mySCADA

Reference

Small Hydropower Plant Control

Small Hydropower Plant in Hluboká nad Vltavou

Investor:	HydroCon a.s.
Supplier:	Mavel, a.s.
Country:	Czech Republic
Year of implementation:	2014

Czech company HydroCon Inc. has rebuilt small hydropower plant (SHPP) in Czech city Hluboká nad Vltavou, which was completely modernized in 2014 with a strong emphasis on the latest technology that allows remote management and effective control of the data. The supplier of the technology was the international engineering and manufacturing company Mavel a.s. that provides hydro turbines for small hydroelectric power plants worldwide. The SHPP in Hluboká is equipped with direct flow horizontal Kaplan turbine. The power transmission from the turbine shaft to the shaft of the asynchronous generator is secured by a belt drive. Sets are designed for parallel operation of the network.

As in other industries, energy and water industry also follows the latest trends and uses the latest technologies in the field of automation and control. What changes are primarily control systems for small hydro power plants, in terms of full automation. By combining smart sensors and advanced algorithms it is possible to achieve much higher reliability and efficiency in energy production.

"In this area there is still a great potential for application of technology nowadays quite common in other automation industries, enabling remote supervision and management of these power plants, as well as real-time monitoring of the status, performance optimization and fault diagnosis, "says Karel Kraus, Chairman of the Board of Directors of HydroCon Inc. All these requirements are met by mySCADA, which has been implemented as main SCADA control system of this small water hydropower plant.

mySCADA Box
- advanced HMI interface
- multiple PLC protocols
- data logging up to 28mio of records
- complex alarm system
- trends, reports, data analysis
- secure user access
- visual programming
- box side scripts
- integrated secure web server
- advanced routing options
- 3 types of VPN tunnels
- remote access
- integrated 3G/4G modem
- CISCO VPN compatible

