

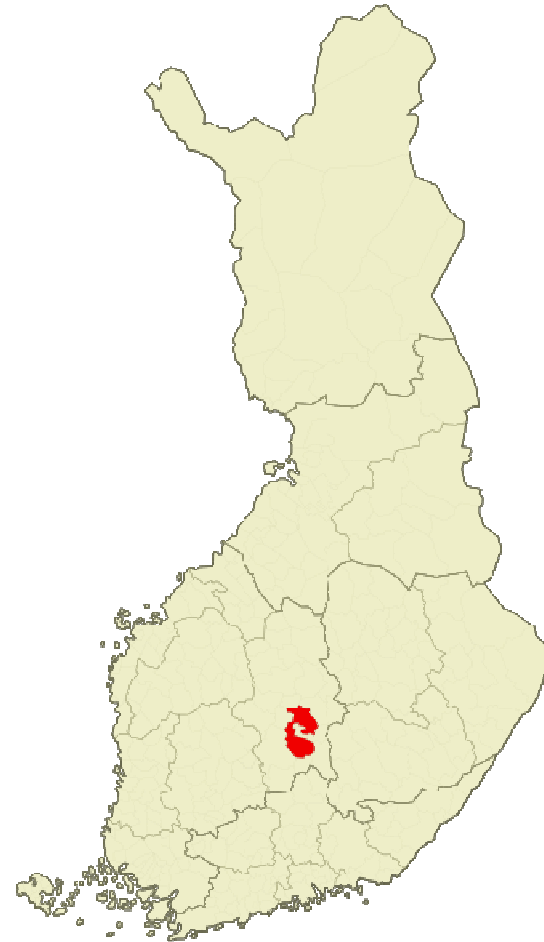
# JAMK University of Applied Sciences




JYVÄSKYLÄN AMMATTIKORKEAKOULU  
JAMK UNIVERSITY OF APPLIED SCIENCES

# Facts and figures

- Jyväskylä, Finland
- Students: 8000  
Staff: 800
- Ltd. established 1994





# The Finnish Dual Model of Higher Education

- Two sectors:
  - Universities of Applied Sciences (Polytechnics)
  - Universities
- Degrees
  - Bachelor's degree (Polytechnics and universities)
  - Master's degree (Polytechnics and universities)
  - Licentiate (University postgraduate)
  - Doctor (University postgraduate)





# Studying at JAMK University of Applied Sciences

- Four different units:
  - Business and Services Management
  - Health and Social Studies
  - Technology
  - Teacher Education College
- Technology:
  - ICT
  - Mechanical Engineering
  - Logistics
  - Natural Resources and Civil Engineering





# Bachelor of Engineering (Logistics)

- Conducted in Finnish and English
- Completed in 3,5 – 4,5 years
  - Practical training period (30 ECTS Cr)
- Cooperation with local businesses
- The focus areas:
  - Materials Handling
  - Transportation Systems
  - Integrated Logistics Support



# Improving Logistics Management with Telematics at a Bio Energy Heating Plant

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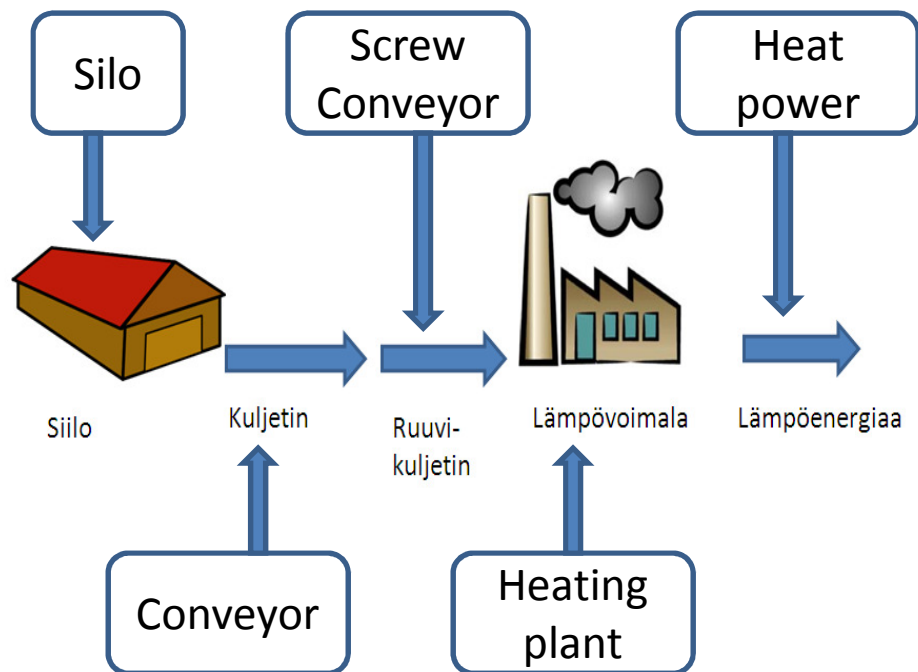
# Introduction

