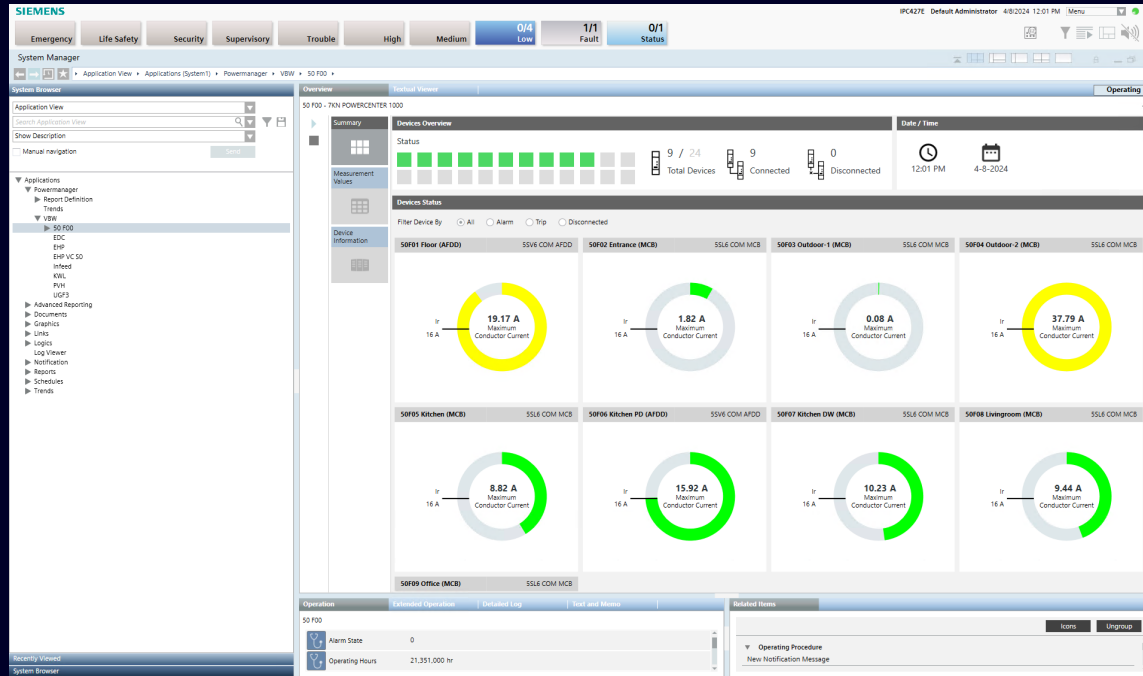
- Rapid Deployment: Quick installation reduces project timelines
- Space Optimization: Compact design maximizes available area
- Enhanced Safety: Minimizes on-site risks during operations

Benefits

- Cost Savings: Reduces capital and operational expenditures
- Time Efficiency: Quick installation on-site
- Enhanced Safety: Lowers risks with reduced on-site presence
- Compact Footprint: Optimizes space usage with modular design

Comprehensive transparency from infeed to final circuit

How to achieve a comprehensive energy management system?



Challenge

- Additional hardware effort due to measuring devices
- Special requirements reg. space
- Compatibility for retrofit

Solution

SENTRON portfolio provides protection and switching devices including measuring and communication capable features from infeed towards final circuit additionally to the measuring devices portfolio.

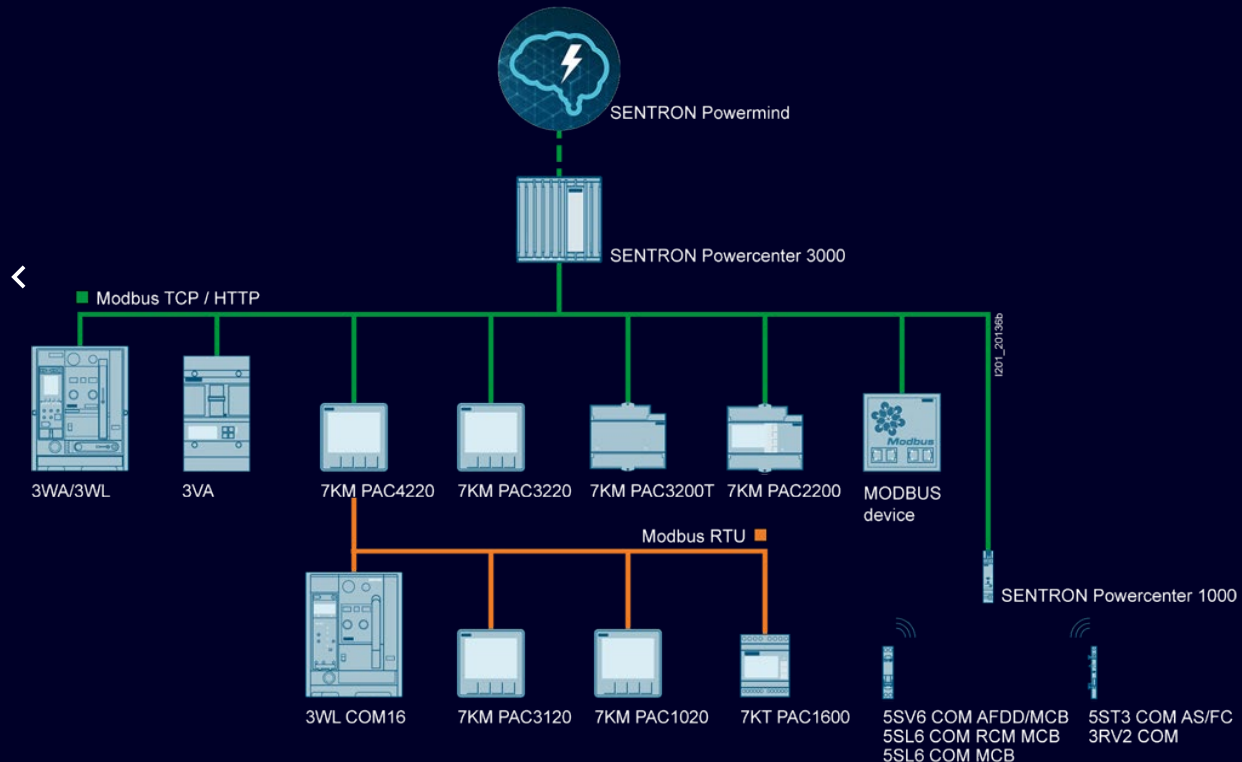
This creates possibilities to be compatible in retrofit solutions, save space and avoid additional hardware in the power distribution systems, while still having access to all relevant data.

