Internet-Based Air Pollution Monitoring

Tipok Suppakit

Introduction

Introduction

At present, our world has developed sophisticated technologies occurs.
In order to facilitate everyday life. Over time, the population number
has increased every year. Therefore, the demand for resources in production,
for such technologies increases. Which make an impact, with the weather.
And when it is used in large quantities. Effect more severe. Pose as the
air pollution problem at present.

Therefore, it has invented a monitoring air pollution system. By measuring
carbon dioxide, which that affects the climate of the world. You can see
the measure result and the historical data of carbon dioxide on the web browser.

Air Pollution

Weather conditions are contaminants in quantities higher than the normal level for a long time. Enough to cause harm to humans, animals, plants or other assets.

Carbon dioxide (CO_2)

Colorless and odorless gas that is vital to life on Earth. This naturally occurring chemical compound is made of one carbon and two oxygen atoms.

Carbon dioxide is a greenhouse gas. Greenhouse gases are trap heat energy, Make change the climate and weather on our planet, Earth. This is called climate change. Greenhouse gases are a cause of global warming, the rise of Earth surface temperature.

Effects of Carbon dioxide on Human

Carbon dioxide in the atmosphere has a density of approximately 300-500 ppm carbon dioxide is a gas that is non-toxic and non-flammable, but it is not conducive to life, and if I receive the high dose carbon dioxide would pose risk to life.

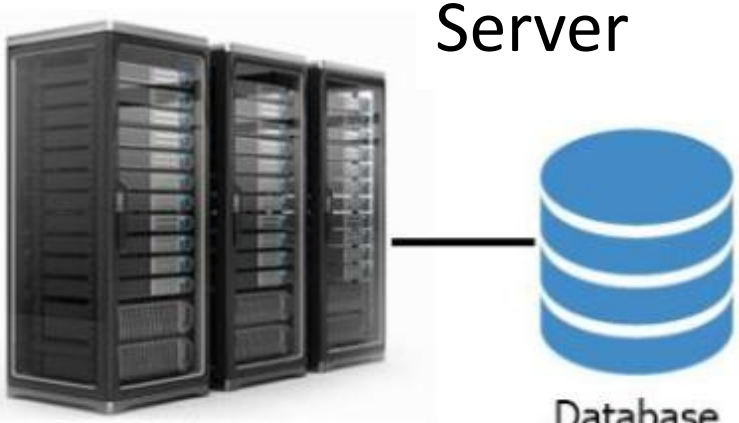
Effects of Carbon dioxide on Human

Carbon dioxide	Effects
300-500 ppm	Normal values in the atmosphere
600-800 ppm	Acceptable Indoor Air Quality
1000 ppm	Indoor air quality at tolerable
5000 ppm	Accept a moment limit not exceeding 8 hours
6000-30000 ppm	Be careful getting in short intervals only
3-8%	Breathe more frequently , Dizziness
> 10%	Nausea, vomiting, unconsciousness
> 20%	Unconsciousness quickly die