HARDWARE PARAMETERS
mySCADA Box conf. EEGN

Dual core 1.0 GHz CPU (Cortex A9 with ULP GeForce GPU

512 MB DDR RAM, 1GB industrial NAND Flash

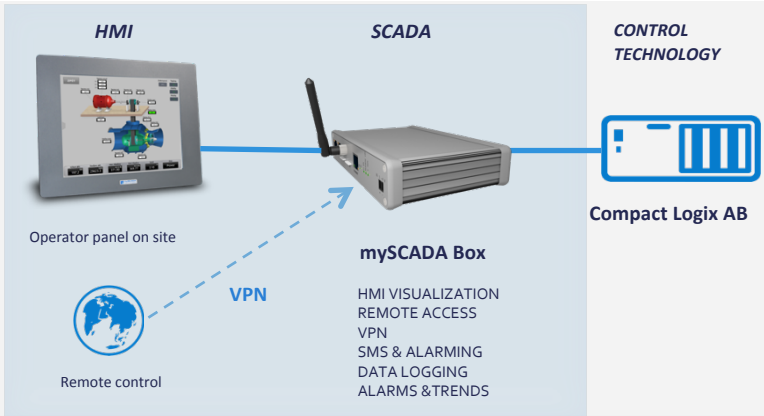
3x10/100 Mbit Ethernet interface

Ethernet 3x10/100 Mbit

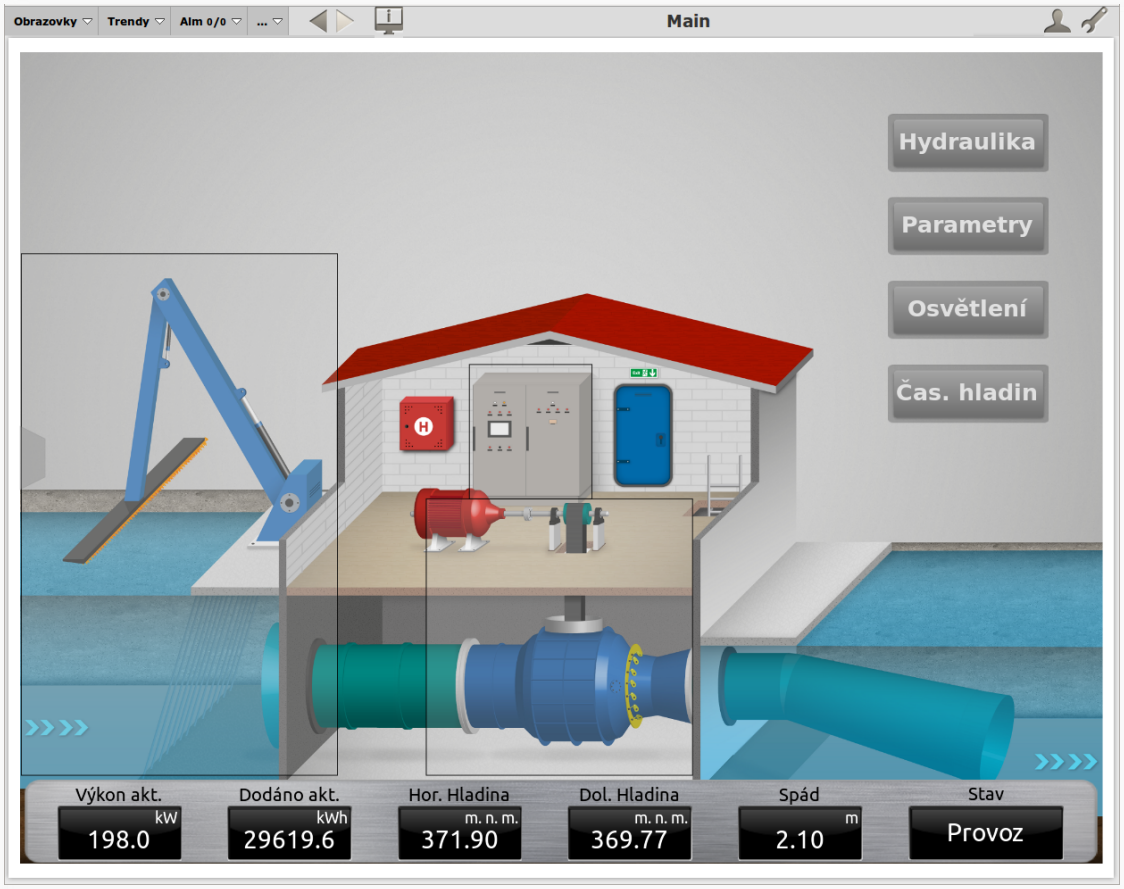
Micro SD card

3G modem with dual SIM option

12-48 VDC



Hydro plant technology

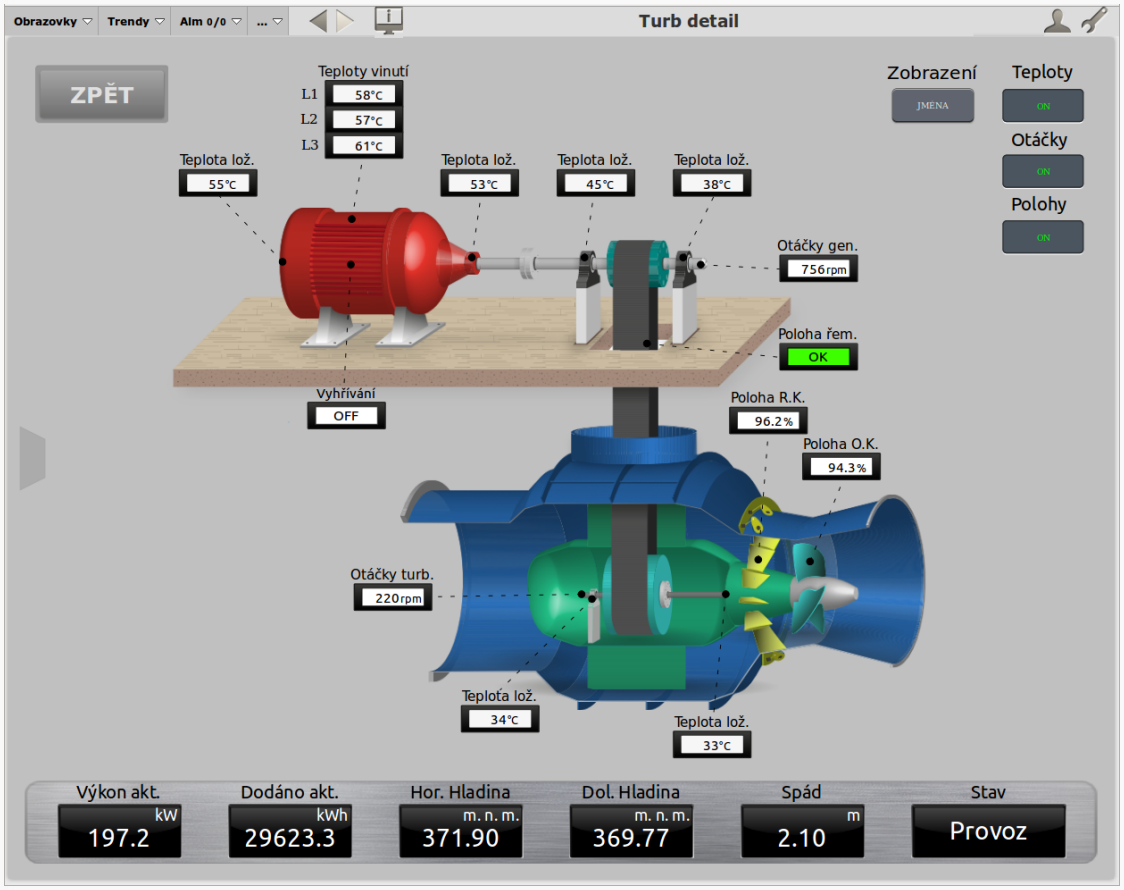


Main View

The main view shows an overview of the SHPP technology and selected major indicators:

- actual power delivered to the supply network (kW)
- Total delivered in the current month (kWh)
- upper water level in front of the trash racks (MASL)
- lower water level (MASL)
- slope – upper and water level difference (m)
- status - an indicator of the current state of SHPP

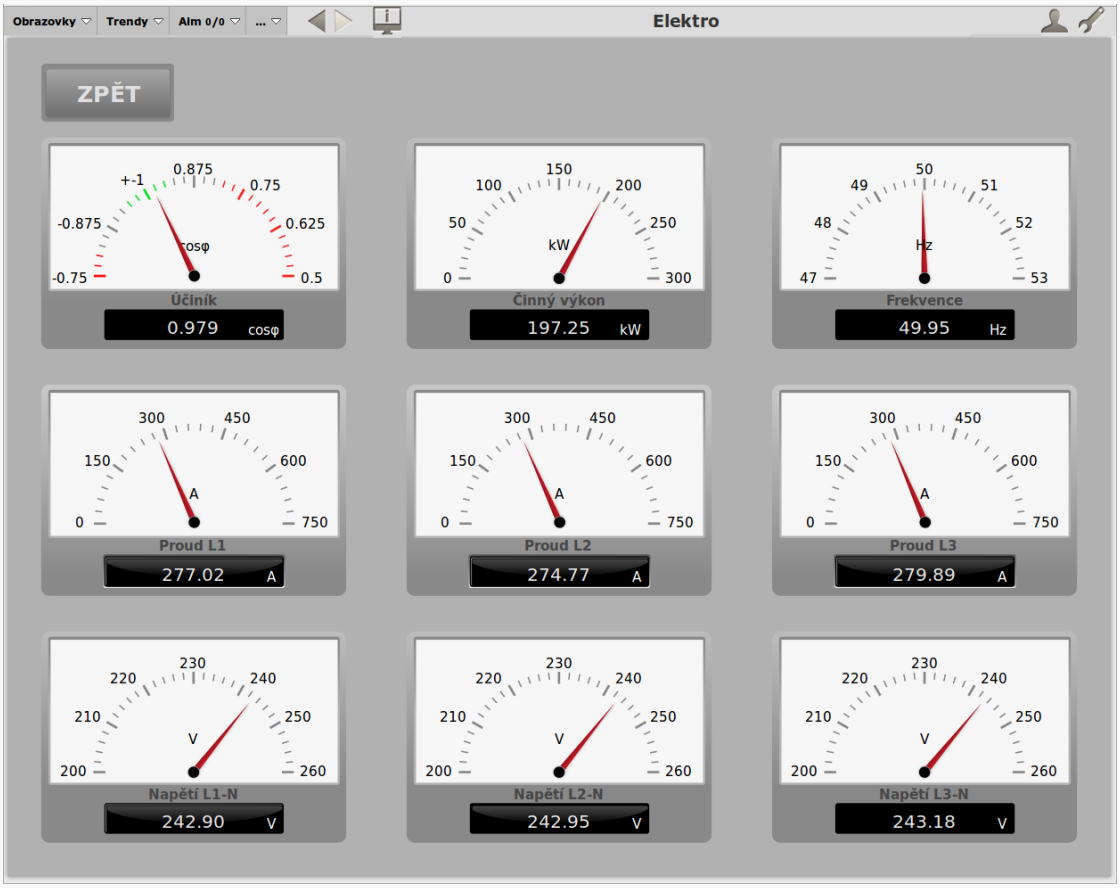
To switch to the next screen, you can click on the relevant part of visualization or use the buttons on the right of the screen.