Benefits

- Comprehensive transparency: Detailed information from infeed level to individual consumers in the final circuit
- Space savings: Avoidance of many additional devices for measuring equipment
- Reduced efforts: Less efforts for commissioning and parameterization of equipment due to different functionalities combined in the devices

Easy set-up of energy monitoring system

How to set up an energy monitoring system with low efforts in time and limited budget?



Challenge

- Defining a communication structure while connecting various measuring devices
- Access to the collected data
- Time synchronization

Solution

SENTRON Powercenter 3000: a small industrial PC with an energy monitoring system already installed

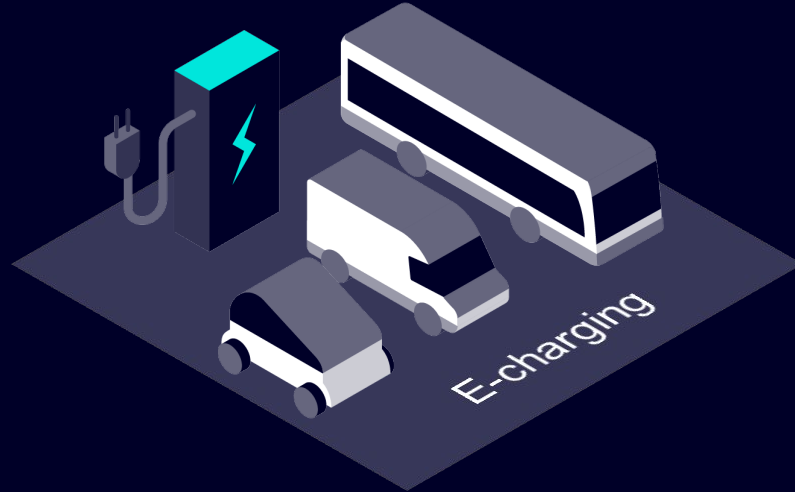
- Intuitive integration of devices via network scan functionality
- Energy data points are automatically stored as 15 min values for more than one year and for up to 212 meters
- Easy integration of sub devices with an integrated network search

Benefits

- Reduced time and effort to deploy a solution
- An easy implementation means less know-how required, making it easier for the personnel to understand and utilize the solution effectively
- Organizations can start realizing the benefits and value of the solution sooner, enabling them to achieve their desired outcomes like more energy efficiency more quickly

E-Charging

Electrifying the car and truck fleet to tackle challenging sustainability targets



● Smart Infrastructure

Business objective

Accelerating the transition to sustainable transportation by developing and promoting electric vehicles and the necessary infrastructure, thereby reducing greenhouse gas emissions, enhancing energy efficiency, and providing consumers with innovative, reliable, and eco-friendly mobility solutions.

