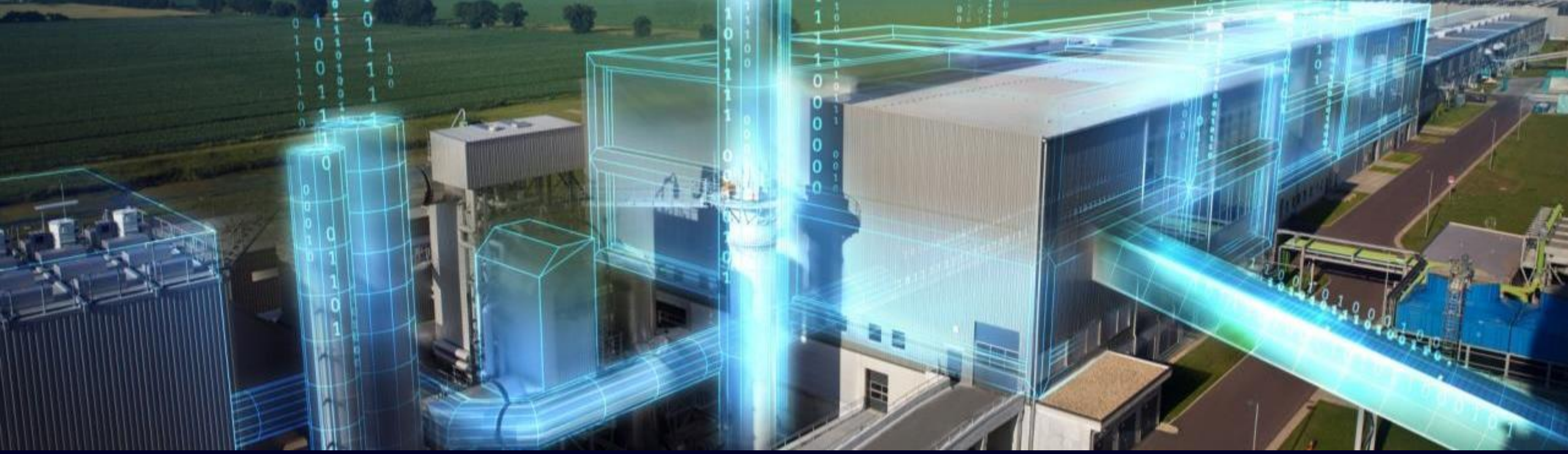

Energy efficiency through digitalization

Prospects for energy-efficient and low-CO2 production

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Why is energy management important in industry?
Factors for energy management

Sustainability

Achieving the 17 United Nations Sustainable Development Goals (SDGs) by 2030[1]

Climate change

Increase in average surface temperature (0.9 degrees Celsius) due to CO^2 and other emissions[2]

Decentralisation

Increase in energy demand by 28% between 2015 and 2040[3]

Digitisation

Increase in production and energy data volume to 175 zettabytes by 2025 (fivefold increase)[4]

We see it as our responsibility to make a contribution.

Source: **1** SDG UNO (Link) | **2** NASA Gov (Link) | **3** EIA Gov (Link) | **4** Statista (Link)