Details of the Turbine.

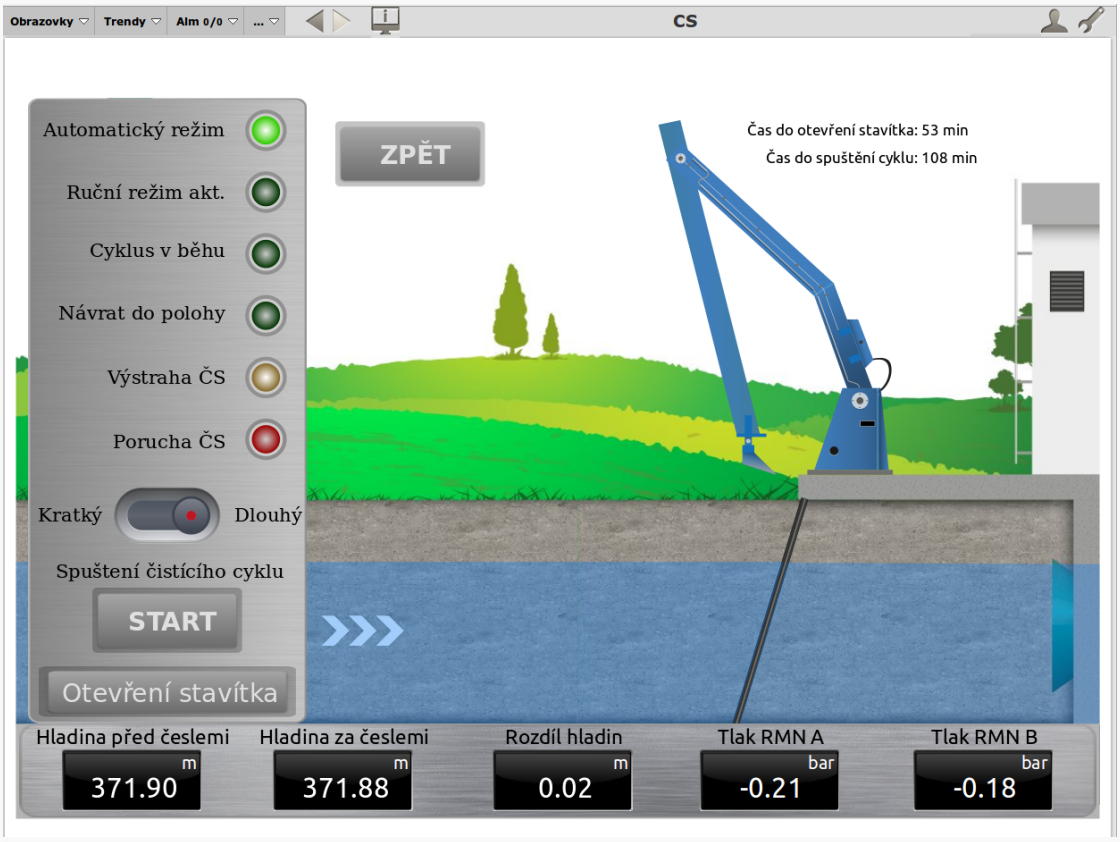
This screen displays the values of all the sensors on the turbine, belt drives a generator.