Key capabilities

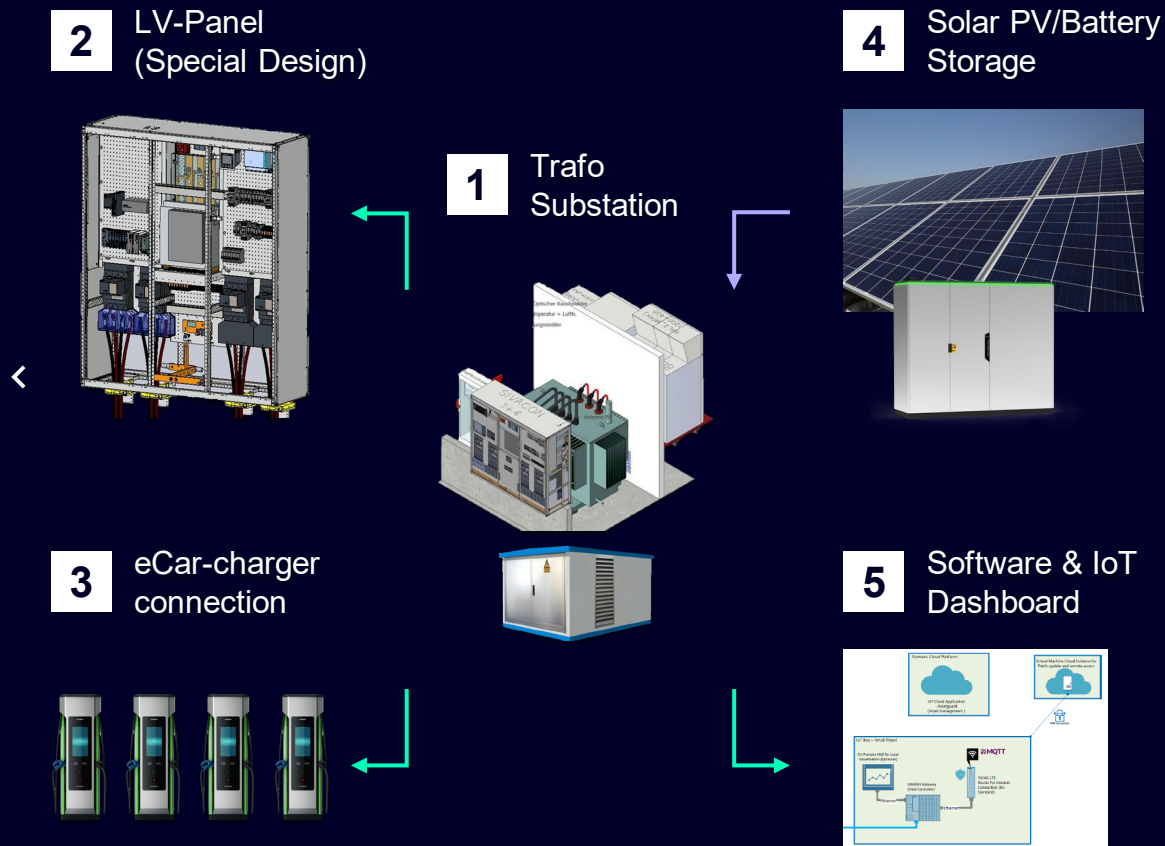
- Comprehensive Charging Infrastructure: Develop and deploy widespread, accessible charging stations to support the growing number of electric vehicles, ensuring convenience and ensure charging opportunities
- Smart load management: Charging vehicles at the same time need a smart software behind to ensure smooth travelling

Use cases

[E-mobility from consulting to charging](#)

E-mobility from consulting to charging

How to decarbonize fleet and improve logistics?



Challenge

- Currently installed electrical systems not strong enough
- Fleet exchange is expensive
- Scope 3 emissions are enormous and hard to trim down

Solution

Siemens E-mobility solutions are one key cornerstone to reduce CO2 emissions. By combining forces, you can count on our expertise to ensure a smooth transition into an electrified fleet.

- E-car and E-truck charger
- Infrastructure setup with renewable integration
- Services to ensure uptime and availability

Benefits

- One supplier for the entire electrification
- Decarbonizing the supply chain with a focus on Scope 3 emissions
- Financing options and services from the project start to the maintenance

Building management

Transforming Workspaces: The Impact of Smart Technology on Modern Building Management



● Smart Infrastructure

Business objective

Implementing innovative building management solutions that enhance energy efficiency, improve occupant comfort, and optimize operational costs, thereby creating sustainable and smart office environments.

Key capabilities

- Software and Hardware systems that work across all building disciplines like HVAC, lighting, fire safety or access control
- Open platforms to integrate with existing solutions

Use cases

[Building automation – from HVAC to security and fire safety systems](#)

[Reliable Fire Safety](#)

Building automation – from HVAC to security and fire safety systems

How to manage the facility from one central location and optimize it?



Challenge

- Using of energy is not efficient enough
- Comply with regulations
- High operational cost

Solution

Desigo CC in collaboration with Building X is an integrated building management platform that enhances the efficiency, comfort, and security of smart buildings.

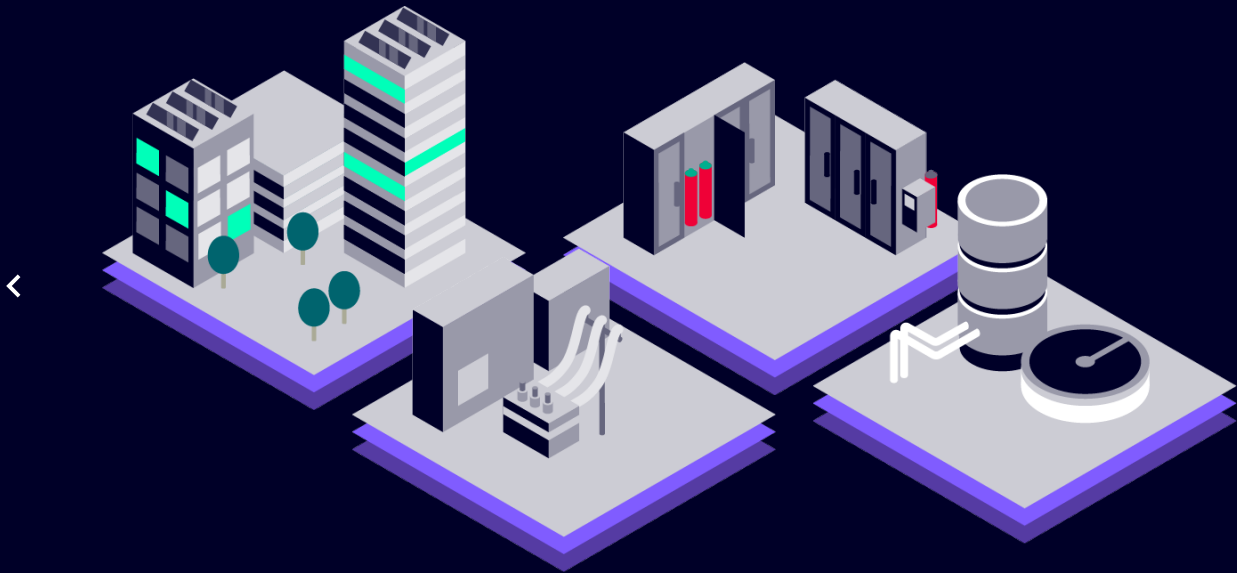
- Scalability: Easily adapts to changing needs
- Energy Management: Optimizes energy consumption
- User-Friendly: Intuitive interface for operators

