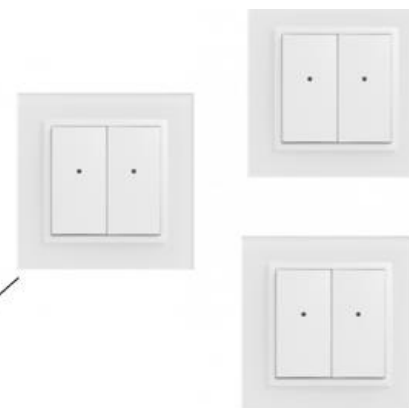


ON-LINE MONITORING OF ENERGY SOURCES AND CONSUMPTION

13 April 2021

- The energy monitoring system will provide real data on the consumption of electricity and heat, cold and hot water for the university building. In addition, each training room is provided with the monitoring of the main indicators of the microclimate - temperature and humidity, carbon dioxide concentration. A separate component of the monitoring system is a meteorological module that will monitor the temperature and humidity of the outside air, wind direction and speed, atmospheric pressure, intensity of solar radiation (insolation), the value and trend of changes in atmospheric pressure.
- The monitoring system is created on the basis of "smart" devices of energy monitors of the Slovakian company INELS (<https://www.inels.sk/>) (Figure 2). All data obtained in the course of the monitoring process are available for viewing in real time on any device (PC, tablet, smartphone) and stored for further analysis in the cloud or local storage.



Správca zariadení



CU3-02M (000000)

▲ Centrálna jednotka - CU3, 4x digitálny vstup, 2x analógový vstup, 1x digitálny output, inštalácia na DIN lištu, 6-MODUL.

Internal-Master/BUS1 (0100F1)

▲ Modul mastera internej zbernice BUS1.

WSB3-40-Hum (000029)

▶ Nástenné skupinové ovládače s krátkym ovládaním Double - 2x dvojstavové tlačidlo, vstavané meranie teploty a vlhkosti, 2x digitálny vstup alebo 1x teplotný vstup.

DLS3-1 (00002A)

▶ Modul senzora intenzity osvetlenia, vstavané meranie intenzity osvetlenia.

DA3-22M (00002B)

▶ Stmievacia, spínacia jednotka, 2 kanály (400VA / kanál), 2x ovládací vstup, vstavané meranie teploty, 1x teplotný vstup, inštalácia na DIN lištu, 3-MODUL.

ADC3-60M (00002D)

▲ Prevodník analógovo digitálna, 6 kanály, inštalácia na DIN lištu, 3-MODUL.

• AIN1 (AIN1)

• AIN2 (AIN2)

• AIN3 (AIN3)

• AIN4 (AIN4)

• AIN5 (AIN5)

• AIN6 (AIN6)

• OUF-Alert1 (OUF-Alert1)

• OUF-Alert2 (OUF-Alert2)

• OUF-Alert3 (OUF-Alert3)

• OUF-Alert4 (OUF-Alert4)

• OUF-Alert5 (OUF-Alert5)

• OUF-Alert6 (OUF-Alert6)

• OVLO-Alert Uref1 (OVLO-Alert Uref1)

• OVLO-Alert Uref2 (OVLO-Alert Uref2)

Internal-RF-Master (0100F6)

▲ Modul internej zbernice RF.

RFTM-1 (00002C)

▲ RF pulzný prevodník pre domáce meranie energie, inštalácia do inštallačnej krabice.

• Battery LOW (Battery LOW)

• Counter (Counter)

• Write-Counter-DOUT (Write-Counter-DOUT)

• Setup-To-Counter (Setup-To-Counter)

• Reset-Unit-DIN (Reset-Unit-DIN)

• Write-Counter-DIN (Write-Counter-DIN)

Internal-Master/BUS1 (0100F1)

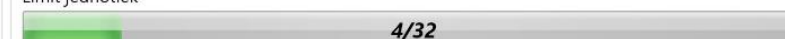
Parametre

Adresa:

Meno:

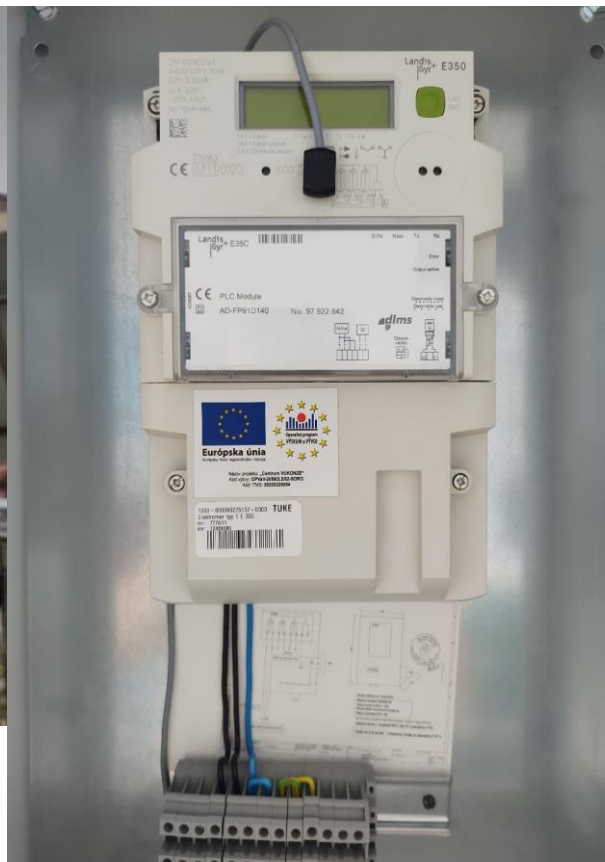
Poznámka:

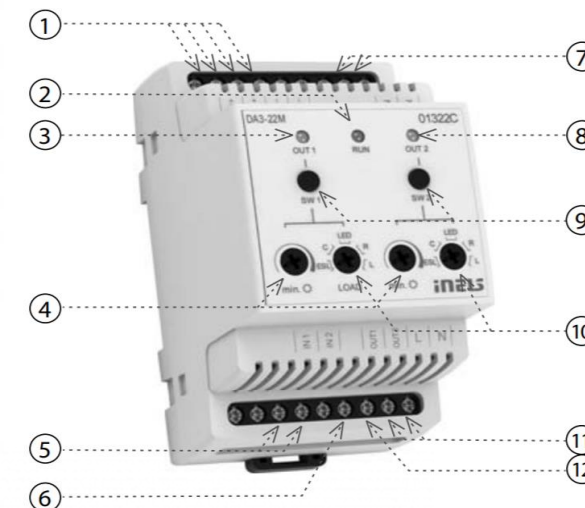
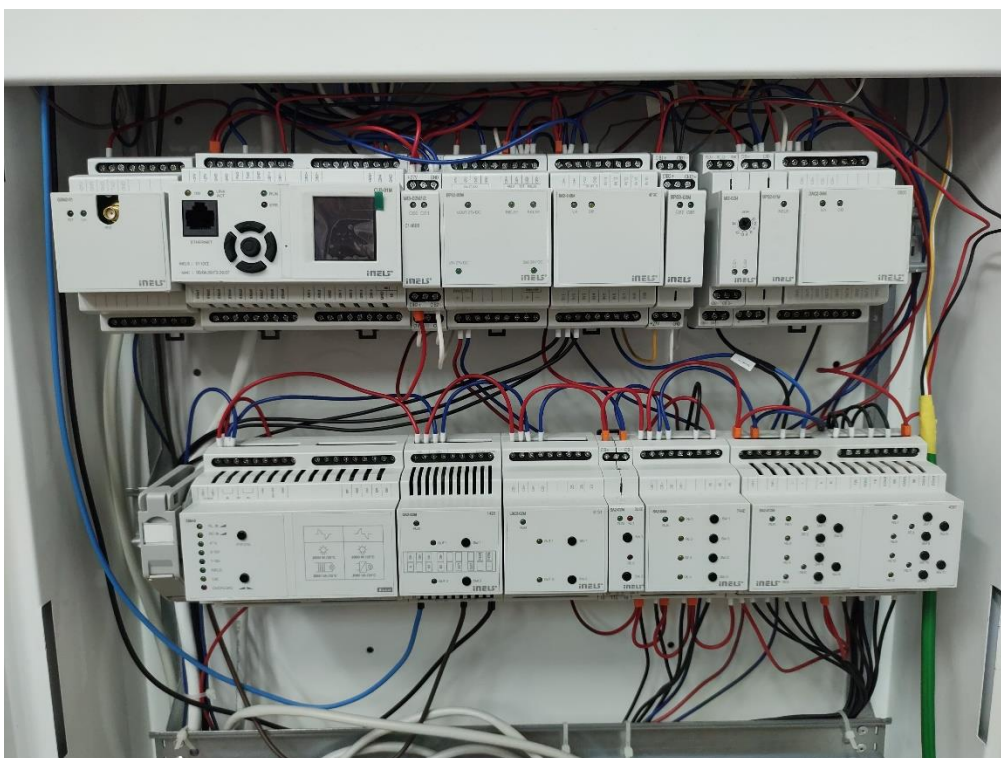
Limit jednotiek



