



Students report about CO₂ monitoring Ученически доклад за дейността по измерване на CO₂

Дата/ Date: 08.03.2024

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 CO₂ monitoring experiments Доклад за дейността при мониторинг на CO₂

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 m²

Room volume (обем на стаята) - 90 m³

Number of windows (брой прозорци) - 2

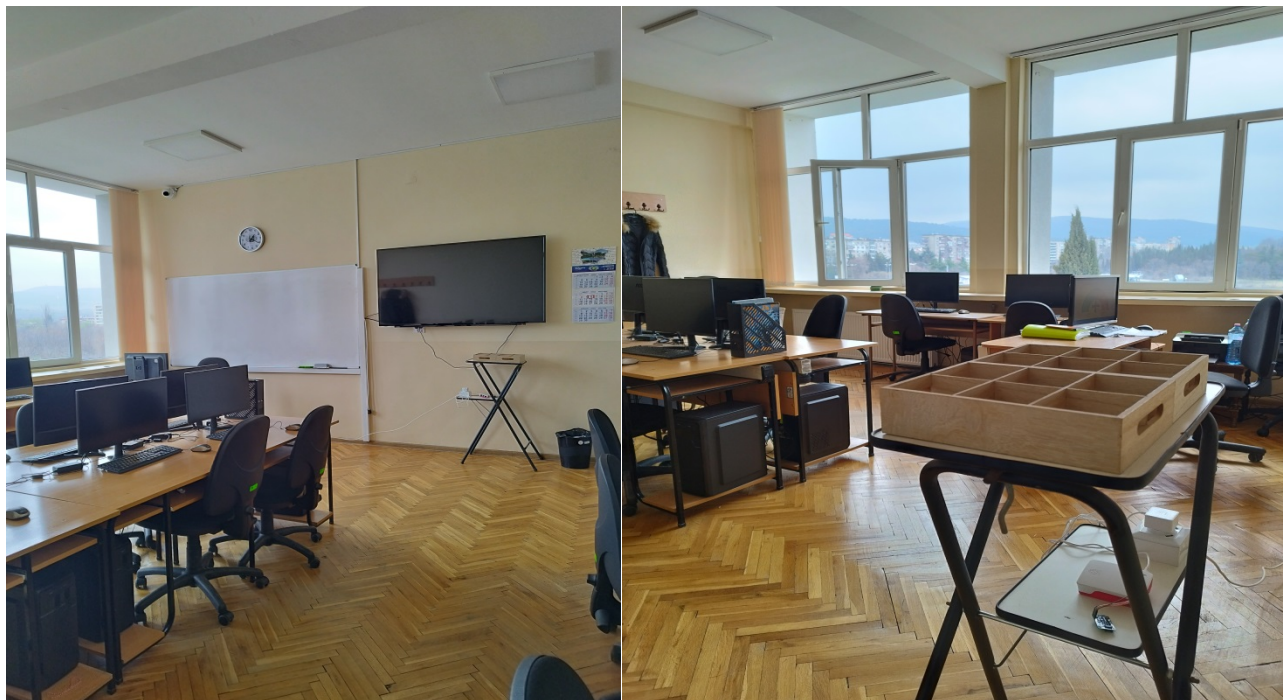
Window opening surface (площ отваряеми прозорци) – (0,8 x 2) m²

Position of monitoring stations (разположение на устройството) – **in the middle of the east wall of the room**

Position of HVAC (Отоплителни , вентилационни системи) - Radiator 3m² away

Average number of occupants (среден брой на хората) - 8

Average occupation time (school hours?)(учебни часове: начален час-краен час) 00:00 – 00:00



