AIR PURITY REGULATOR

A CO2 sensor to monitor a Sick Building Syndrome prone environment

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***Abstract*— Our project will work as an automation system and monitor the air quality by detecting the Carbon Dioxide levels in the local space, the sensor is alive in. The system will then turn on the air purifier, which is a part of the system, if the air quality value drops below a certain threshold value.**

Keywords—CO2 sensor, Air Purity Sensor, CO2, level monitor, Sick Building Syndrome monitor.

I. INTRODUCTION

As the title suggests, our project will work as an automation system and monitor the air quality by detecting the Carbon Dioxide levels in the local space, the sensor is alive in. The system will then turn on the air purifier, which is a part of the system, if the air quality value drops below a certain threshold value. The system will consist of an active sensor placed in the vicinity of our target location (home, hospital, warehouse etc.). The sensor will then be interfaced with a Wi-Fi chip which will push the sensor data into a browser in any connected device. Finally, the network will then be connected to an electric socket which will turn on/off the air purifier interfaced to it. Our wireless sensor will have a traditional CO2 sensor connected to an Arduino board. The Arduino board will be personalized using codes written in Arduino programming language in the Arduino Development Environment.

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II. A DESCRIPTION OF A PROBLEM WITHIN THE DOMAIN.

It is certainly a good idea to measure the air quality of the place we breathe in. Monitoring the Carbon Dioxide is the easiest way to check if the facility is encapsulating gases. Because all other gases follow the same trend as CO2, this gas is used as a marker for air quality. High CO2 level on its own is an unfavorable condition, it causes oxygen level in the body to decrease, hampering the flow of oxygen to the brain. Main CO2 health effects include Vasodilation, reduced Cell Oxygen Levels, Nerve Stabilization etc. Common symptoms include feeling drowsy, having headaches, and functioning at lower activity levels.

III. SOLUTION

Our proposed system, when installed in appropriate locations, may alert the occupants of the high CO2 levels, also resolving the situation by triggering the air purifier. Carbon dioxide accumulation is normally related directly to the number of occupants. Also, carbon dioxide by nature is heavier than air, and therefore tends to accumulate in low areas such as basements.

This regulator, further can also be installed in hospitals and basement workshops in order to diminish the chances of any CO2 related medical emergency.

IV. WHAT ARE SAFE LEVELS OF CO AND CO2 IN ROOMS?

- 250-350 PPM- Normal Background Concentration
- 350-1000PPM-Concentration typical of occupied indoor spaces with good air exchange
- 1000-2000PPM-Complaints of drowsiness and poor air.
- 2000-5000PPM-Headaches, sleepiness and stagnant, stale, stuffy air. Poor concentration, loss of attention, increased heart rate and slight nausea may also be present.
- 5000-Workplace exposure limit (as 8-hour TWA) in most jurisdictions.
- >40000- Exposure may lead to serious oxygen deprivation resulting in permanent brain damage, coma, even death.

