

The Siemens logo is displayed in a white box in the top left corner of the image. The background of the entire image is a photograph of a man in a blue shirt, white hard hat, and safety glasses, holding a tablet and looking at a bar chart on the screen. He is in an industrial setting with large windows and machinery.

**SIEMENS**

Dalibor Marković

# Energy efficiency in Croatia Where we and You can do today? Projects!

# Actual projects 2016.

- CEMEX
- New VSD
- Perfect Harmony

**Delivery**

- SLAVONIJA SLAD
- Energy Monitor
- Energy Monitoring system

**Delivery**

- HEP
- Own consumption optimization
- 3 Power Plants

**Delivery**

- BE-TO Glina
- Biomass cogeneration
- Renewables

**Delivery**

- IKEA Zagreb
- Water Wells for Heating Pump System
- Controll System, Drives, Instrumentation

**Delivery**

- Midle Voltage Frequency Converter – special design
- Kiln fan for extraction



- Energy Monitor
- PAC 3200....



*“Slavonija slad” d.o.o.*

- SIMATIC WinCC
- S7-400 / ET 200S
- PAC 3200....



- SIMATIC PCS7
- Procesna instrumentacija
- Analitika

**SHERIFGROUP**

- S7-1200 / LOGO!
- SINAMICS G120
- SITRANS F/P



FIL.B.IS. Projekt d.o.o.



# Actual projects 2017.

- PETROKEMIJA
- Fan Drive 560kW
- VSD integration Perfect Harmony

**Delivery**

- PETROKEMIJA
- CS Pakra
- Frequency converter, automation, IT Sec

**Delivery**

- HEP ELTO Osijek
- Burner Management
- SIMATIC S7-400 / PCS7

**Delivery**

- BETO N. Gradiška
- Biomass CHP
- Renewables

**Delivery**

- TDR – Tobacco Factory
- Energy monitoring
- Dedicated Energy Monitoring System

**Delivery**

- Implementation of 3,3, kV frequency converter
- Inlet fan drive



- Frequency converter SINAMICS G120
- PLC SIMATIC S7-300
- Security Router SCALANCE S



- SPPA T3000
- S7-400
- SIPART P DSIII



- SIMATIC PCS7
- Process Instrumentation
- Process Analytics



- SCADA WinCC
- PLC SIMATIC S7-300
- Remote I/O ET 200SP + Energy Meters (130 pcs)



## Regional stars of Energy Efficiency

### CEMEX – 1,8MW Fan now saves 1 MW



- **Objective:** Optimization of the rotary kiln fan drive
  - to use existing motor 1,8MW
  - minimum change on exist. system
- **Scope:** Siemens Perfect Harmony
  - 2MW, 6kV frequency converter
  - Conditioned room, automation
- **Savings:**
  - 6,3GWh/Y
  - CO2 reduction up to 4300 t/Y
  - Reduction of input power 1MW
  - Less vibration (9 stops, 76h prod. loss before)
  - Avoiding of electrical outages (29 stops, 90h prod.)
  - Continuous load 700kw (before 1,8MW)