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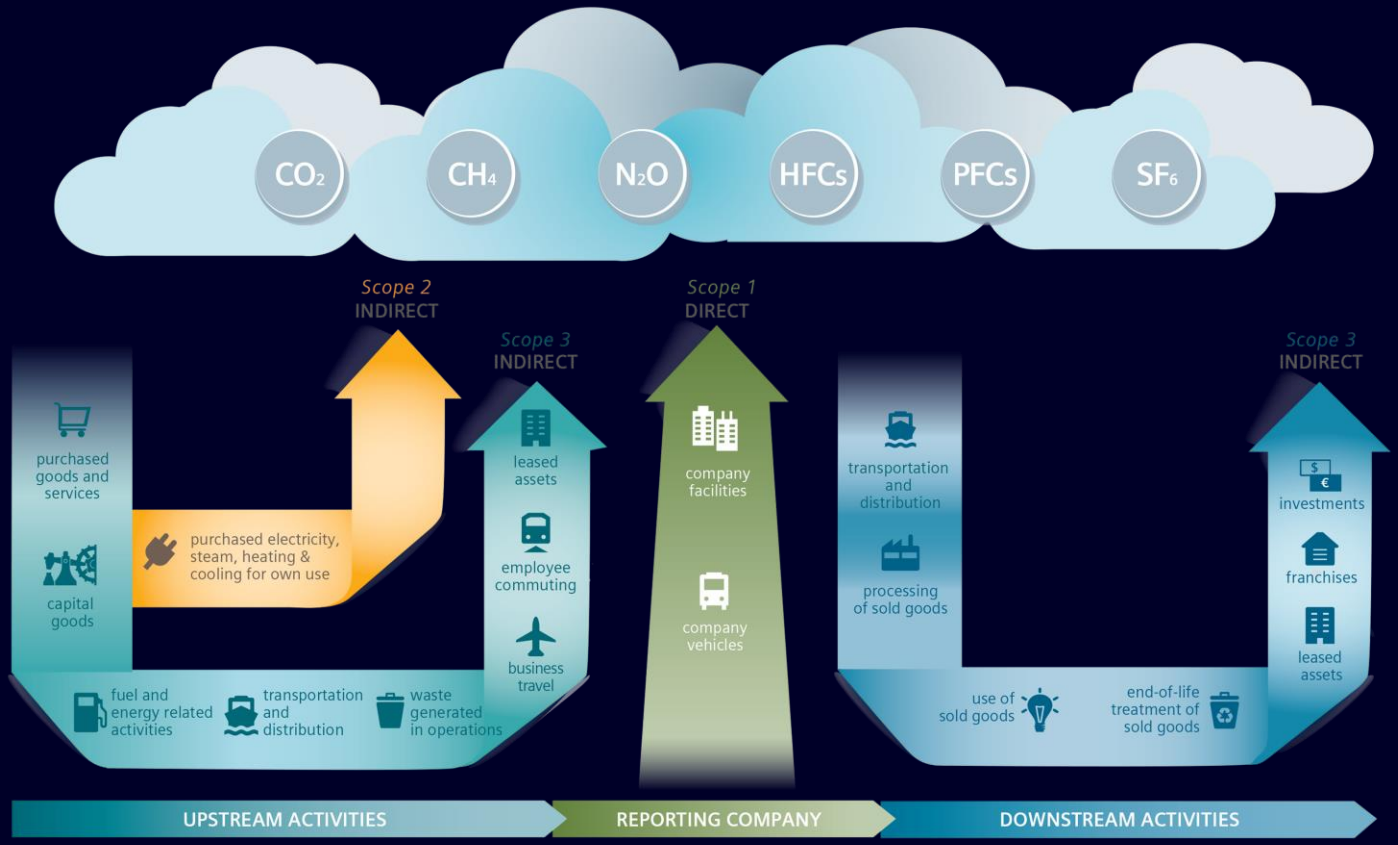
The key factors influencing carbon footprint



The **carbon footprint** as a key figure to indicate the development of the commitment to sustainability

Investors evaluate climate risks and expect compliance with environmental and climate protection standards

Customers demand environmentally friendly products and include this in their purchasing decisions

Active, transparent handling of the CO2 issue is essential!
Managing your product carbon footprints with SiGREEN from SIEMENS

Source: SiGREEN (www.siemens.com/sigreen)