Benefits

- Central interface combining all disciplines in one place
- Enhance productivity due to quick reactions
- Eliminate risk of failures and false alarms
- Increase profitability

Reliable Fire Safety

How to ensure a safe environment for the entire production plant & building?



Challenge

- Restricted access areas
- Explosive and hazardous environments
- Fully automated warehouses with high ceilings or hygienically sensitive production parts

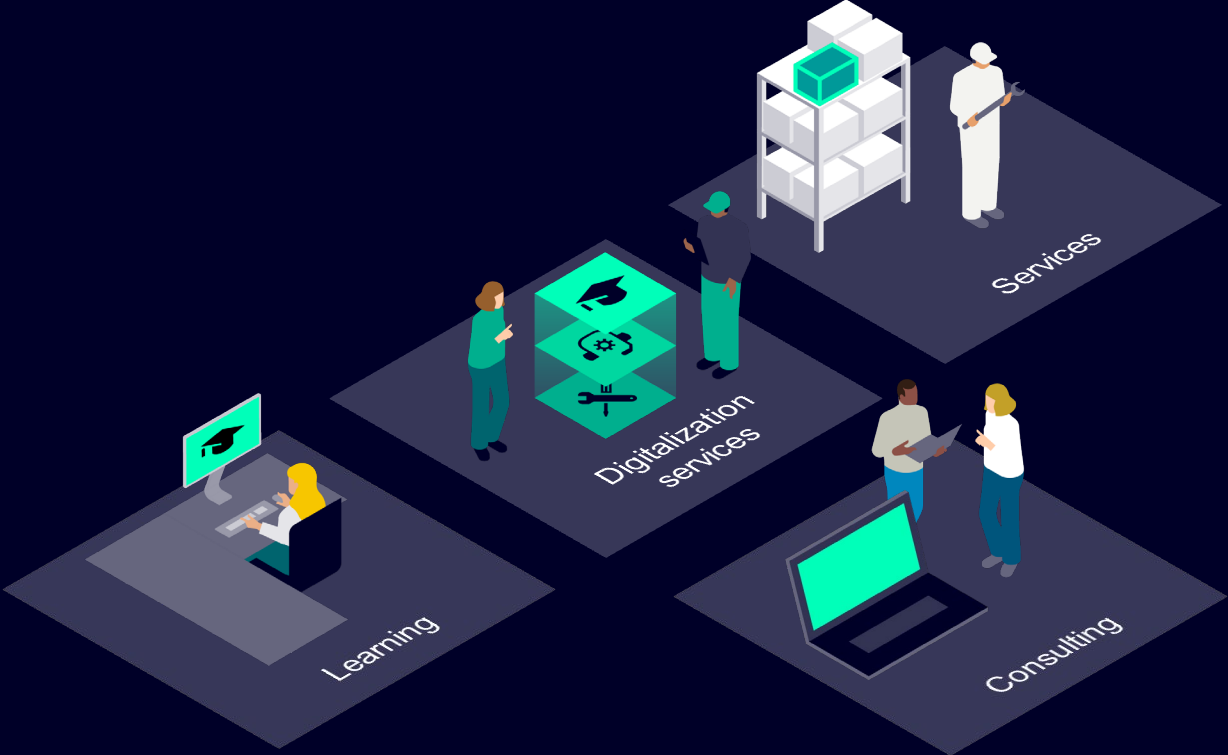
Solution

- Combining hardware elements of smoke and fire detection, explosion resistant sensors and cameras with artificial intelligence algorithm to inspect pictures
- Information is combined in the software Fire Manager from Building X portfolio

Benefits

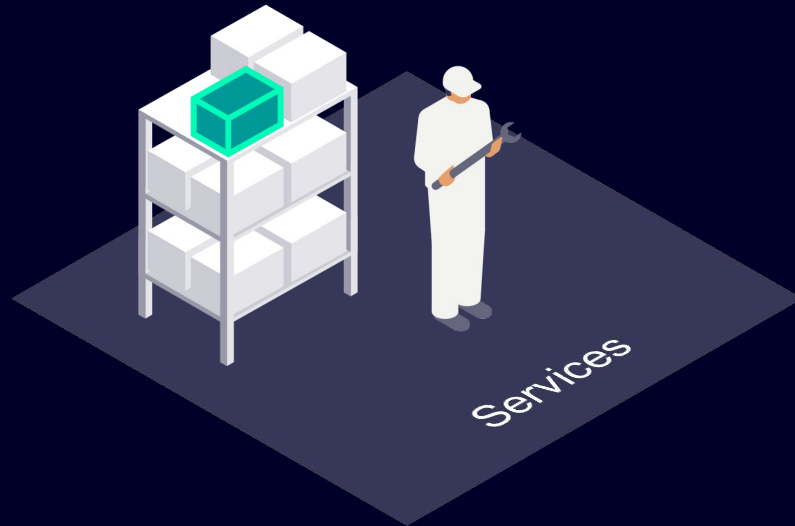
- Protection of people and production machines
- Protection from business interruption
- Protection from consequential damage