V. CODE LINKS

https://github.com/vaibhavagrawal0289/AirPurityRegulator272CMPE

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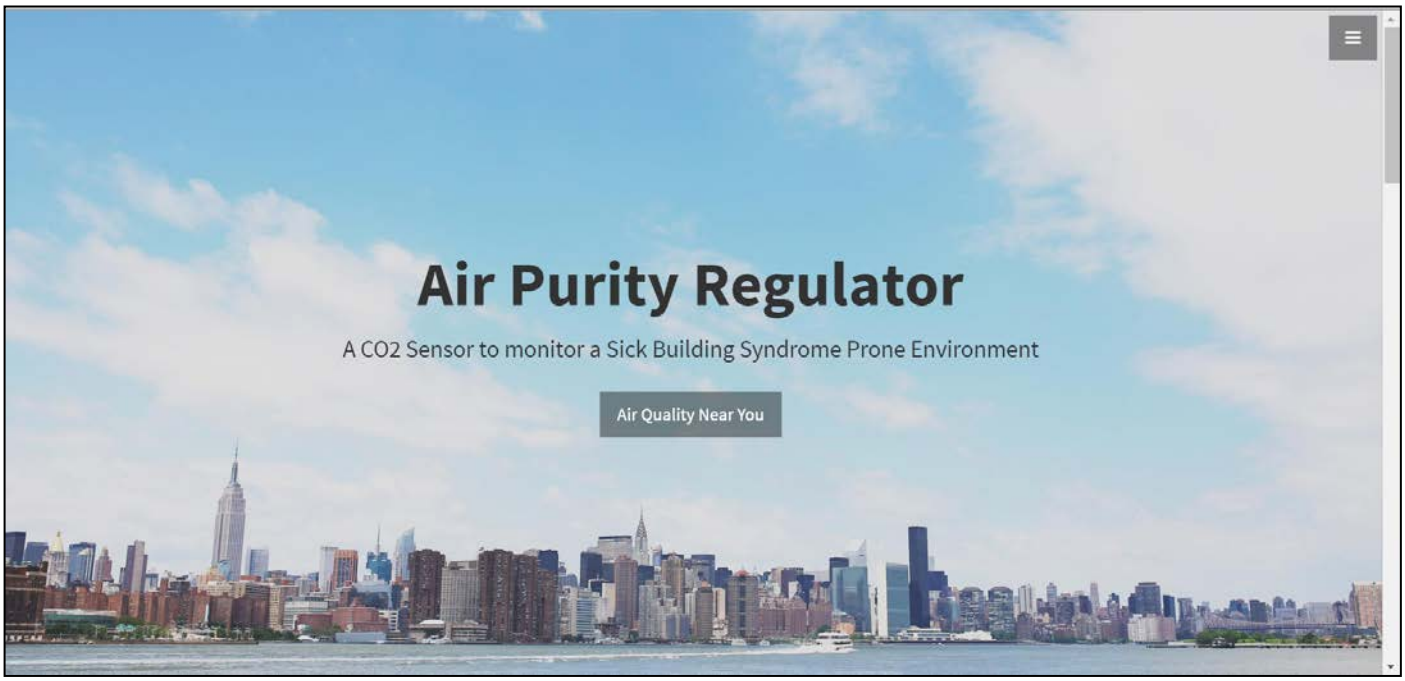