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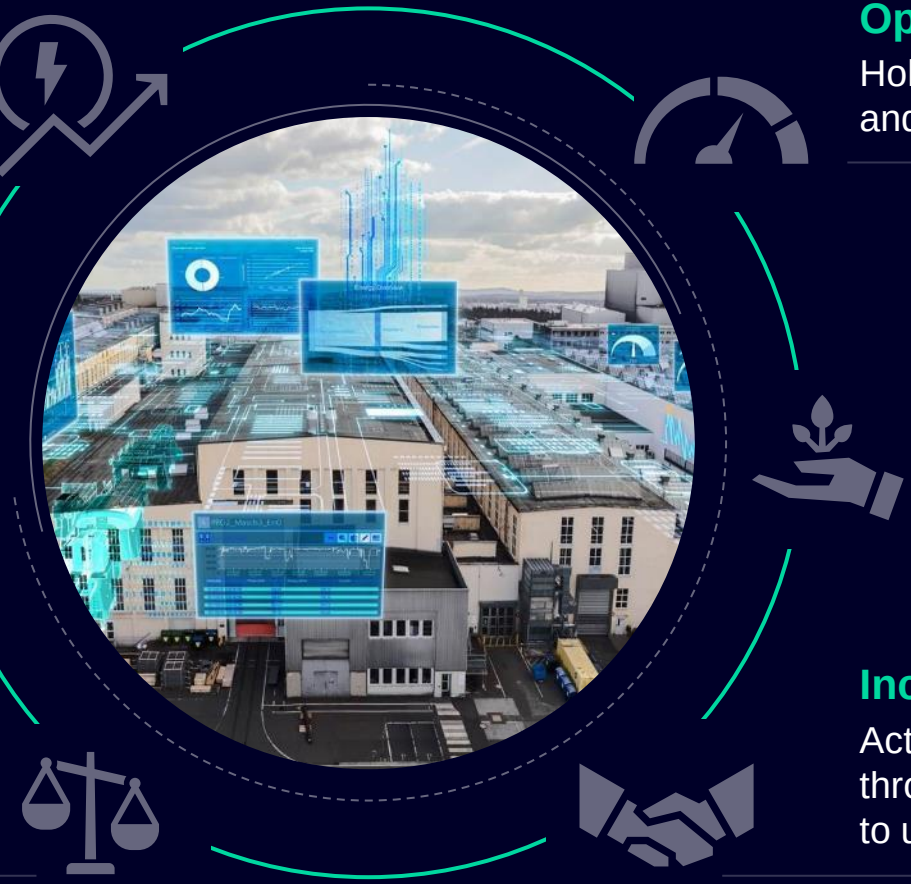
Operative challenges in glass industry

Increase energy efficiency

Energy data transparency
Production KPI indication and analysis

Optimum use of renewable energy

Holistic concept for generation, storage and utilization/sourcing & supply



Reduce energy cost

- Energy peak management
- Optimize energy procurement
- Optimum use of waste heat/energy

Reduce CO_2 footprint

- Emission monitoring and control
- CO_2 recycling
- Optimized demand of energy

Compliance and legal regulations

ISO 50001, legal requirements, tax refunds, carbon footprint certificates

Increase employee awareness

Active consideration of energy costs through the value chain, from plant floor to utility facilities

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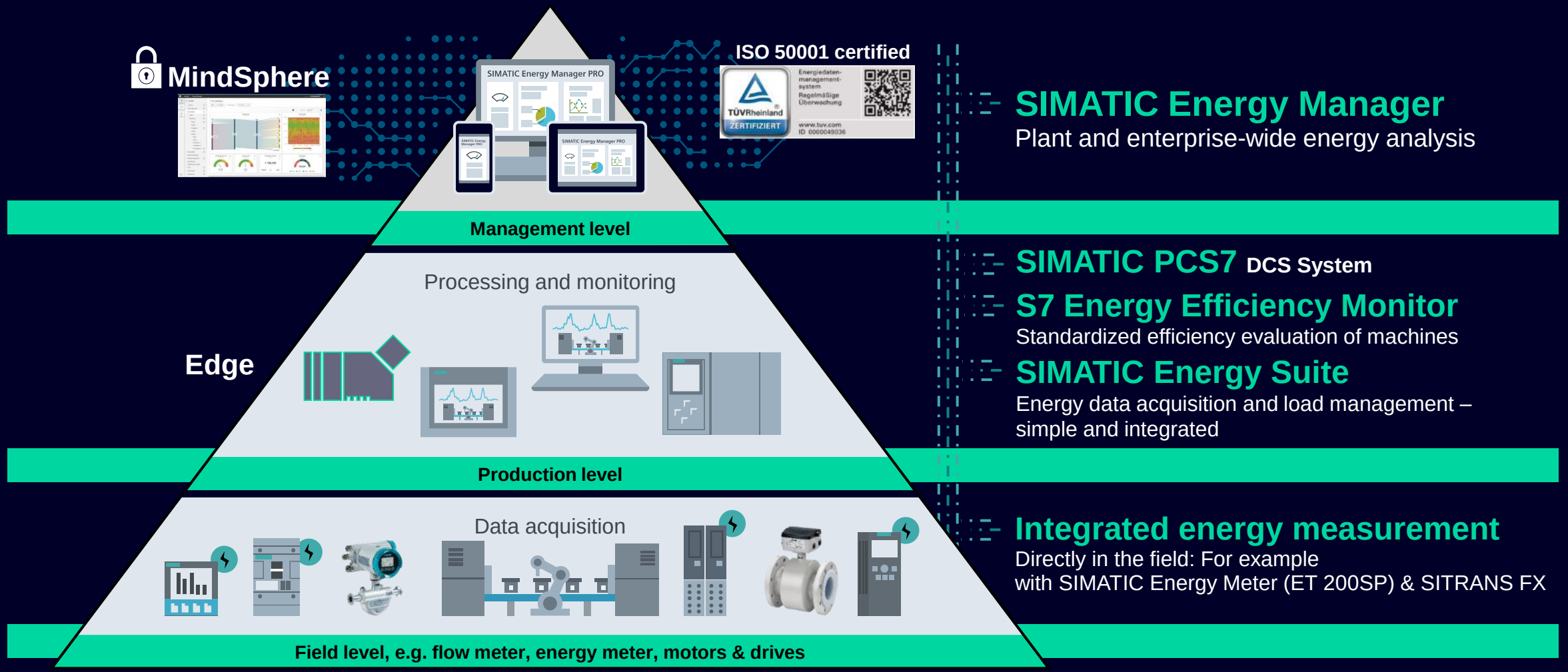
SIMATIC Energy Management – Transparency and efficiency from the plant to the company level



