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Students report about CO_2 monitoring
Ученически доклад за дейността по измерване на CO_2

Дата/ Date: 06.03.2024

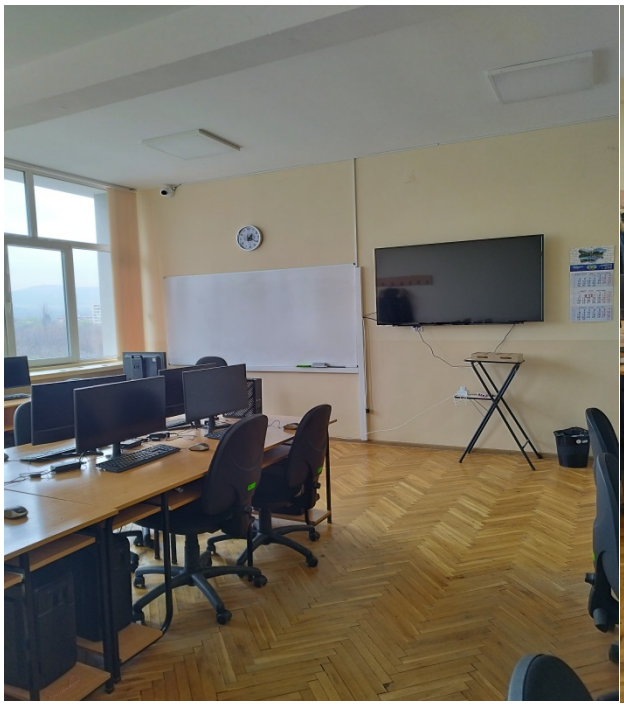
1. Въведение (Introduction):

Monitoring the concentration of CO2 in a closed environment. The time period is 15 days /05.03 – 19.03.2024/. The goal is to examine the levels of CO2 whether there are dust particles, change of temperature, number of people inside the room or ventilation.

Project number 2022-1-IT01-KA220-VET-000087732 –
"CHANGE - Co2 monitoring in scHools for digitAl aNd Green compEtences"
CUP G31B22002160006

Event log to be used in CO_2 monitoring experiments
Доклад за дейността при мониторинг на CO_2