# Regional stars of Energy Efficiency

## HEP TE-TO Zagreb – Heat Accumulator

SIEMENS

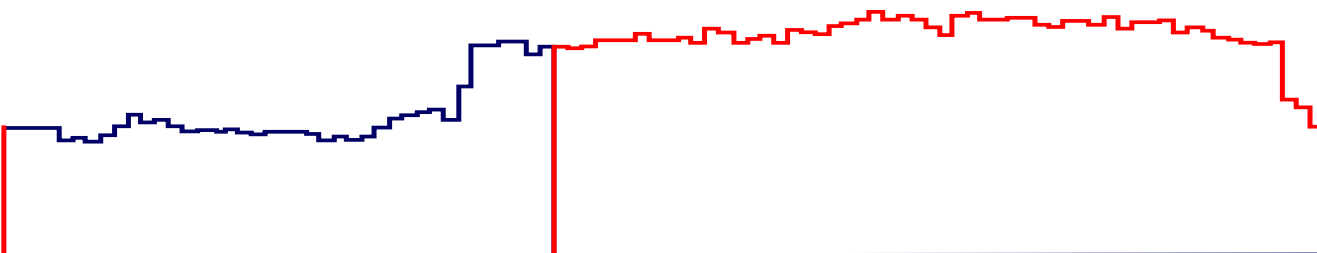


- **Objective:** Heat Accumulator
  - Optimization day/night production
  - Energy balance heat/electricity
  - Stable work of Power plant
- **Scope:** Electrical package installed by Siemens Power Generation Division
  - 54pcs SITRANS measuring devices - Flow, Pressure, Level, Temperature
  - SIMATIC I/O, Automation System
- **Capacity:** 25000 m<sup>3</sup>; 750MWh, 150MW power (dis)charging
- **Expected savings:**
  - 934t Oil/Y
  - 2.978t CO<sub>2</sub>/Y
  - ROI up to 5 Years max.

# Regional stars of Energy Efficiency

## Continuous search for efficiency

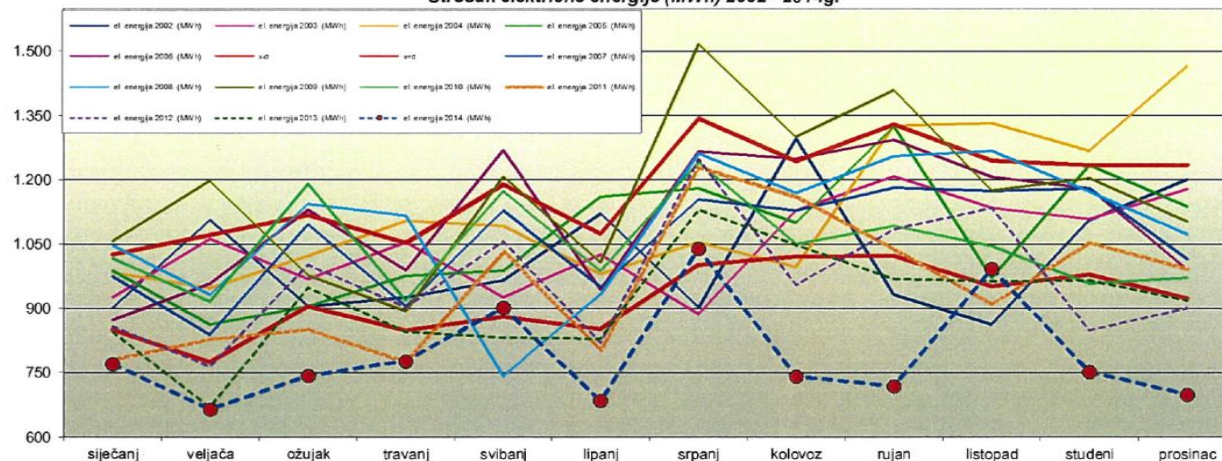
Electricity under control in SuperKonzum Store



Trend of electricity consumption in Zvezda 2002. – 2014.

(Margarine production factory)

Utrošak električne energije (MWh) 2002 - 2014g.



- **Objective:** Cost saving - anyway

- Energy & CO2 saving for 20 - 30%
- Green Image of Agrokor

- **Scope:** Energy Management System

- SCADA – WinCC, last upgrade in 2014.
- 100pcs. SIMATIC S7-1200
- 200 pcs SENTRON PAC

- **Savings:** 2,35 mio€ in 2014.

- **AddOn:**

- Rental of electricity reduced for 2,5 MW
- Biogas plants – 10MW in 2015.
- Photovoltaic power plants – 1,1 MW in 2015.