System Overview

System Overview

Server



3G

3G

Hardware

Web Application

System Overview

Server

Server

Database

KMITL Server

phpMyAdmin

3G

3G

Hardware

Arduino UNO R3

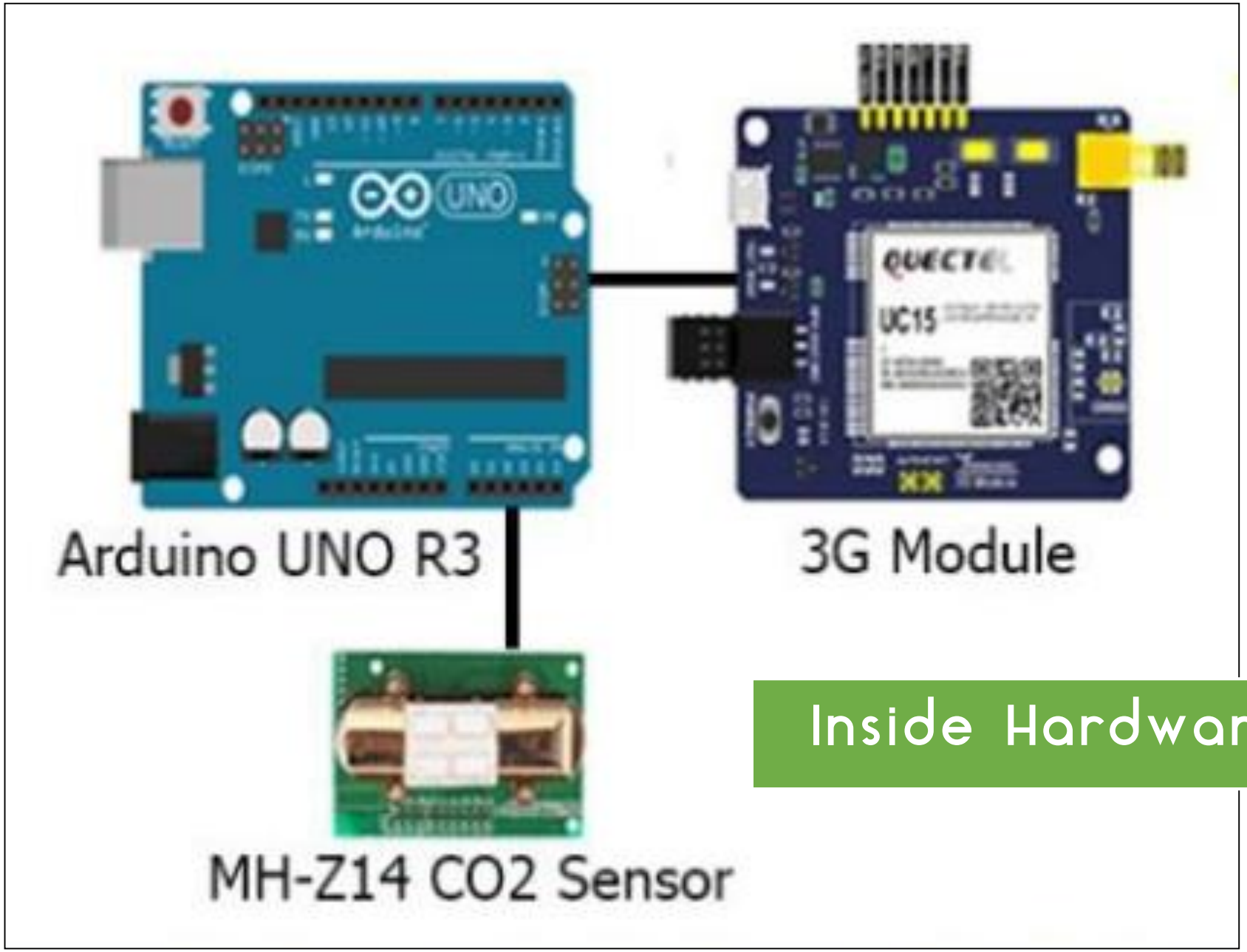
3G Module

MH-Z14 CO2 Sensor

Web Application

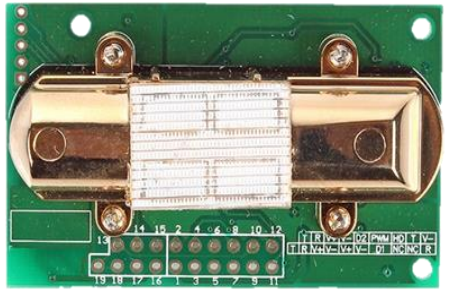
Website

Hardware


Arduino UNO R3
3G Module
MH-Z14 CO2 Sensor
Inside Hardware

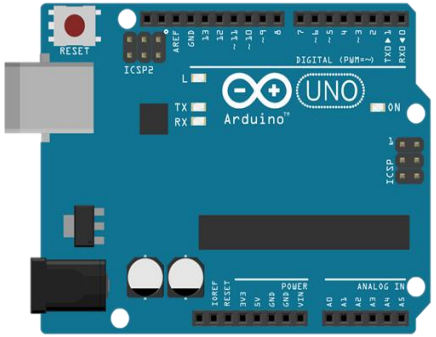
How does Hardware work

Measure CO_2 in air



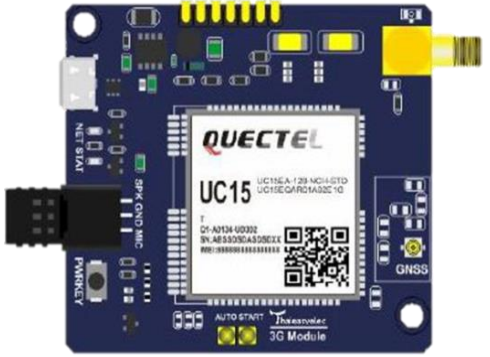
CO_2 Sensor

Convert Voltage → CO_2 Value (ppm)