- The assignments came from Kotimaiset Energiat Oy
  - Means Local Energies, which delivers woodchips to heating plants
- The first mission was to design a system that helps supervise the **quantity of woodchips** in a silo
  - delivering point and **consumption forecast**
  - this system is for small heating plants where the delivering time is critical
- The second mission was to create a system that helps measure the profitability of the company

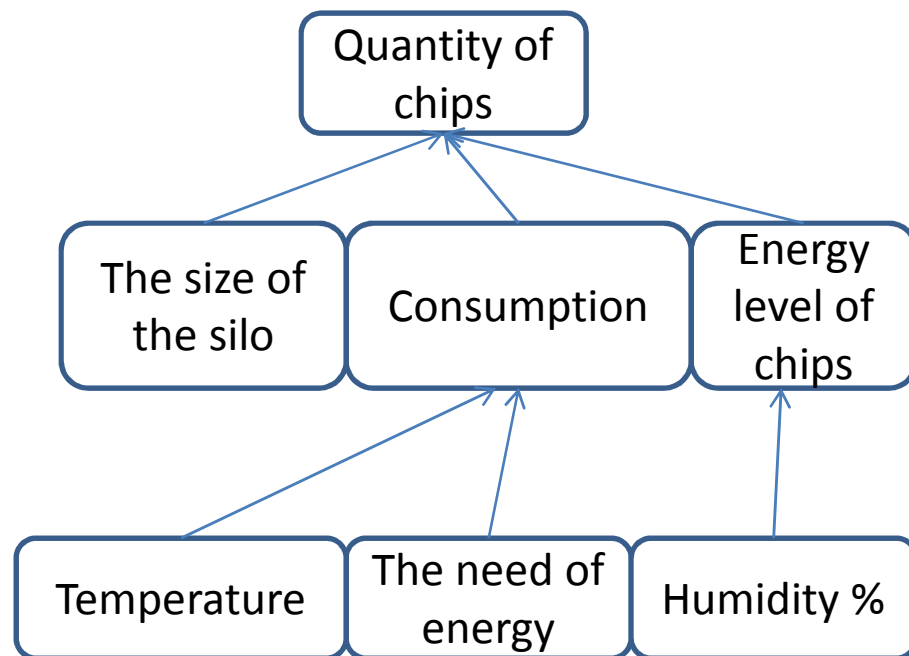


# Operational Environment

Operational environment:



Quantity of chips depends on:



# Login Page of The System

The image shows a login page for 'KOTIMAISET ENERGIAT'. The page has a green header bar with the text 'Kirjautuminen' (Login) on the right. In the top left corner, there is a logo consisting of three orange shapes and the text 'KOTIMAISET ENERGIAT'. Below the header, there are two input fields: the top one is labeled 'Käyttäjätunnus' (Username) and the bottom one is labeled 'Salasana' (Password). To the right of these fields is a black button with the text 'OK'. Two blue boxes with white text and blue borders are overlaid on the page: one labeled 'Username' with an arrow pointing to the 'Käyttäjätunnus' field, and another labeled 'Password' with an arrow pointing to the 'Salasana' field.