The buttons in the upper right corner display the current temperature, speed and position. Any fault or alarm is indicated by orange background frame and orange warning pictogram.



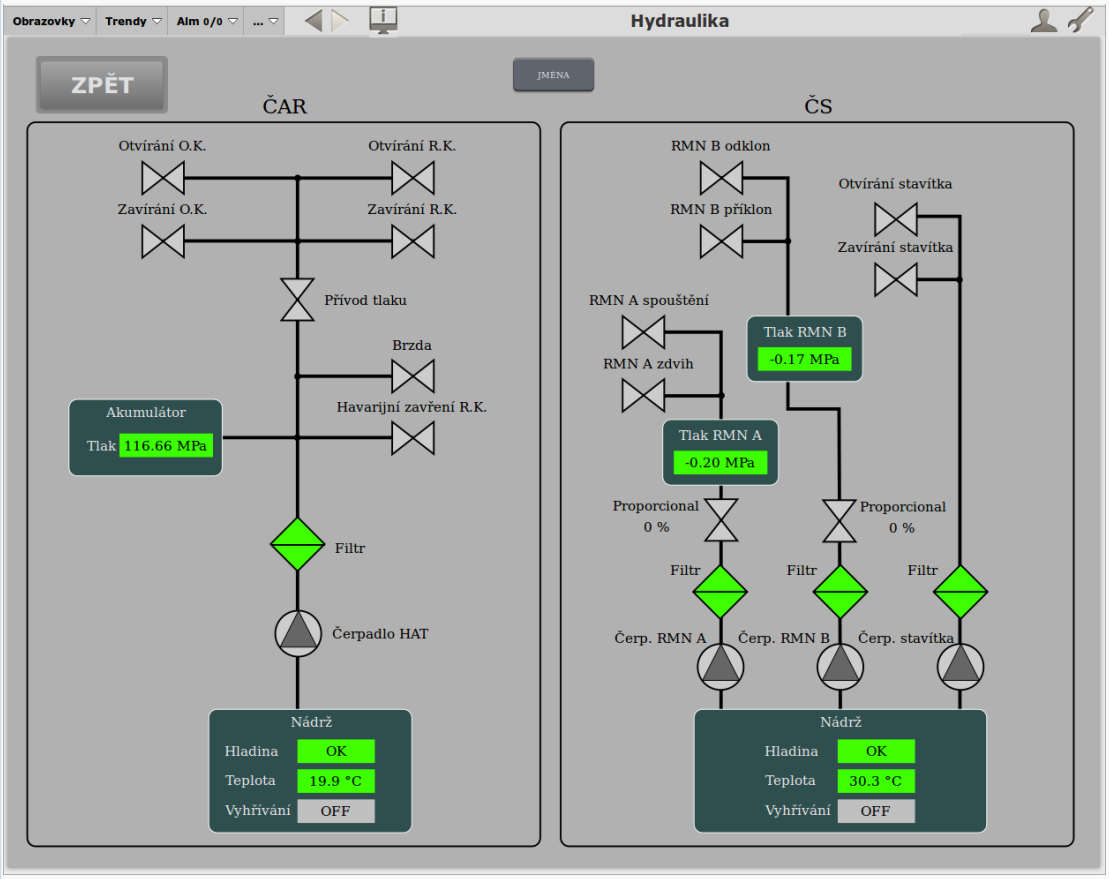
Electro.