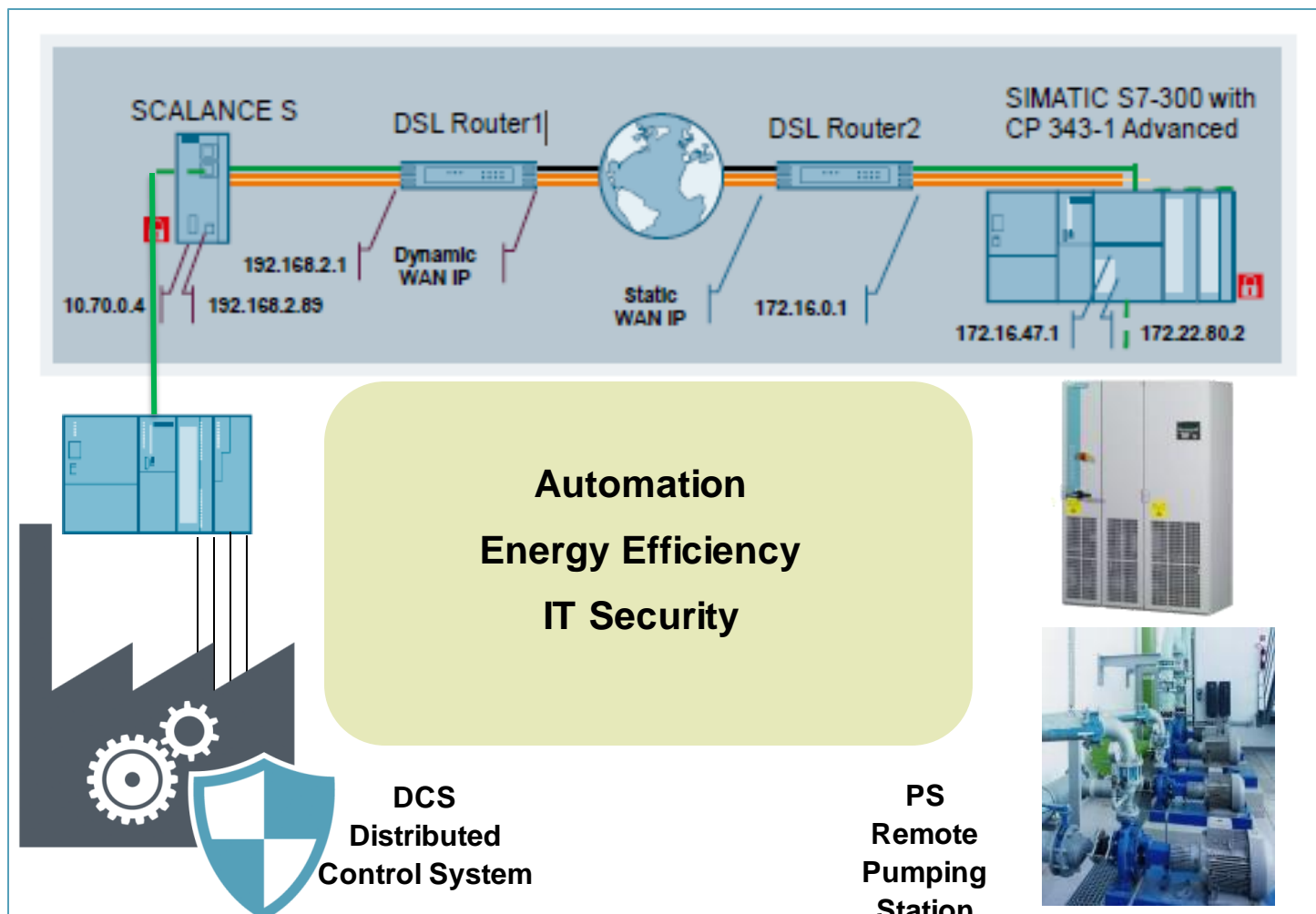
# Cyber Security, Automation and Energy Efficiency

## Task

- To connect remote industrial systems technologically connected
- Setup safe and reliable connection
- Ensure remote access and diagnostic
- Prevent manipulation, espionage and cyber damage of main industrial system