SIMATIC Energy Manager
Plant and enterprise-wide energy analysis

SIMATIC PCS7 DCS System

S7 Energy Efficiency Monitor
Standardized efficiency evaluation of machines

SIMATIC Energy Suite
Energy data acquisition and load management – simple and integrated

Integrated energy measurement
Directly in the field: For example with SIMATIC Energy Meter (ET 200SP) & SITRANS FX

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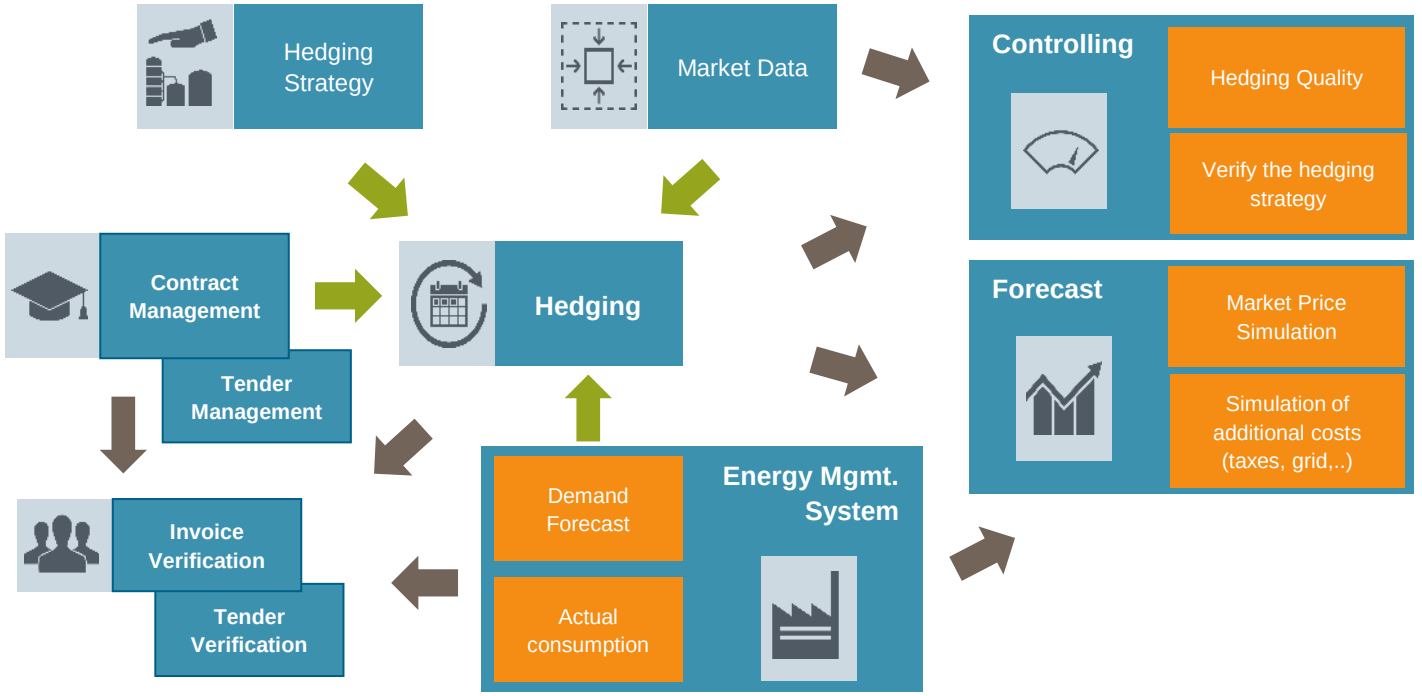
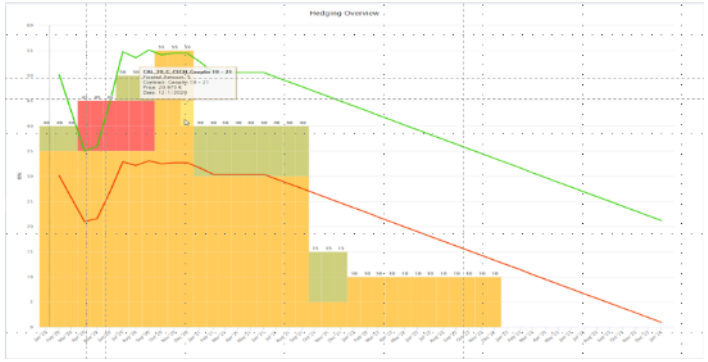
Structured energy procurement
From all-in contracts to procurement at stock exchange