Digitalization Services



Services

Siemens service offering for dairy



● Digital Services Offerings

Business objective

For cost efficiency, it's often cheaper to purchase a service than developing and maintaining it in-house. Implementing an established service is faster to ensure time savings. Service providers offer specialized expertise and higher quality. Purchased services can easily scale with concrete business needs. Providers offer ongoing support and updates, allowing the team to focus on core competencies and what they do best.

Key capabilities

- Intelligent concepts to achieve productivity and performance targets
- Transparency of installed base with lifecycle status report and suggested measures

Use cases

[Retrofit and Modernization Services](#)

[Obsolescence Management with Plant Assessment Automation](#)

Retrofit and Modernization Services

How to update your industrial facility to the latest technology standard?



Challenge

- Create smart upgrade solutions for drive systems, automation, and machine tools that keep equipment running safely and reliably
- Help operators overcome system limits, improve performance, and protect their investments

Solution

- Drive systems: Our service offerings extend the lifetime of your assets (motors and converters) by providing the right retrofit solutions
- Production machines and automation systems: Standardized migration solutions from Siemens enable a smooth, safe and efficient transition to the latest automation technology
- Process control systems: Optimized maintenance and modernization of PC-based control systems are key throughout the lifecycle - beyond just hardware upkeep

Benefits

- Reduction costs
- Minimized unplanned downtimes
- Step-by-step digitalization

Obsolescence Management with Plant Assessment Automation

How to ensure a reliable basis?



Challenge

- Help factories gain full transparency of their installed automation systems
- Proactively address obsolescence through lifecycle assessments and actionable insights

Solution

- Phase 1: Regional on-site assessment to capture and document the installed base
- Phase 2: A report provides clear view of the installed base and obsolescence status of the components (Siemens & Competitors) and gives recommended measures based on lifecycle status

Benefits

- Transparency of installed base
- Information about obsolescence status and suggested measures
- Enabler for obsolescence management to secure productivity

Consulting

Leveraging Siemens expertise



● Digital Services Offerings

Business objective

Consultants contribute with specialized expertise and experience that may not be available within the organization. They can provide fresh perspectives and innovative solutions, helping to address complex issues more effectively. Additionally, consultants can often solve problems quicker and more efficient, saving time and resources.

Key capabilities

- Value stream map
- End-To-End maturity assessment
- Technology for future success

Use cases

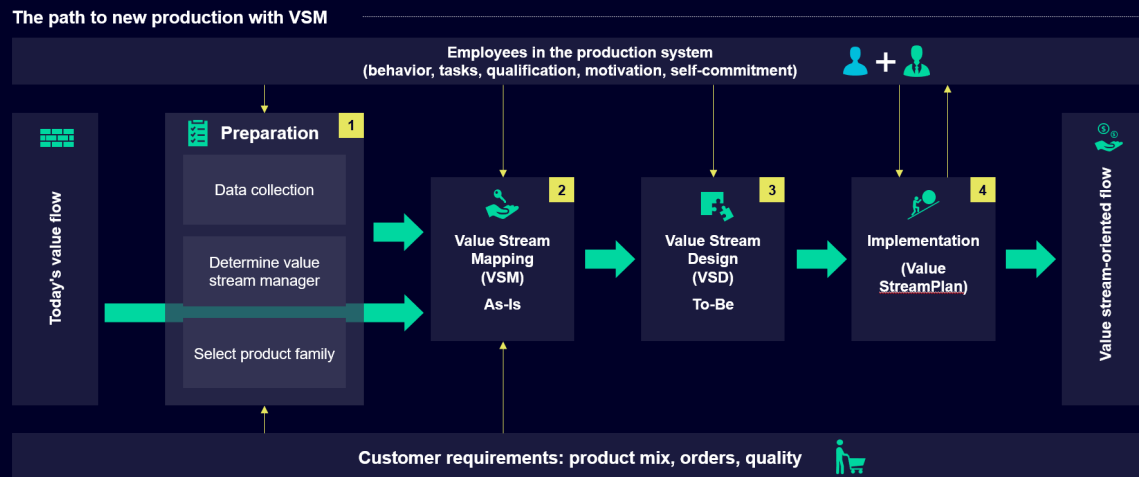
[Understand and optimize value streams](#)

[Identify starting points for digitalization integration](#)

[Define business strategy for the Factory of the Future](#)

Understand and optimize value streams

How to generate transparency on a value stream of any operations process in a standardized form?