This screen displays selected electrical parameters.



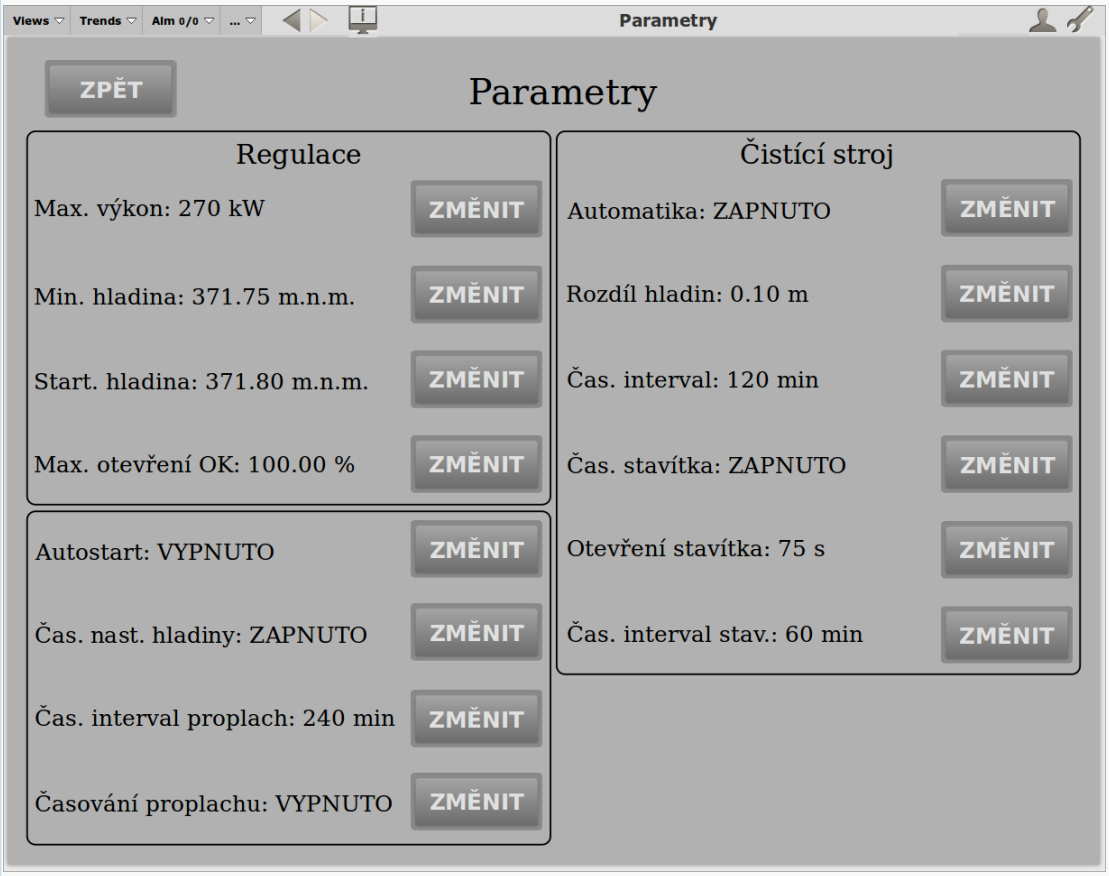
Fine Trash Rack Cleaning Machine.

This screen displays selected parameters of the trash rack cleaning machine and its control elements.



Hydraulics.

This screen shows a simplified hydraulic scheme with all controls and sensors for hydraulic turbine unit and trash rack cleaning machine.



Parameters.

On this screen you can set the optional parameters of the control system, for example the maximum power limit of the SHPP or the minimum water level in front of trash racks.