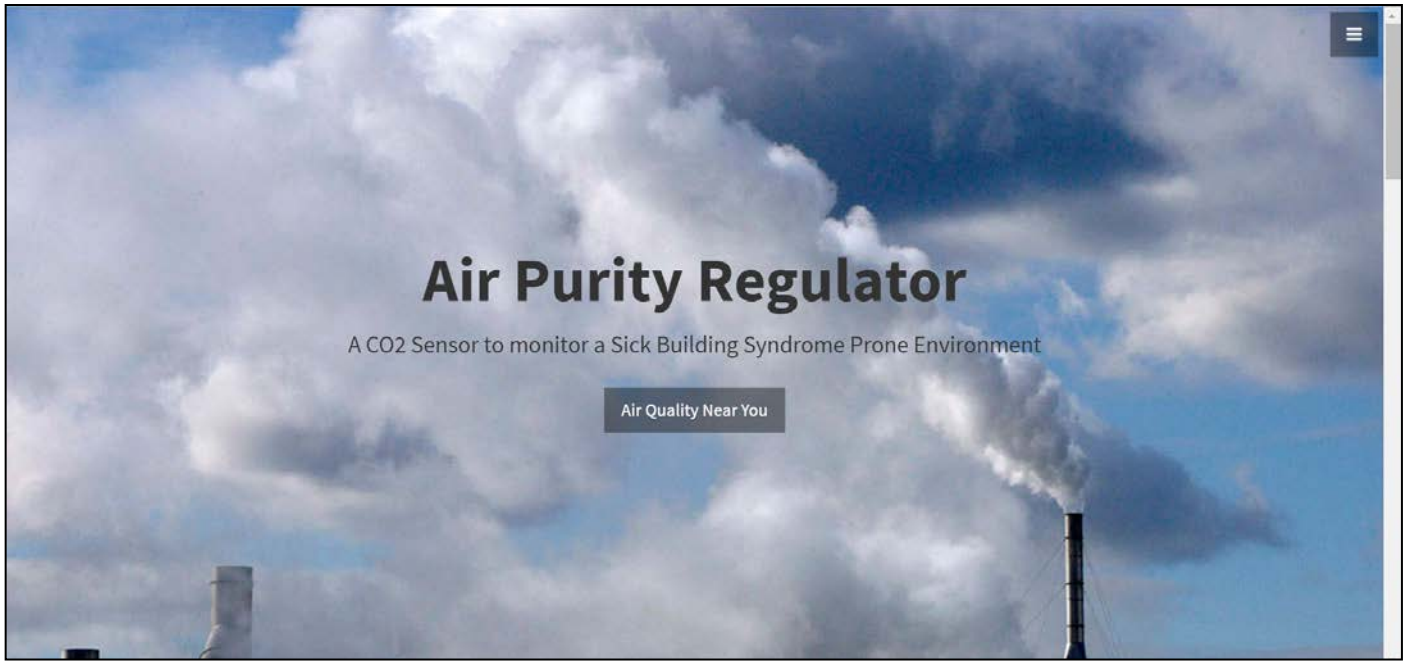
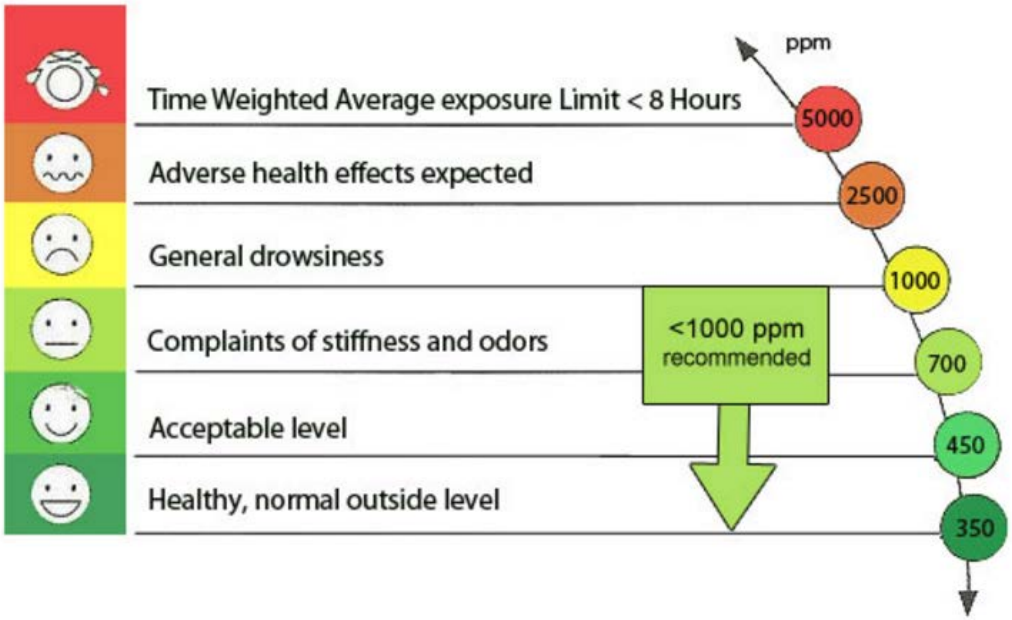
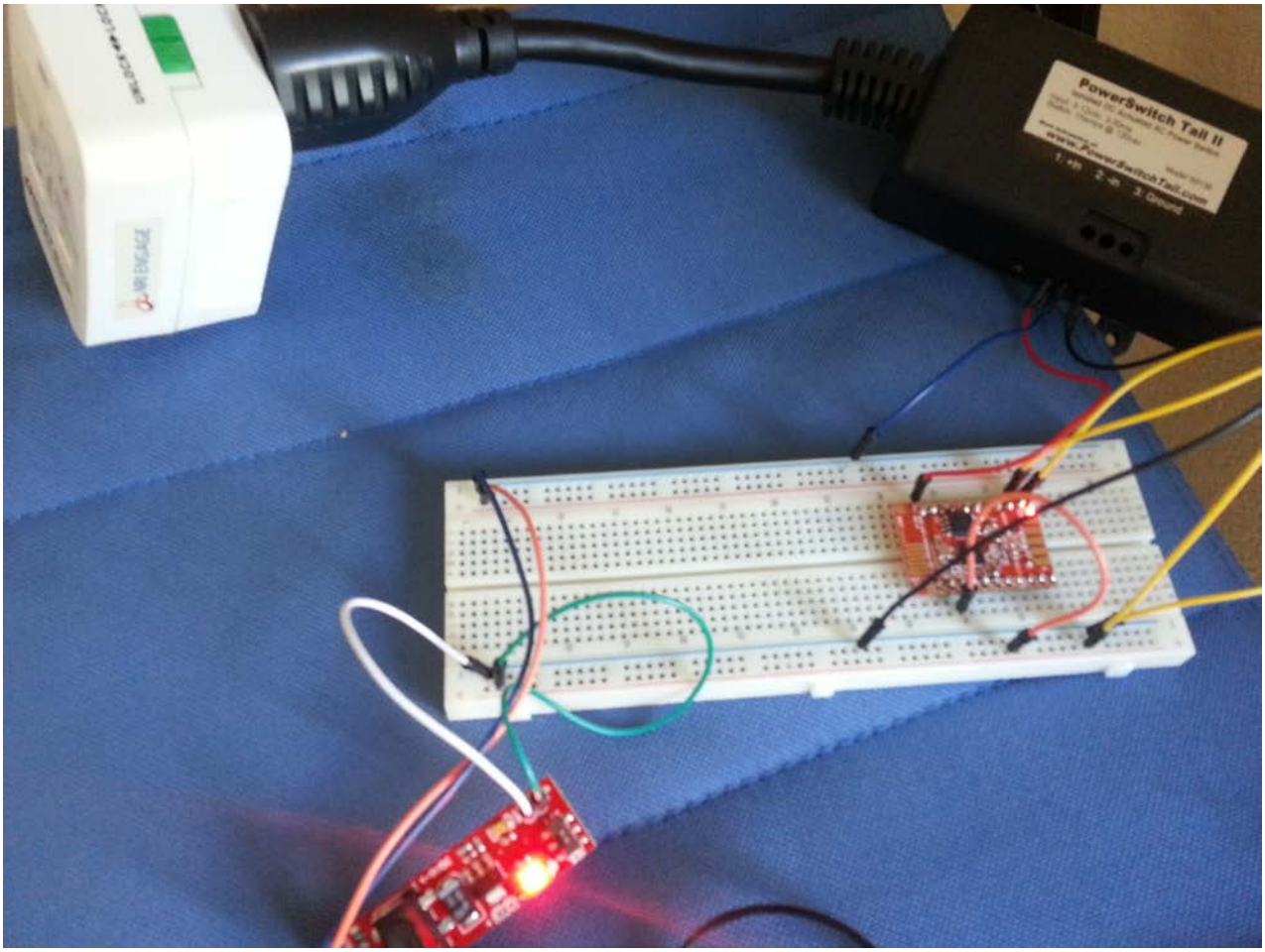
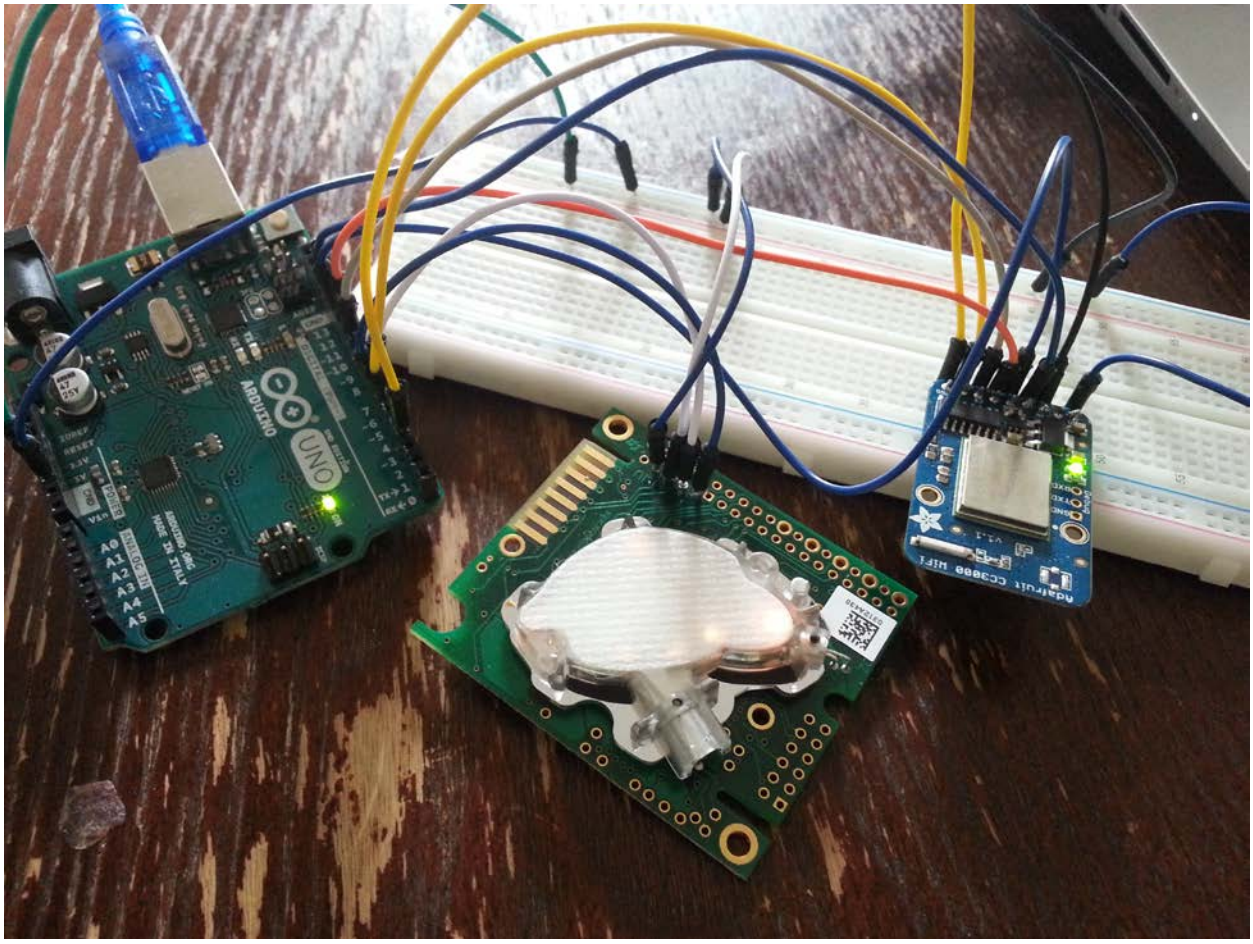





ppm
Time Weighted Average exposure Limit < 8 Hours
5000
Adverse health effects expected
2500
General drowsiness
1000
Complaints of stiffness and odors
<1000 ppm
recommended
700
Acceptable level
450
Healthy, normal outside level
350


PowerSwitch Tail II



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