Challenge

- Complex processes
- Interdisciplinary teams required
- Poor quality level or lack of existing process documentation

Solution

Siemens Advanta Consulting Value Stream Mapping and Value Stream Design

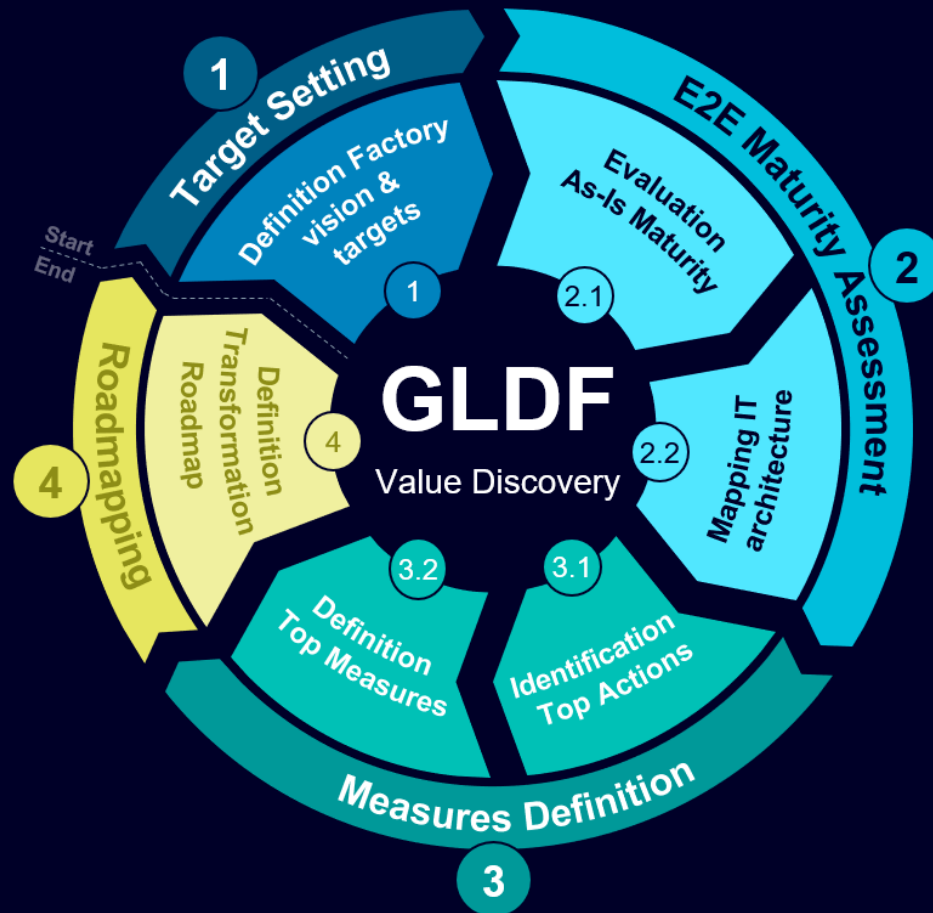
- Systematic problem identification and replanning with Value Stream Mapping and Value Stream Design
- Analysis of the actual state through observations and measurements (no secondary sources)
- Continuous improvement process and visualization reveals levers for process optimization and priorities for action

Benefits

- Identification of the causes of waste
- Joint, holistic view of a production system
- Systematic recording of important process, material flow and information steps

Identify starting points for digitalization integration

How to conduct comprehensive End-To-End factory maturity assessment?



Challenge

- Conventional productivity measures are “not enough”
- Digitalization is still not yet fully present in operations
- Sustainability is a key requirement for operational processes and products today

Solution

Siemens Advanta Consulting “Green Lean Digital Factory” framework

- Define vision & targets for factory
- Conduct End-To-End maturity assessment with focus on green, lean and digital levers based on standard Reference Process & IT Architecture
- Derive and detail quantified measures for improvement (incl. Xcelerator solutions) and a transformation roadmap over next 10 years

Benefits

- Assessment report, incl. industry benchmarks
- To Be maturity level and derived action levers based on 1) cost & operational impact and 2) transformation horizon
- Measures with impact on addressable costs & operational KPIs Transformation roadmap

Define business strategy for the Factory of the Future

How to incorporate market insights, vision, objectives and company strategy?



Challenge

- High level of complexity incorporating many different aspects across company
- Finding right level of granularity and tangibility

Solution

Siemens Advanta Consulting “Green Lean Digital Factory” framework

- Shape the path towards the Factory of the Future adapting technology with purpose and drive value for the end customer
- Combine external (market) with internal (vision, company strategy) views to derive Green Lean Digital Factory Business Strategy
- Link GLD Business Strategy with existing management system and operating model

Benefits

- Clear direction deriving implementation tactics
- Foundation laid for innovation and growth without deviating from company vision and strategy

Learning

Allowing continues learning and upskilling of staff



● DT Smart Manufacturing

Business objective

Maintain operability and preventing failures by keeping people qualified on used technology and support live long learning with the right trainings and knowledge transfer.

Key capabilities

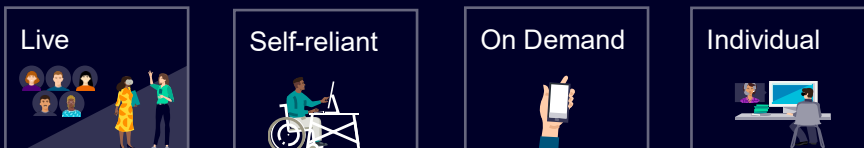
Knowledge Hub that provides an extensive range of expertise directly from manufacturers

Use cases

[SITRAIN – Industrial Learning](#)

SITRAIN – Industrial learning

How does the learning for the industry of today & tomorrow look?



