

An aerial photograph of a large industrial facility, likely a glass manufacturing plant, situated within a vast, dense forest. The plant consists of several long, interconnected buildings with light-colored roofs, a tall smokestack, and various smaller structures. A winding road or path cuts through the wooded area, leading towards the facility. The surrounding landscape is heavily forested, with a small body of water visible in the upper right. The overall scene highlights the integration of industrial operations with a natural environment.

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LYNX

# Energy Management in glass industry

[www.solvera-lynx.com](http://www.solvera-lynx.com)

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# Energy management in glass industry

**Steklarna Hrastnik Company** is the leading glass products manufacturer in Slovenia with a 150-year tradition.

The company specializes in special glass packaging, glassware and lighting, as well as handmade items etc.



## Solvera Lynx Solutions for Industry

Check more information regarding our solutions at [www.solvera-lynx.com](http://www.solvera-lynx.com)

## Challenge

The company has a strong environmental regulation compliance strategy and is dedicated to optimizing and reducing energy consumption. In order to comply with European energy regulation and meet the energy consumption reduction target, Steklarna Hrastnik decided to carry out an energy management project.

The project included complete digitalization of energy data with the purpose of implementing an energy management system, that provides a transparent view of energy consumption, offering a tool for employees to perform more relevant energy management and energy efficiency activities in order to reduce energy costs.

Energy optimization of glass manufacturing in such large and dispersed industrial area was possible due to new innovative LoRaWAN communication technology instead of the classical wired system.

## Steklarna Hrastnik Key Figures

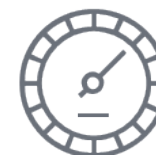


Locations: 2



Consumption of resources:  
Electricity, compressed air,  
natural gas, water, oxygen

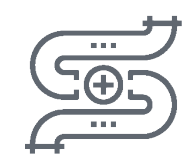
## Measurements



315 metering points



64 from the  
SCADA system



2 through  
Gass supply system

# Our Solution

## Energy consumption monitoring

Electricity

Compressed air

Natural Gas

Oxygen

Water (sanitary water, cooling water)

## Energy efficiency analysis and predictions

Energy efficiency performance indicators (EE of machines)

- Energy consumption vs production output
- Energy consumption vs m3 compressed air