Situation

- Due to the non-existing transparency of the current and future energy consumption, the optimum cannot be achieved in energy procurement.

Requirements

- Integration of all relevant information incl. market data (example EEX,...)
- Forecasting possibilities
- Mapping of the hedging strategy

Advantages

- Transparency about energy flows
- View into the future
- Contract management
- Hedging support
- Invoice verification
- Overview of purchases made

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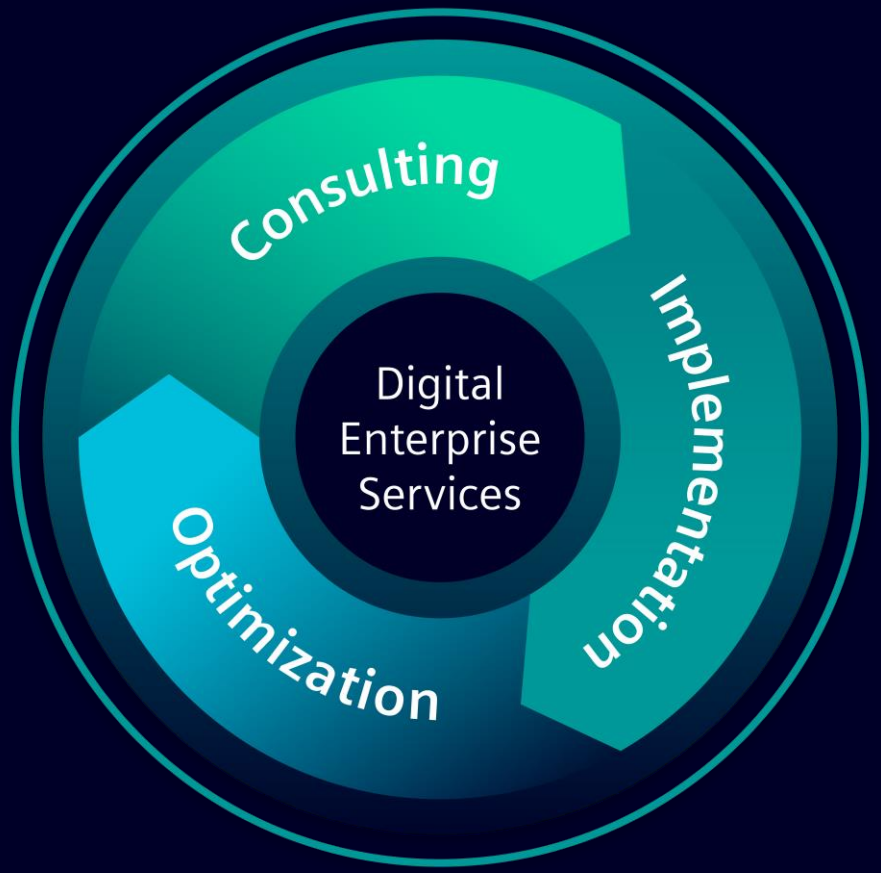
Industrial Energy Management Services