Challenge

- Enhance employee knowledge through diverse learning methods and skill levels which meets employees learning habits and daily workflows

Solution

Extensive range of knowledge directly from the manufacturer for all industries and applications, for beginners and experts:

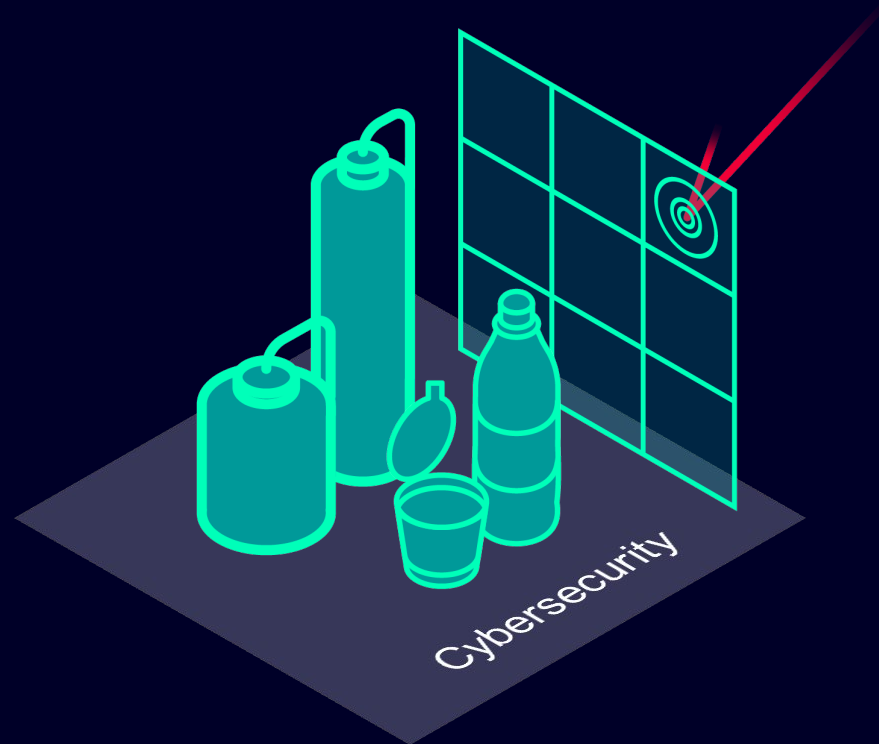
- Learning Event: Build up knowledge quickly, compactly and in a guided manner - in face-to-face training (classroom | online) or onsite
- Learning Membership | SITRAIN access: Secure your knowledge through independent and continuous learning with SITRAIN access - the digital learning platform, available 24/7
- Learning Journey: The optimal combination of virtual live sessions with a learning consultant and self-learning modules for a more sustainable learning success

Benefits

- Extend your knowledge sustainably through the optimal combination of different learning formats
- Choose the learning format that best integrates into your day-to-day work
- Learn only what you really need. And exactly when you need it
- Ensure your future viability through a continuous learning process in a modern learning culture

Cybersecurity

Protect sensitive data, maintain operational integrity, comply with regulations and safeguard brand reputation



Business objective

To help businesses protect against growing cyber attacks, threat and risk management, compliance assessments, device-level identity information, and security analytics solutions can be used. They are designed to safeguard the company's operating model.

Key capabilities

Multi layered cybersecurity concept based on the defense in depth principle, which provides an effective protection

Use cases

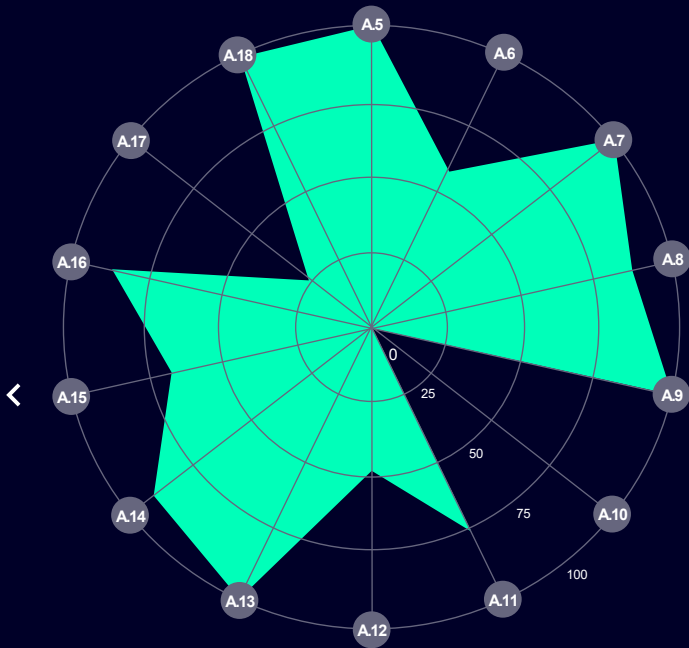
[Security assessments & consulting](#)

[Vulnerability and patch management](#)



● DT Smart Manufacturing

Security assessments & consulting



- | | | | | | | |
|-----------------------------------|--|---|-----------------------------|-----------------------------------|--|--|
| A.5 Information security policies | A.6 Organization of information security | A.7 Human resource security | A.8 Asset management | A.9 Access control | A.10 Cryptography | A.11 Physical and environmental security |
| A.12 Operations security | A.13 Communications security | A.14 Acquisition, development and maintenance | A.15 Supplier relationships | A.16 Security incident management | A.17 Aspects of business continuity management | A.18 Compliance |

Radar Diagram
Compliance Coverage
Graphical Results IEC62443-2-2 (Establishing an industrial automation and control security program)

Security Compliance Coverage Summary
Radar Chart showing in green the percent compliance to each category (A.5 – A.18) in the IEC62443-2-1 portion of the assessment.