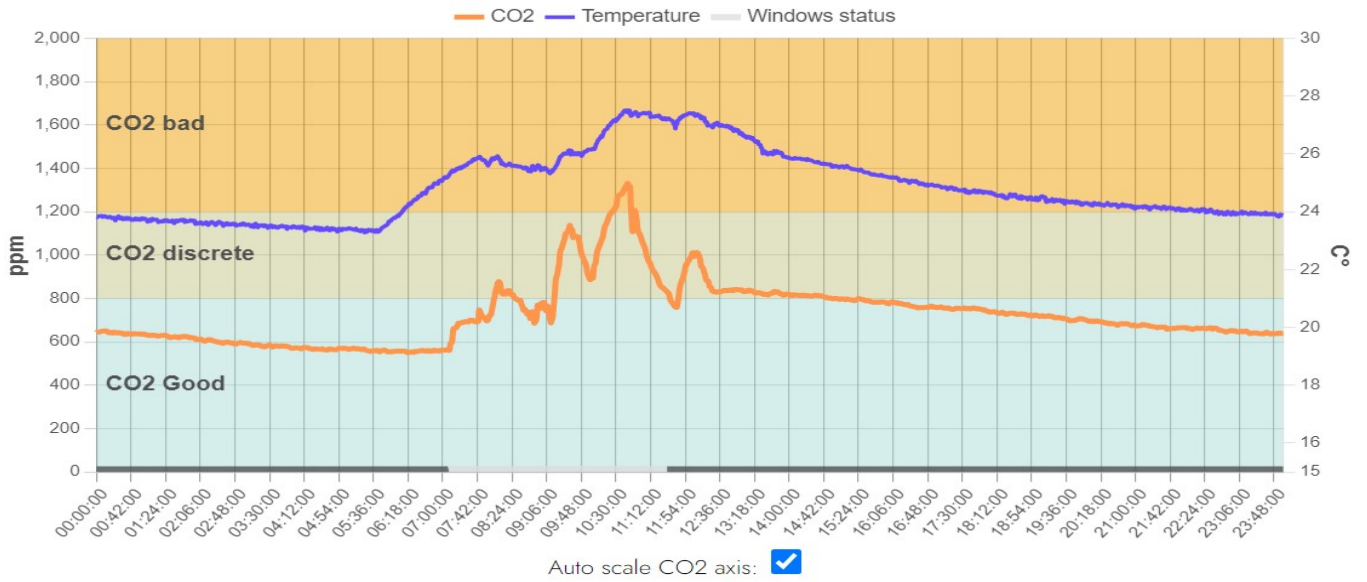
Разположение на стаята и устройството

Event Log

2. Информация (Information):

Station CHANGE44

11:32:44



08.03.2024 г.

Влажно, много време, роси. $4^{\circ}\text{C} - 7^{\circ}\text{C}$ навън през ренз
 08:00 - 660 ppm, 25°C , 41% - няма уч., вкл. парт., затв. проз.
 08:45 з. - 733 отворен, 26°C , 42% затворен →
 отворен прозорец, няма учени. до 08:55 з. 700 ppm,
 $t - 26^{\circ}$, 40%. От 9:00 з. - Фученика, РС вкл., прозорец
 отворен $\text{CO}_2 \uparrow$ в 9:05 - 855 ppm, 26° , 39%
 В 9:40 → CO_2 - 748 ppm, $t - 25^{\circ}$, 34%
 9:40 ÷ 9:50 з. - няма ученици
 ↳ 703 ppm, 25° , 32%
 9:50 з. група ай - Мученика $\text{CO}_2 \uparrow$ и в 10:00 е
 отворен 700 ppm, 26°C , 33%, вкл. РС
 10:35 - 1121 ppm, 26° , 34%
 10:35 з. до 11:00 з. няма ученици
 ↓ 885 ppm, 26° , 32%
 В 11:07 - Фученика CO_2 се е повишила на 1017 ppm, 26°C , 33%
 В 11:30 з. CO_2 - 1225 ppm, 27° , 34% независимо отворе-
 ния прозорец; 11:45 - 1318 ppm, 27°C , 35%
 11:50 ÷ 11:55 няма никой, $\text{CO}_2 \downarrow$ 1176 ppm, 27°C , 34%
 11:55 ÷ 12:40 само преподавател $\text{CO}_2 \downarrow$
 ↳ CO_2 760 ppm, 27° , 31%
 От 12:40 з. Фученика, $\text{CO}_2 \uparrow$ - в 12:50 з. 886 ppm, 27° , 32%
 В 13:15 з. - CO_2 - 944 ppm, $t - 27^{\circ}\text{C}$, 32%
 ↳ затворен прозорец 13:30 CO_2 844 ppm, 27° , 31%