Kirjautuminen

KOTIMAISET ENERGIAT

Käyttäjätunnus

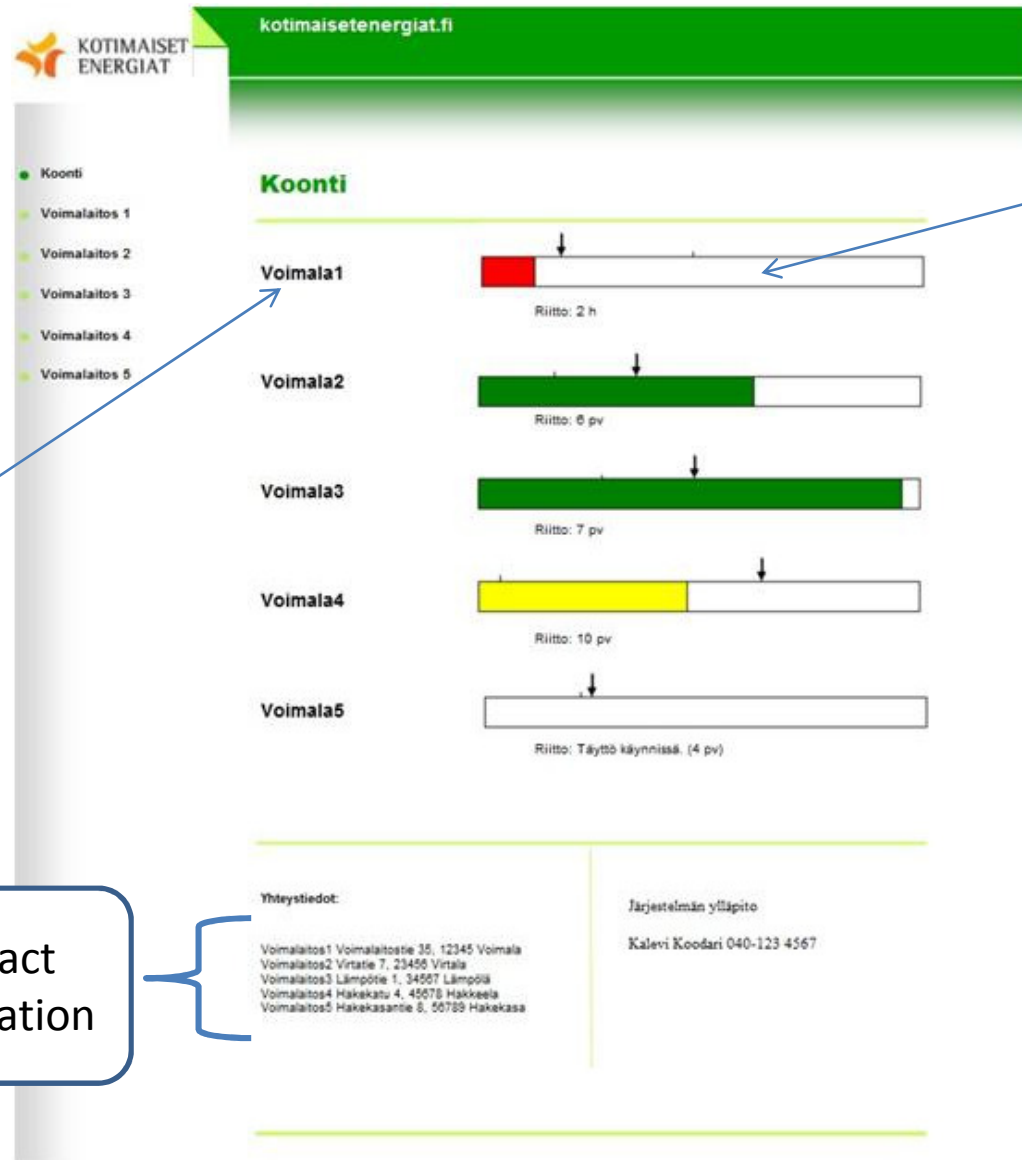
Salasana

OK

Username

Password

# Front Page of The System



Move to the details of plants

Heating plant number 1

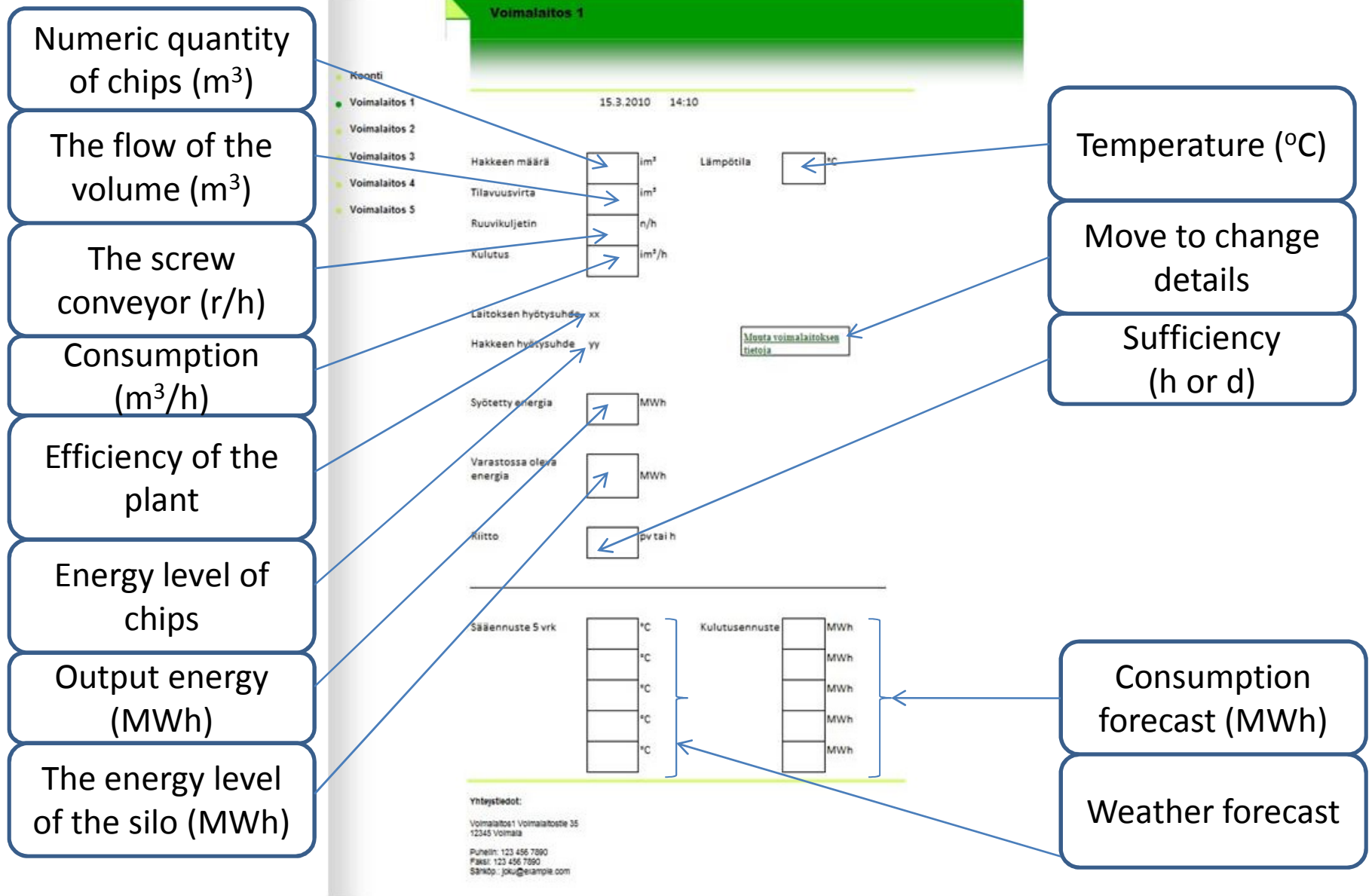
Contact information

The status bar of the quantity of chips

The colors of the status bar

- red: urgent delivery
- yellow: able to deliver full truck load
- green: no room for full truck load
- white: supplement of the silo in progress

# Details of The Heating Plants



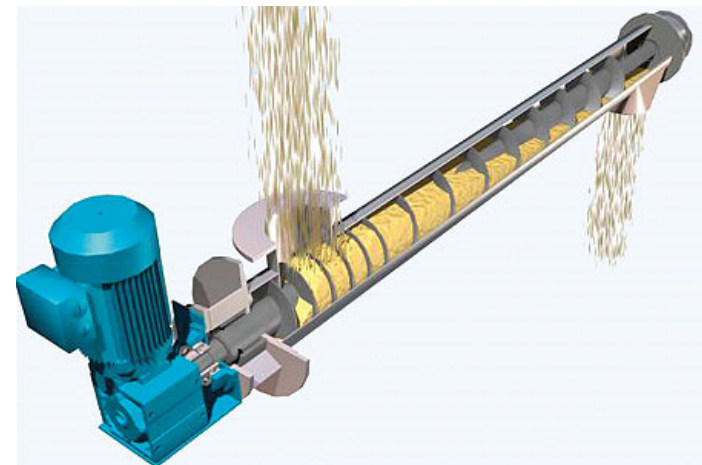
# Technology

- Siemens Simatic automation system
  - for new heating plants
  - tailored product
  - required information can be transferred into the system automatically



# Technology

- In older plants it is expensive and difficult to use new automated technology
  - Alternative technology
- The screw conveyor gives the volume flow





# Chosen Technology for Older Plants

- The selection was an inductive sensor which is a pulse sensor
  - Forwards information of the spins to the rotational speed sensor
- Rotational speed sensor
  - Counts the spins from the screw conveyor
- Distance Control
  - Forwards information from the rotational speed sensor and energy meter to the system automatically





# Measuring Profitability

- Measuring
  - One transport / One job
  - At the company level
- Instruments for measuring profitability
  - Profit and loss statement
  - Activity-based accounting



# Thank You!