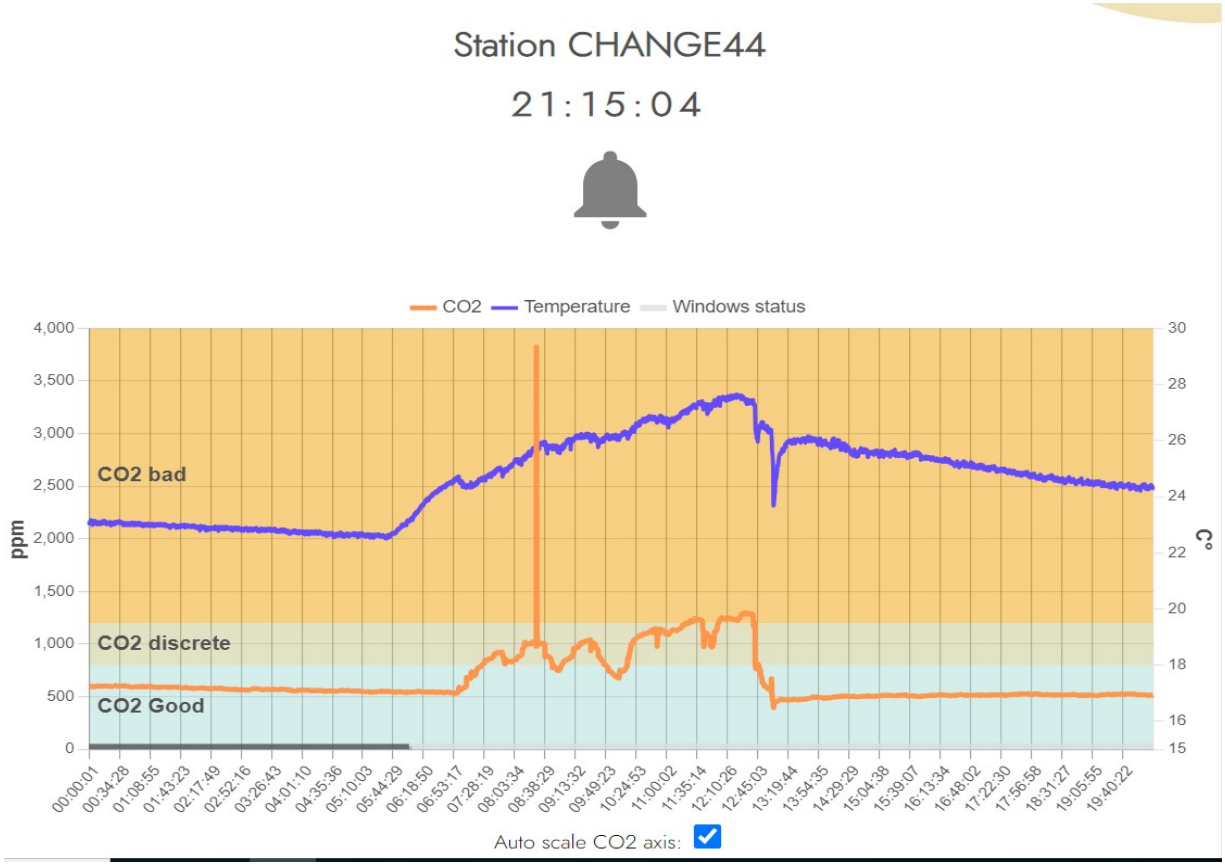
Type of activity (вид дейност): Monitoring CO2
Info about workspace (информация за работната среда) - School environment
School and Class (училище и клас) – PGE „John Atanasov" – Stara Zagora, 10b
Room destination (номер на стаята) - 418
Room surface (площ на стаята) - 30 m^2
Room volume (обем на стаята) - 90 m^3
Number of windows (брой прозорци) - 2
Window opening surface (площ отваряеми прозорци) – (0,8 x 2) m^2
Position of monitoring stations (разположение на устройството) – in the middle of the east wall of the room
Position of HVAC (Отоплителни , вентилационни системи) - Radiator 3m^2 away
Average number of occupants (среден брой на хората) - 12
Average occupation time (school hours?)(учебни часове: начален час-краен час) 00:00 – 00:00