Start time Начален час	End time Краен час	Event събитие	Notes Бележки
08:00	08:45	Closed window	No students in the room
08:45	13:30	Open window	

3.Коментари (Comments):

At 08:00, a concentration of 660 ppm, temperature 25°C, humidity 41%, there are no students and teachers in the room, the windows are closed, the heating is on. From 08:15 to 08:30 the room is being disinfected. At 08:45 the window is open, just before that the concentration of CO₂ 733 ppm, temperature 26°C, relative air humidity 42% were recorded. From 08:45 to 08:55 there are no students in the room. It is noticed that as a result of the natural ventilation, CO₂ drops to 700 ppm, and the temperature and humidity keep their values - 26°C, 40%. From 09:00, 7 students are studying in the room, the computers are turned on, one of the windows is open. CO₂ started to rise and at 09:05 a concentration of 855 ppm, temperature 26°C, humidity 39% were recorded. At 09:40 hours after the end of the lesson, the concentration was 748 ppm, the temperature 25°C, the humidity 34%. An influence certainly indicates the draft created by the open window and door to leave the group of the office. From 09:40 to 09:50 there is no one in the room, resulting in lower CO₂ levels of 703 ppm and humidity of 32% recorded at 09:50, temperature maintained at 25°C. As of 09:50 there are 11 students in the room. The increased number of people in the closed room indicates an effect on the concentration, temperature and relative humidity of the air. At 10:00 the concentration is 780 ppm, temperature 26°C, humidity 33%, indicators increase under the same conditions (number of people, open window). At 10:35 a.m., before the group went into a long break, the concentration reached 1121 ppm, at a temperature of 26°C and a humidity of 34%. From 10:35 to 11:00 the room is available. After the long break, at 11:00 the concentration dropped to 855 ppm, the humidity dropped to 32%, and the temperature remained at 26°C. From 11:00, the training continues again with the previous group of 11 students. As the lesson progresses, CO₂ rises:

11:07 a.m. – CO₂ 1017 ppm, temperature 26°C, humidity 33%

11:30 a.m. - CO₂ 1225 ppm, temperature 27°C, humidity 34%

11:45 a.m. - CO₂ 1318 ppm, temperature 27°C, humidity 35%.

From 11:50 a.m. to 11:55 a.m. there is no one in the room, the window is open and the concentration drops to CO₂ -1176 ppm, the temperature and humidity keep their readings - 27°C, 34%. From 11:55 a.m. to 12:40 p.m., only the teacher is in the office, the readings start to drop at 12:40 p.m. - CO₂ 760 ppm, temperature 27°C, humidity 31%. From 12:40 p.m. to 1:55 p.m., 8 students study in the room. Again, as time progressed, it was observed that the number of people in the room indicated an influence on the concentration, temperature and humidity maintained their values:

12:50 p.m. – CO₂ 886 ppm, temperature 27°C, humidity 32%

1:15 p.m. - CO₂ 944 ppm, temperature 27°C, humidity 32%

From 1:15 p.m. to 1:30 p.m., only the teacher is in the room again. Before the window was closed, CO₂ 844 ppm, temperature 27°C, humidity 31% were recorded.

4. Заключение (Conclusions):

The concentration of CO₂ increases rapidly when the number of people in the room increases and decreases when there are no people or a smaller number of people, in contrast to the temperature and relative humidity of the air, which keep their values for a short interval of time.

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