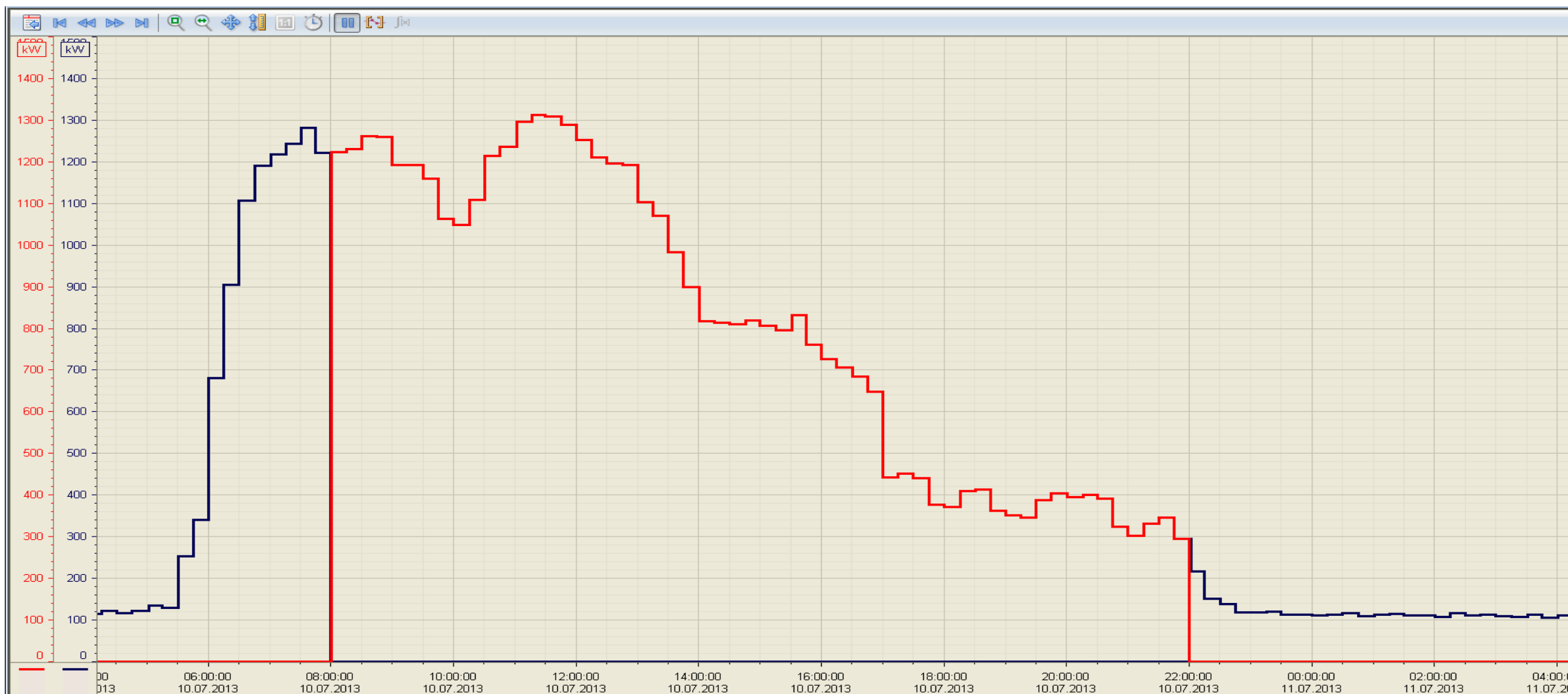
## Solution

- Automation with PLC, Firewall and VPN
- Hard wiring to main control system (DCS)
- Firewall, VPN, IPsec integrated with automation system of pumps.
- Optimisation of pumps
- Energy Saving



# Analysis of load profile – Basis for understanding a plant's consumption

## What you can “read” from this picture?





**SIEMENS**



**Q & A**

**What can you do to change the world?**

**[dalibor.markovic@siemens.com](mailto:dalibor.markovic@siemens.com)**