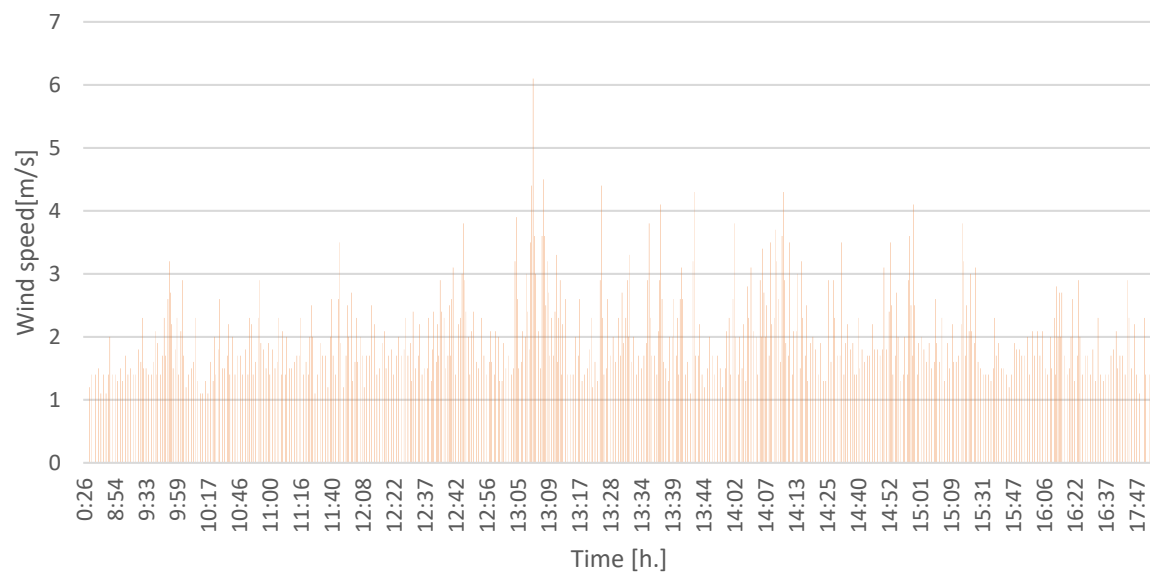
Prúdový zdroj:



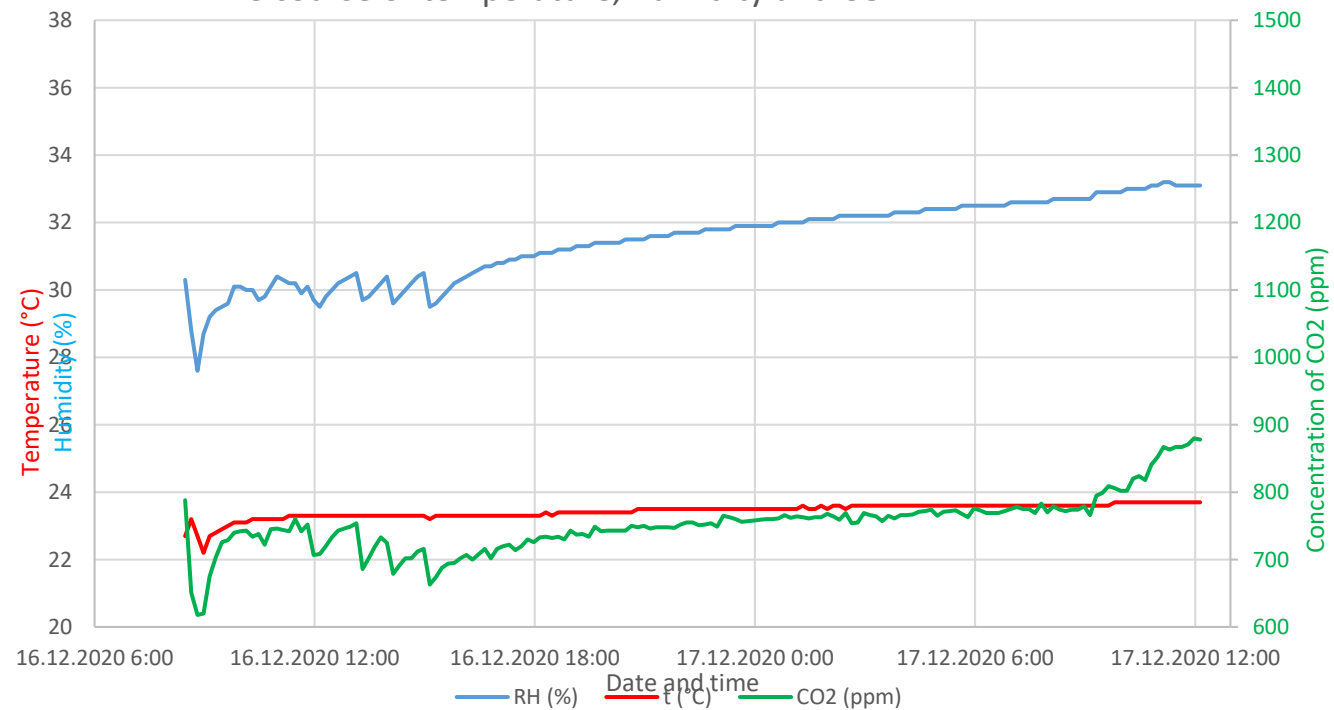




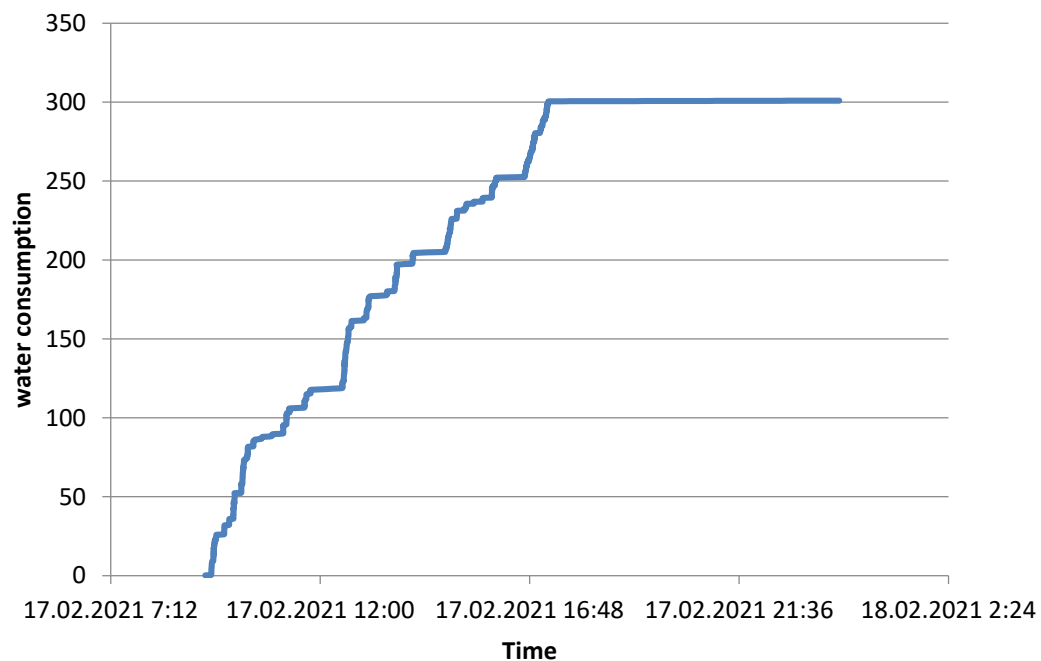
The course of wind speed during the day 4.1.2021