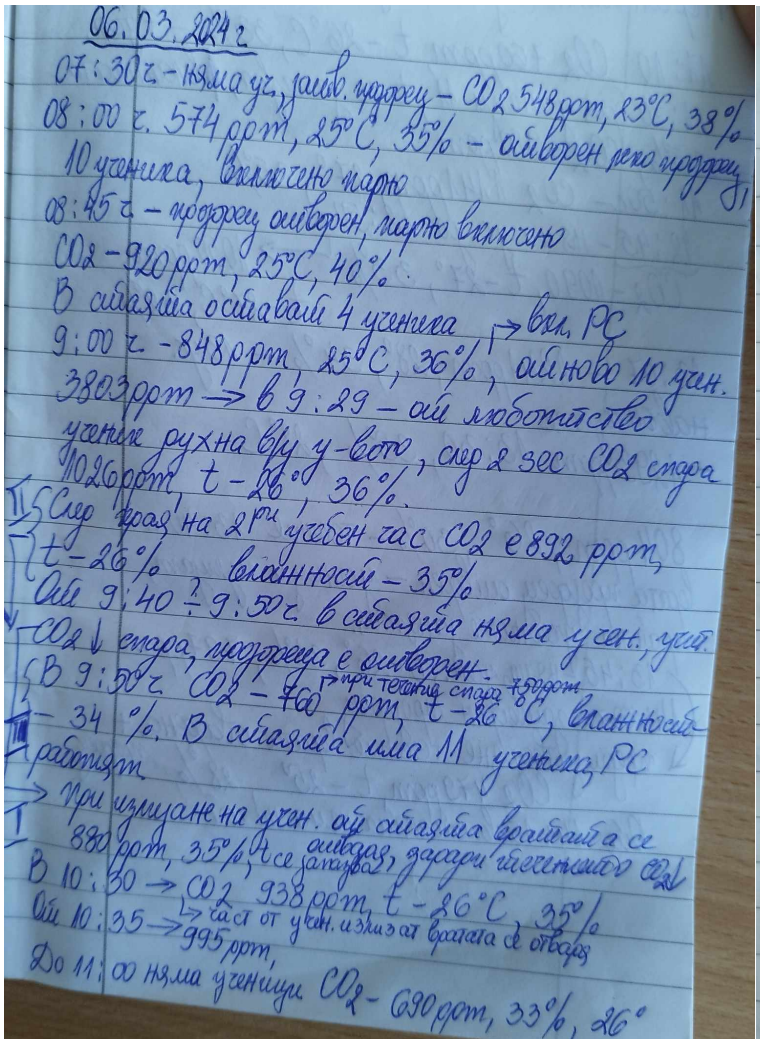


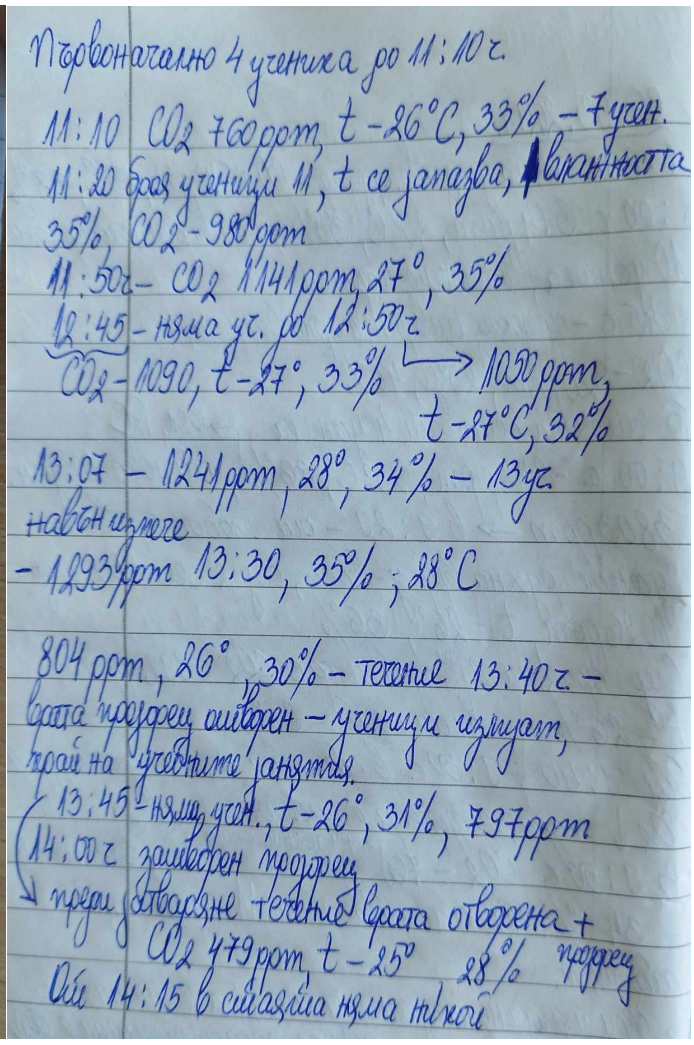

Разположение на стаята и устройството

Event Log

2. Информация (Information):