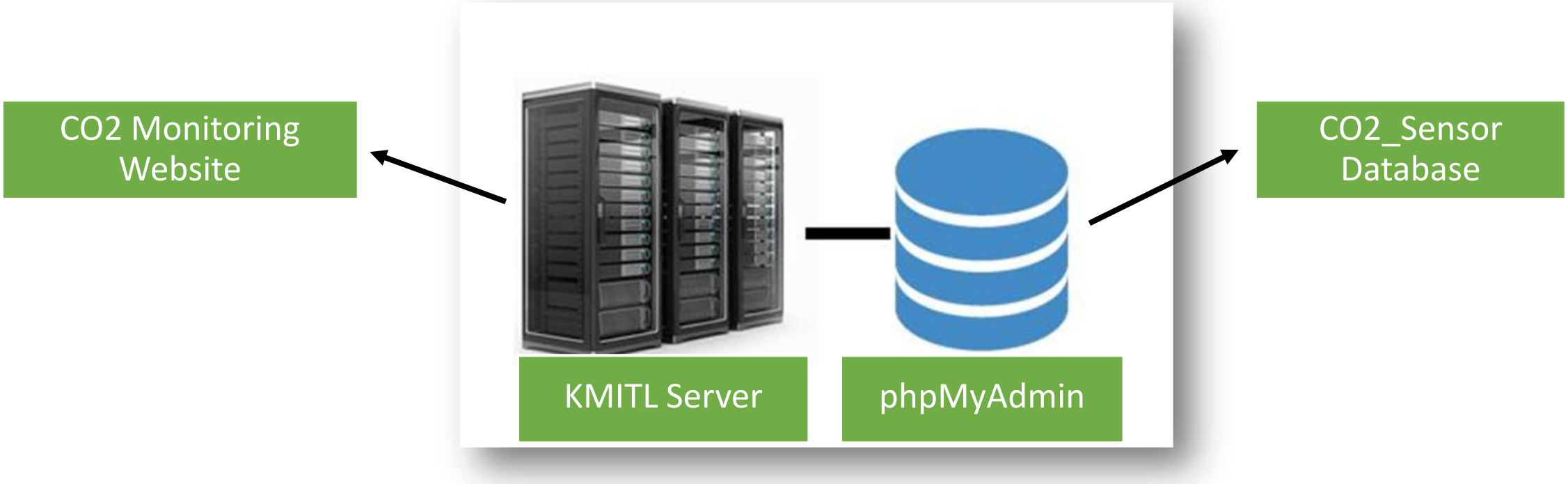
Arduino

Send to server



3G Module

Server

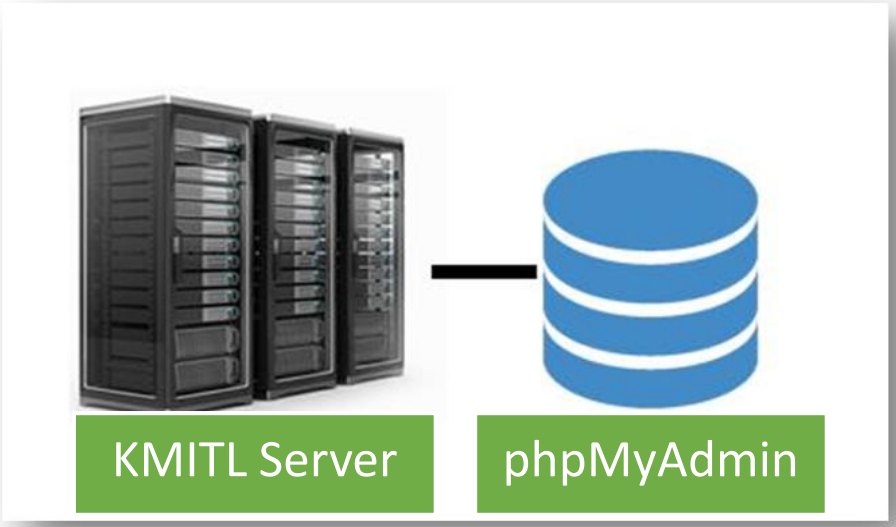

CO2 Monitoring Website
KMITL Server
phpMyAdmin
CO2_Sensor Database

How does Hardware Export data to server

CO_2 Value (ppm)