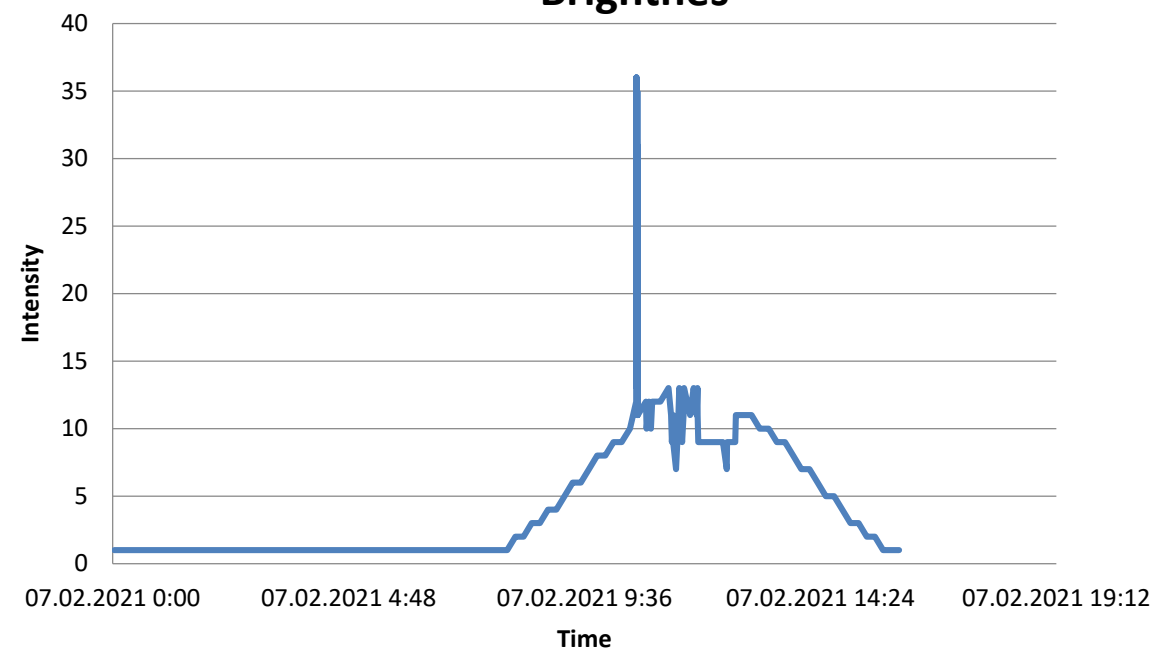
The course of temperature, humidity and CO2