The areas with the least compliance coverage represent the areas with least security policy coverage and should be prioritized in the implementation plan going forward.

Challenge

- Industrial cybersecurity capacities are rarely available. IT staff needs support from security experts with automation know-how
- Time pressure due to new compliance requirements and laws with due date

Solution

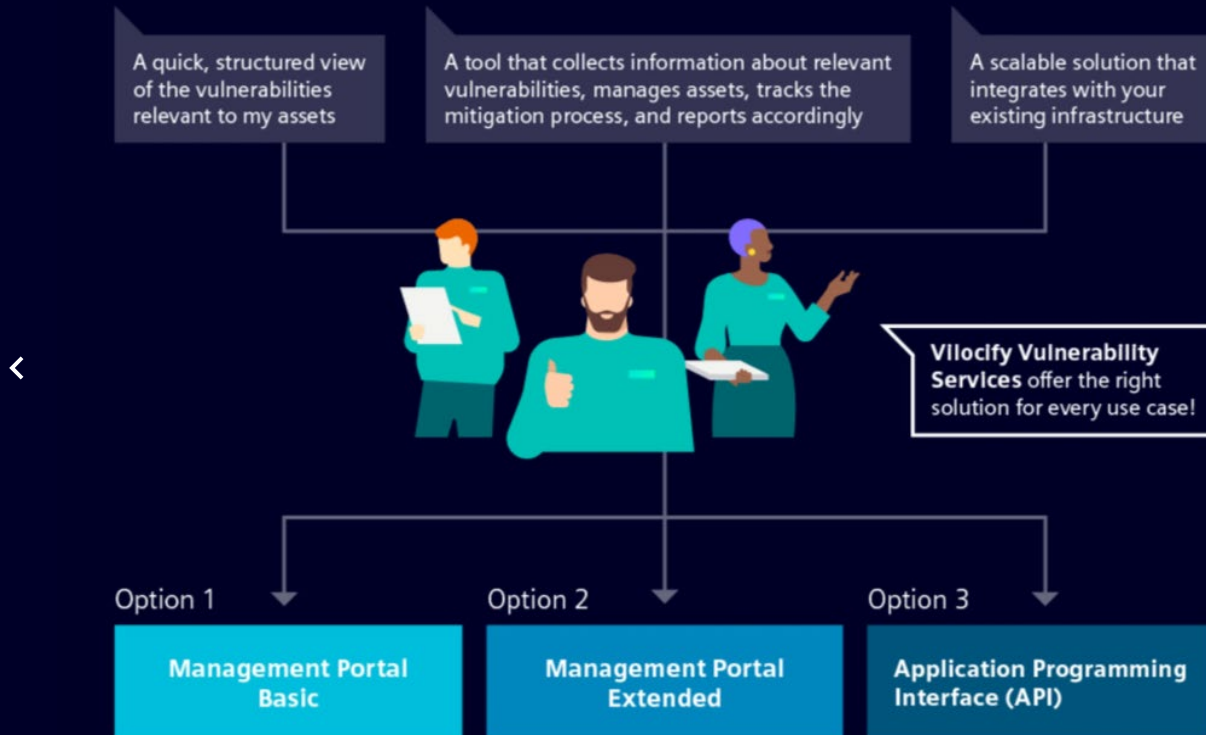
- Security Assessments cover a holistic analysis of threats and vulnerabilities, the identification of risks and recommendations to close the identified gaps.
- Industrial Security Consulting provides on-site support through experienced consultants

Benefits

- Transparency through evaluation of the current security status based on IEC 62443 and NIS 2
- Plant-specific and risk-based security roadmap
- Immediate access to expert know-how, no investment for developing own OT cybersecurity capacities

Vulnerability and patch management

How to manage vulnerabilities and patches to increase security?



Challenge

- Companies need to reduce their exposure to vulnerabilities
- Identifying new vulnerabilities as soon as possible and minimizing time-to-patch is crucial

Solution

- Vilocity Vulnerability Services empower you to secure your infrastructure and product portfolio by providing relevant, actionable vulnerability intelligence
- Based on a unique monitoring approach you receive vulnerability alerts for your individual system

Benefits

- Instant transparency over relevant vulnerabilities based on sophisticated vulnerability intelligence
- Proactive management of cyber risks – easily integrated into your workflow, saving time and cost
- Identify and manage vulnerabilities in time to avoid downtimes and costly exploits



Disclaimer

© Siemens 2026

Subject to changes and errors. The information given in this document only contains general descriptions and/or performance features which may not always specifically reflect those described, or which may undergo modification in the course of further development of the products. The requested performance features are binding only when they are expressly agreed upon in the concluded contract.

All product designations may be trademarks or other rights of Siemens AG, its affiliated companies or other companies whose use by third parties for their own purposes could violate the rights of the respective owner.