Start time Начален час	End time Краен час	Event събитие	Notes Бележки
07:30	08:00	Closed window	The room is empty
08:00	14:00	Open window	Students in the room
14:00	14:15	Closed window	1 person in the rom

3.Коментари (Comments):

At 07:30 there is no one in the room, the windows are closed, the steam has been running since 07:00. Reported concentration 548 ppm, temperature 23℃, relative humidity 38%. At 08:00 one of the two windows in the room is open, there are 11 people in it. CO2 574 ppm, temperature 25℃, relative humidity 35% were reported. After 45 minutes, the readings were taken again under the same conditions – the concentration was 920 ppm, the temperature 25 ℃, the humidity 40%. From 08:45 to 09:00 there are four people in the room, this affects the CO2 and it decreased to 848 ppm, the temperature remains 25 ℃, but the humidity drops to 36%. At 9:00 a.m. again the number of people in the room is 11, with a slight rise in CO2. Before the end of class, at 9:30, one of the students in the group expressed interest in the device. Spontaneously, he does an experiment - he blows with his mouth near it, during which the concentration very quickly rises to 3803 ppm. After 2 minutes it is normalized in permissible values -1026 ppm. The temperature and relative humidity kept their readings - 26 ℃ and 36%. When the group leaves

the room, the door is open. A draft is created which causes the CO2 to drop to 880 ppm. The relative humidity of the air also decreases - 35% (by 1%), the temperature keeps its value - 26℃.
From 09:40 to 09:50 there is no one in the room, the window is open. Within 10 minutes, a drop in CO2 and humidity was observed. The following readings were reported:
09:40 hours – CO2 892 ppm, temperature 26 ℃, humidity 35%
09:50 hours - CO2 760 ppm, temperature 26 ℃, humidity 34%
From 9:50 there are 12 people in the room, the computers are on. After the end of the class, 10:35 a.m., concentration 995 ppm, temperature 26 ℃, humidity 35% were reported. From 10:35 a.m. to 11:00 a.m. there is no one in the room. At 11:00, concentration 690 ppm, temperature 26 ℃, humidity 33% were reported. From 11:00 to 11:10 there are 7 people in the room, the CO2 rises to 760 ppm. From 11:10 the number of people in the room is again 11 people. After 10 minutes, at 11:20 a.m., concentration 980 ppm, temperature 26 ℃, humidity 35% were recorded. At 11:50 the concentration reached 1141 ppm at a temperature of 26 ℃, humidity 36%. There is an increase in CO2 and an increase in air humidity, and the temperature remains constant. Classes with the group continue until 12:45, when the readings are – 1190 ppm, t - 27 ℃, humidity 33%. By 12:50 the room is empty. Before the next group of 14 students, CO2 - 1050 ppm, temperature 27 ℃, humidity 32% were recorded. An increase in CO2 is observed during the learning process:
13:07 - CO2 1241 ppm, temperature 28 ℃, humidity 34%
13:30 - CO2 1293 ppm, temperature 28 ℃, humidity 35%
At 13:00 the heating is turned off.
At the end of the lesson at 1:40 p.m., the influence of the draft on concentration was again observed when the door was open and the window located diagonally across it. As a result of the phenomenon, the concentration of CO2 drops rapidly to 479 ppm, the temperature also drops to 25 ℃, and the humidity to 28%. As of 1:45 p.m., there are no students in the room, the window is still open, but the door is closed, only the teacher remains and the CO2 normalizes. Before closing the window, at 14:00, CO2 - 797 ppm, temperature 26 ℃, humidity 31% were recorded. There are no people in the room since 14:15.

4. Заключения (Conclusions):

A strong influence on the concentration is indicated by the increased amount of air, as a result of which it rises very quickly.

Influence also indicates the flow that is obtained from natural sources (door and window open at the same time). When creating a draft in a closed room, CO2 drops very quickly.

Изготвили (Issued by) : 10б клас (class)