01 | Consulting

Concept Workshop

- Definition of Energy Performance Indicators (EnPIs)
- Creation of measuring concept
- Evaluation of data collection and connectivity requirements

02 | Implementation

- Installation of the needed hardware and software
- Data modeling and preprocessing of the input data
- Creation of dashboard and reports

03 | Optimization

- Energy Efficiency analysis
- Analysis of the potential for optimization of energy performance
- Customized recommendations to act and optimize energy performance
- Individualized service contract

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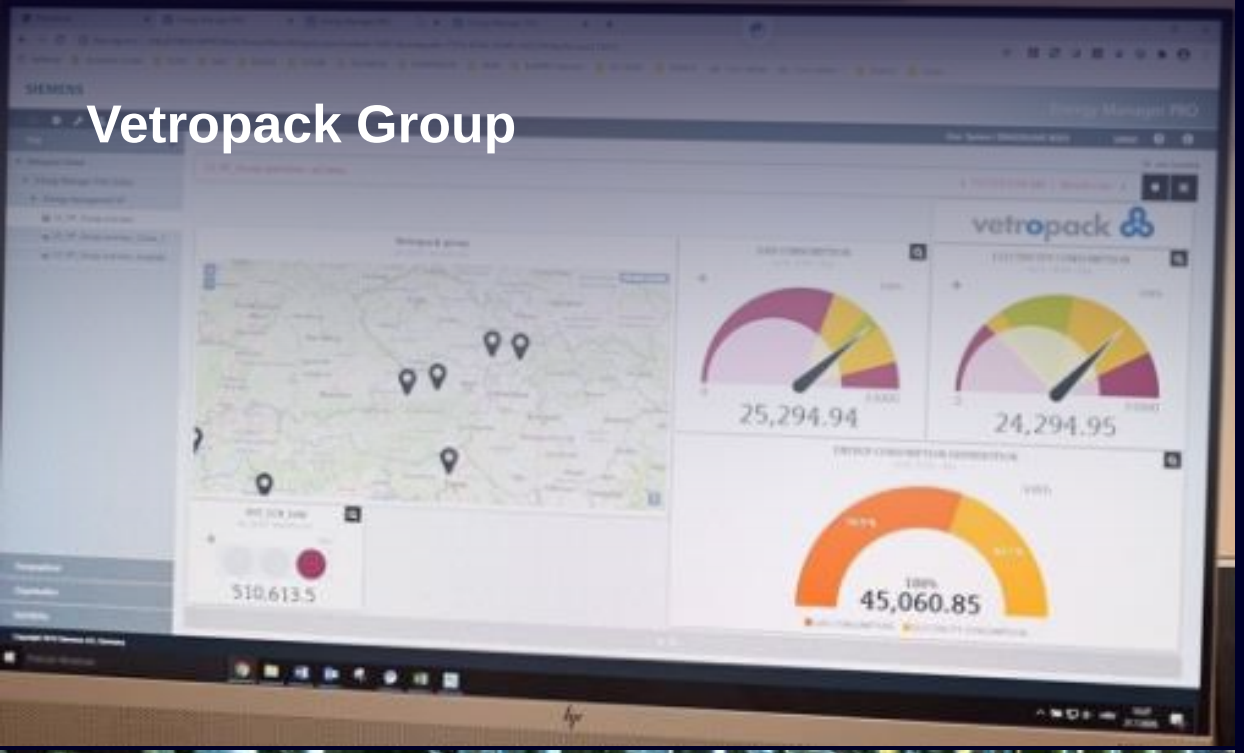
Vetropack Group



“What you do not measure, you can’t manage.”