Water consumption

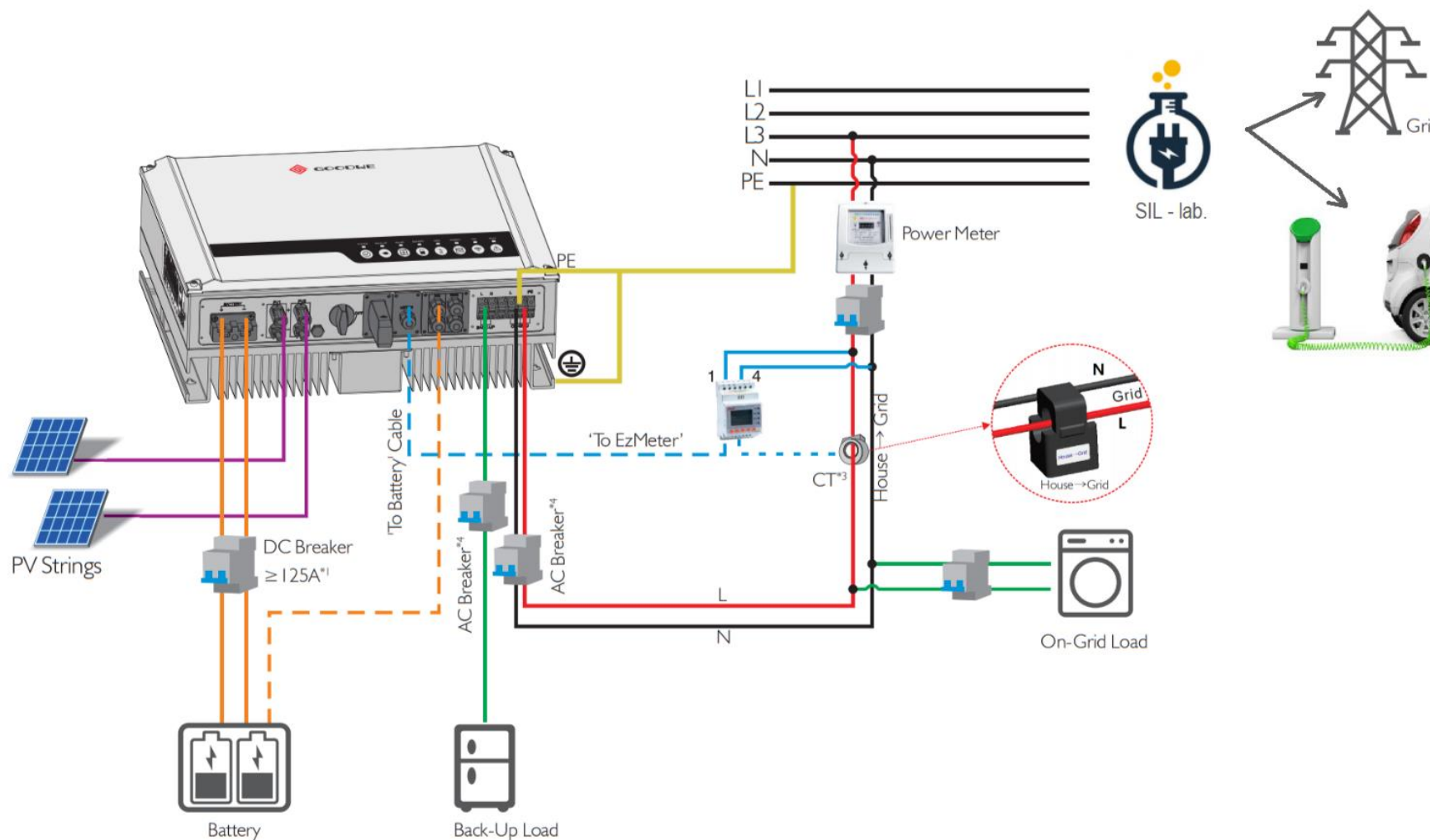


Brightness

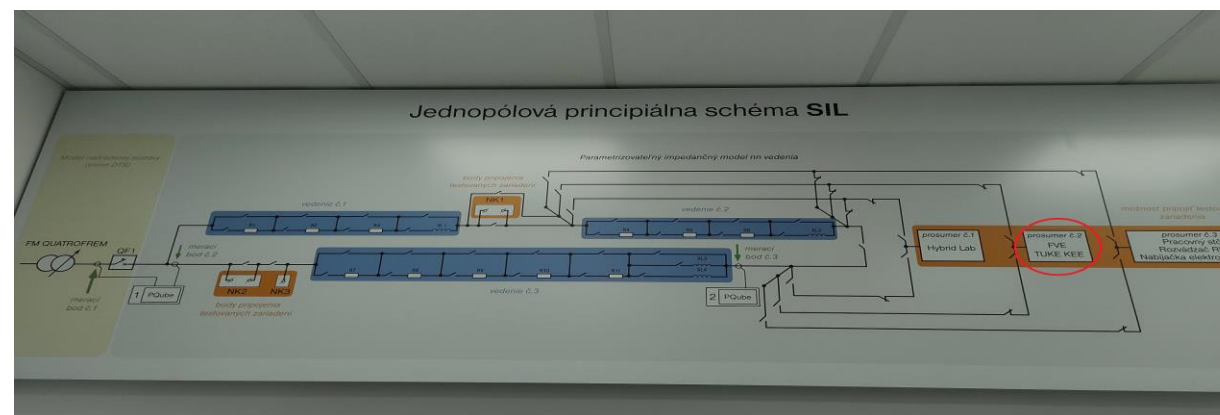


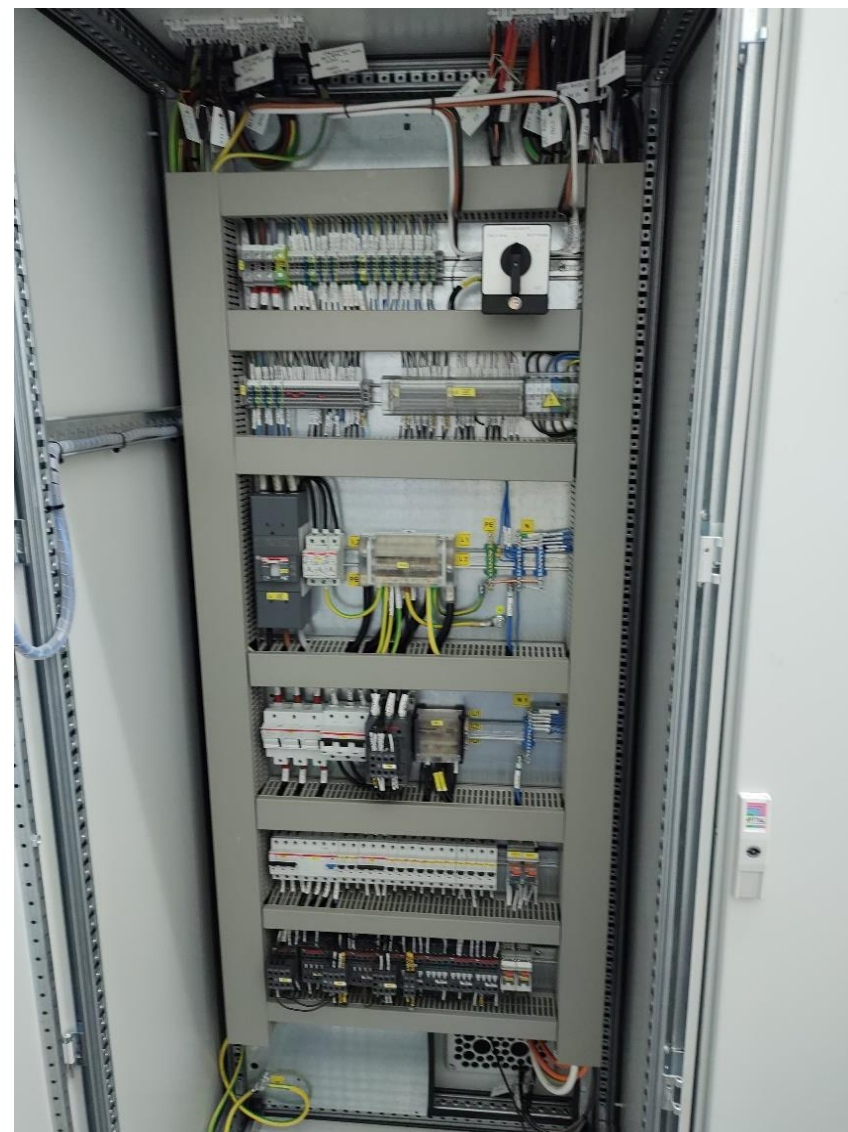
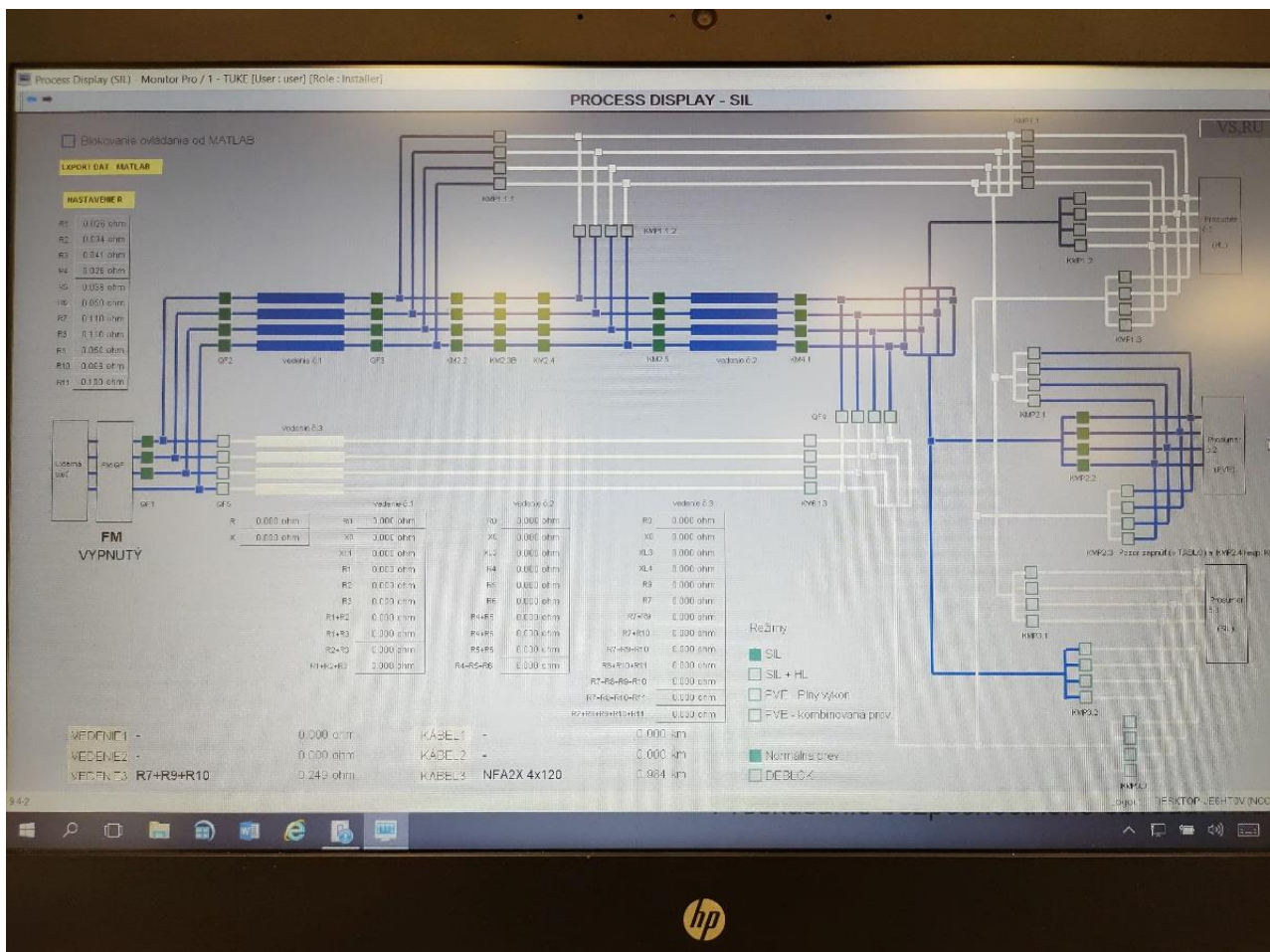
The obtained data on actual energy consumption, after the installation of the pilot monitoring system, during the calendar year will allow to estimate the specific thermal characteristics of the building, determine the actual energy consumption to ensure regulatory microclimate in the building, assess the rationality and trends of energy consumption. Also, such data will help to assess the real effect after the implementation of energy efficiency measures to reduce energy consumption in university buildings.

The pilot energy monitoring system for the university building is being deployed on the Department of Electric Power Engineering. The Department occupies a historic building in old town in Košice.



- The mounted SPP is located in an accessible place - the laboratory of physical bases of renewable energy sources of the Department of electric power engineering, Technical university of Košice. Structurally, SPP is built according to the network scheme and consists of an array of photovoltaic panels, a grid tie inverter and a smart meter through which it is connected to the electrical grid and Laboratory Smart Industry Lab, located on dept. of Electric power engineering – marked as – Load
- As mentioned above, the device is installed on the roof of the building and connected to the SIL laboratory at the Department of Electrical Power Engineering at TUKE. The PV system consists of an inverter (Goodwe 3048-ES) with accessories, smart meter and grid protection. PV consists of 10 Amerisolar panels with a total power of 3200Wp. PV is connected to 2 strings of 5 panels. This splitting is realized due to the fact that if even one panel is shaded, the current from the whole power plant would be reduced, but this solution will only reduce the power of half of the power plant. Both DC and AC switchboards are located in the SIL laboratory.





Any Questions?

