

Case Study: Energy Management System in the Steel Industry

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CASE STUDY: ENERGY MANAGEMENT SYSTEM IN THE STEEL INDUSTRY

SIJ METAL RAVNE KEY FIGURES:



Consumption of resources:
electricity, natural gas, compressed air,
oxygen, heat, water, argon, nitrogen



Measuring points:
340 x electricity, 78 x natural gas, 10 x compressed air, 10 x oxygen, 9 x cooling water, 31 x heating, 2 x argon, 1 x nitrogen, 42 x drinking water

CONSUMPTION



Electricity: 12 GWh/month
Main electricity consumer: electric arc furnace (EAF)



Heat
800 MWh/month



Technical gases: Oxygen: 700.000 kg/month; Nitrogen: 150.000 kg/month; Argon: 20.000 kg/month



Natural gas: 3 mio Nm³/month
Main natural gas consumer: furnaces



Compressed air:
3 mio Sm³/month



Water:
300.000 m³/month

GENERAL COMPANY DESCRIPTION

SIJ Metal Ravne is one of the biggest steel companies in Europe. It produces a rich variety of more than 200 steel grades in different dimensions and shapes, from carbon and alloyed structural steels to tool and specialty steels in the form of rolled and forged products. The company decided to run an energy management project with the following purposes:

- Monitor and analyze real-time energy consumption
- Define and analyze key energy efficiency indicators
- Implement an energy management system
- Develop benchmarking and methodology for savings calculations (IJS)
- Introduce an energy accounting system
- Reduce energy consumption as a result of energy management

GEMALOGIC SOFTWARE PLATFORM

Basic tools: general overview, data current explorer, archive overview, alarms (SMS, e-mail), user-generated reports, geolocations.

Energy efficiency tools: contour display, specific consumption (KPI), comparison indicators, time comparison, targeted monitoring of energy use, M & T and CuSum analysis, accounting of energy consumption from different energy suppliers by buildings, measuring points, energy products.

OUR SOLUTIONS

Energy consumption monitoring

Electricity, natural gas, compressed air, oxygen, heat, water, argon, nitrogen

Energy efficiency analysis and predictions

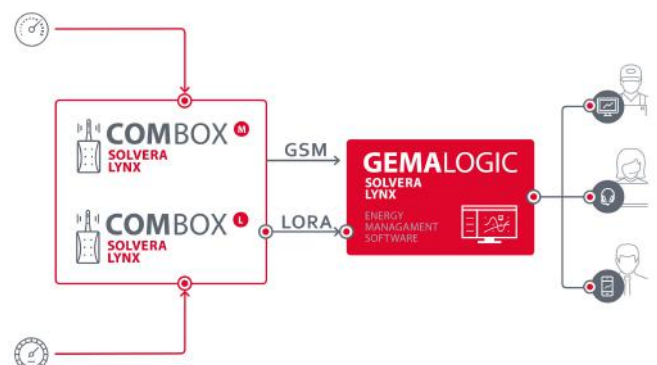
Energy efficiency performance indicators
Energy consumption vs production output

Energy performance and targeting

Targeting energy consumption quantities and costs
Alarms in case of consumption or cost deviations

Calculation of CO₂ emissions

SYSTEM ARCHITECTURE





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COMMUNICATION EQUIPMENT

- 16 x ComBox.M, 65 x ComBox.L and 3 x Base stations

PROJECT RESULTS

- Transparency over energy consumption and detailed analytics (digitalization of energy data, alerts and short response times in case of system deviations)
- Advanced benchmarking (key performance indicators, M&T analysis)
- Energy efficiency improvements through real-time energy monitoring, advanced analysis, benchmarking and forecasting
- Alarm system implementation (the detection of deviations and their causes in energy consumption and the possibility of quick

BENEFITS FROM PROJECT IMPLEMENTATION

- The introduction of a comprehensive energy management system and measures as a basis for future energy consumption reduction
- Electricity consumption reduction (by energy income and outcome control and optimisation of the distribution network)
- Detection of technical and non-technical losses
- Reduction of water leakages
- Water consumption reduction by leakage detection

CONSUMPTION REDUCTION

- Electricity: 3%
- Natural gas: 5-7%
- Technical gases, heat, water, compressed air: 7%

STEEL COMPANIES THAT BENEFITED FROM SOLUTION IMPLEMENTATION

- SIJ Metal Ravne
- SIJ Acroni Jesenice