Head of corporate procurement - Vetropack

vetropack

“Sustainability ensures our business success”

Customer profile

International container glass manufacturer HQ in Switzerland, with several production plants in Europe, serves food & beverage industry

Challenges

- Standardization of the energy measuring points and KPIs
- Planning and strategic procurement to invoice verification
- Define the standards for local factories, harmonize group company-wide energy efficiency activities

Solution

- Implement the EDMS Simatic Energy Manager Pro in 8 factories in Europe
- Consultancy, commissioning, training, services, customization in individual plant
- Realize energy purchasing application
- complete transparency across all relevant energy and media consumption including CO2

Comprehensive approach to link operating and energy data

Reference link (glass-energy-management-vetropack)

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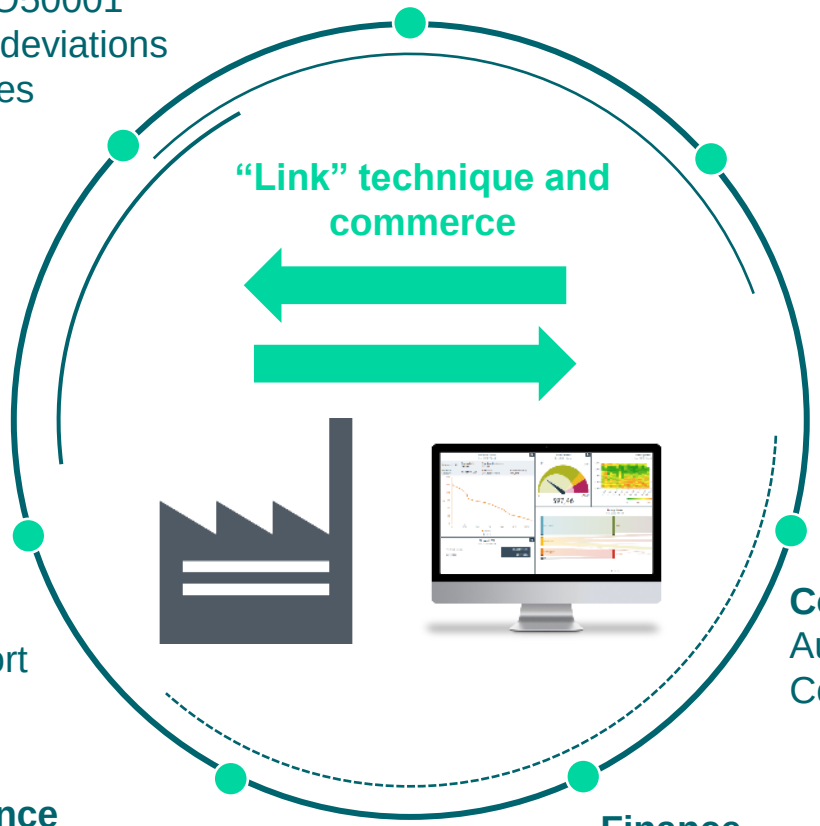
Requirements of stakeholder

Energy Manager
Create energy transparency
Comply with ISO50001
Tracing energy deviations
Set EE-Measures

Management
Site overview with current KPIs
Definition of the strategy for energy procurement



Procurement
Market data evaluation
Contract management
Forecast energy costs
Hedging management
Assessment of the quality of Energy Procurement

Technique
Shift reports
Creation of
cost centre report

Controlling
Auditing
Cost centre accounting

Maintenance
Plant monitoring with dashboards
Support during maintenance work

Finance
Release of provisional invoices
Implementation of forecast data

vetropack

Target

- Exchange of information between the individual stakeholders
- Technique and commerce linking within the company
- Creation of cross-site energy transparency

Challenges

- Harmonization of energy measuring points and subsequently energy performance indicators
- Define detail common standards
- Motivation of local sites for group activities
- Time management

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Thanks for your attention!

Peter Holzmann
Business Development Energy Management
Siemens AG, Digital Industries

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