Energy performance and targeting

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

## System and process monitoring

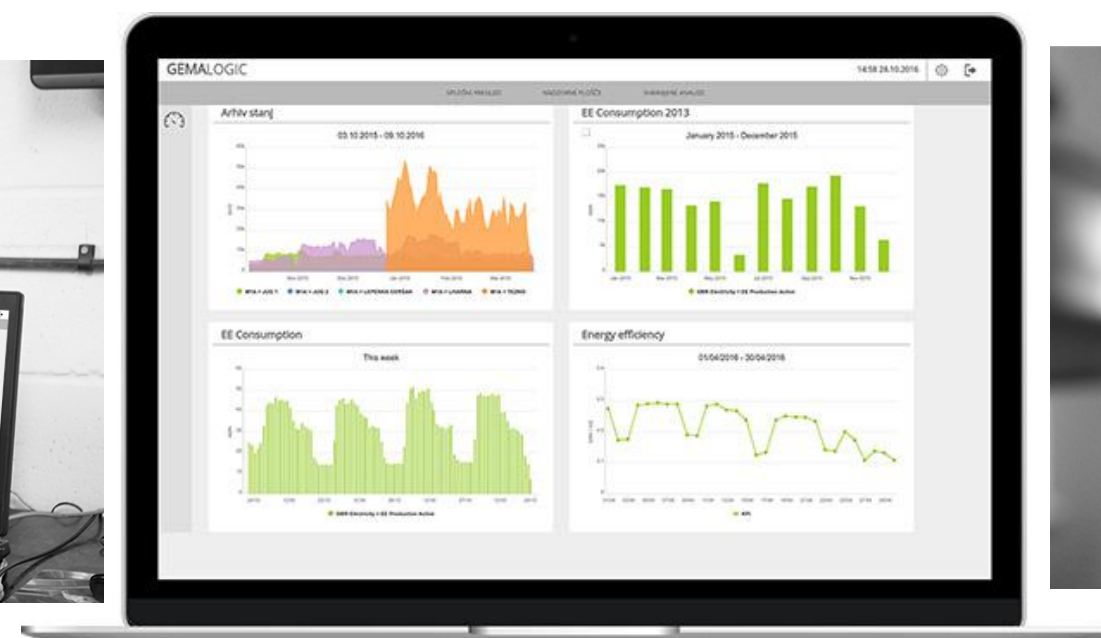
Machine status monitoring

- Machines
- Furnaces
- Lighting and Cooling technologies
- Vacuum pumps

Air and Water conditions monitoring

- Temperature
- Pressure

Alarming in case of system failures, inefficient operations and water leakages



# System architecture

## Communication equipment

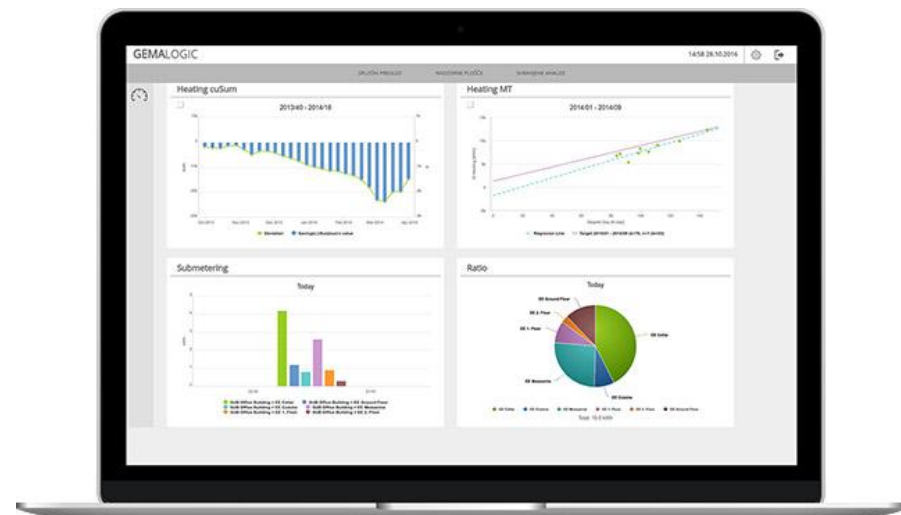


## Integration with control, data acquisition and gas supply systems

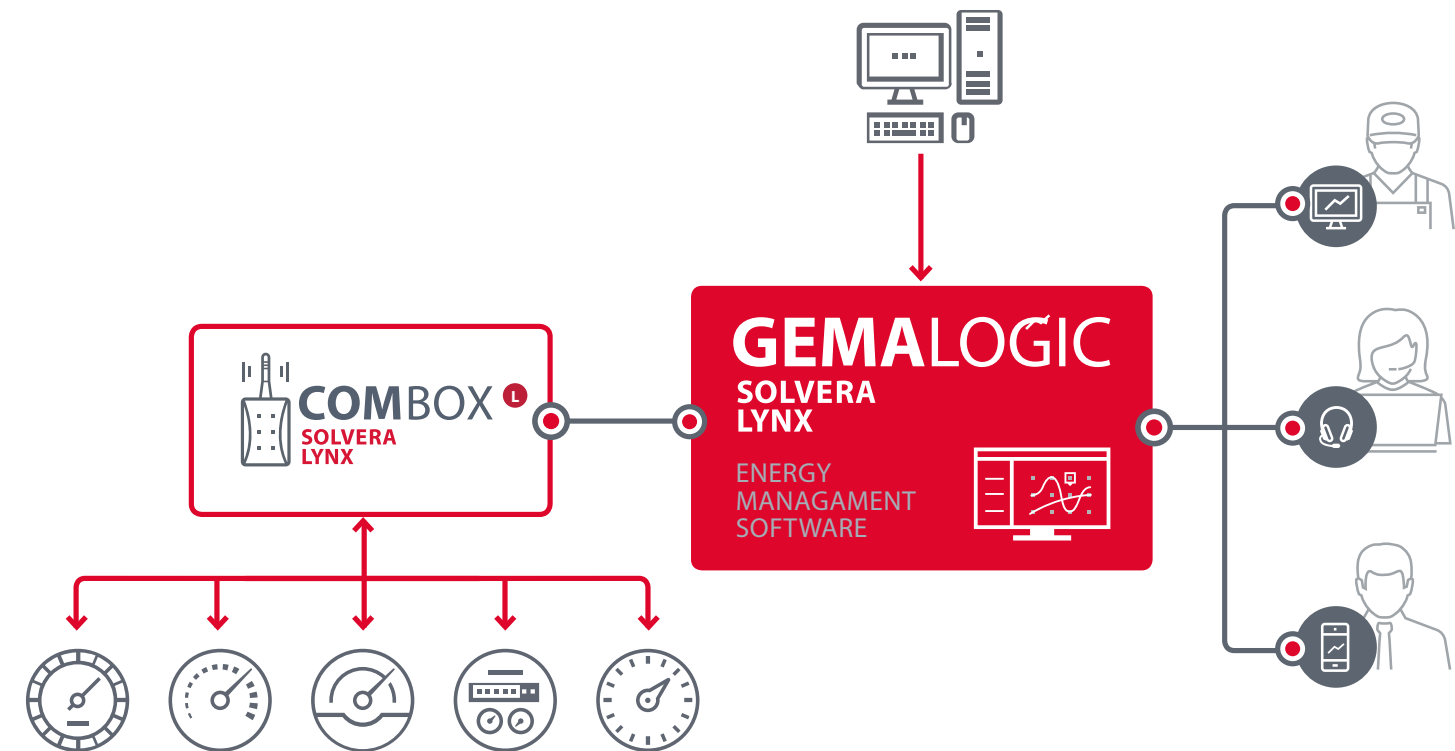
- Supervision, control and data acquisition system
- Gas supply system

In order to effectively connect the meters and the network, we set up the LoRa wireless communication. In order to reach and carry out the measurements and prices, we selected ComBox.L, an innovative product by Solvera Lynx. Expanding the existing LoRaWAN network enabled us to cover the entire industrial area and set up the communication devices in all the less accessible places.

## Energy management software GemaLogic®



Energy and system data analysis and visualization



The solution is designed modularly and provides easy future upgrades.

# Project achievements

## Energy management transparency

- Digitalization of energy data
- Alerts and short response times in case of system deviations
- Alerts and short response times in case of energy consumption deviations

## Energy efficiency improvements through

- Real time energy monitoring
- Advanced analysis, benchmarking and forecasting

Time-independent review and evaluation of energy consumption in accordance with tariffs, schedules, and the like, thus allowing optimisation of production.

## Benefits

- **Energy consumption reduction in the 1st year of solution implementation**
  - Electricity consumption reduction
  - Natural gas consumption reduction
- Reduction of energy losses caused by water and compressed air leakages
- Alarming in case of water and gas consumption increase
- CO<sub>2</sub> emission reduction
- Support in ISO 50.001 implementation