Device

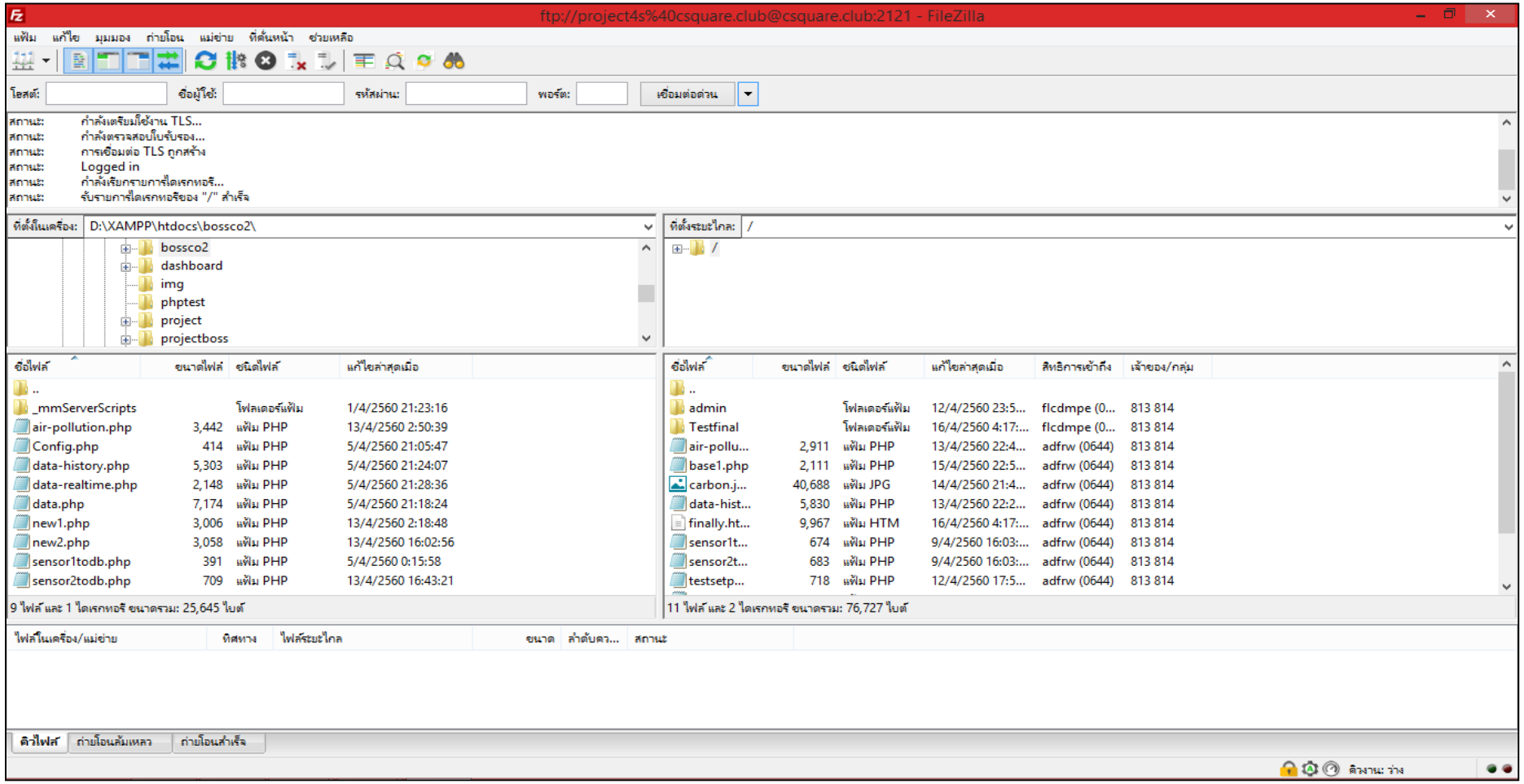
3G



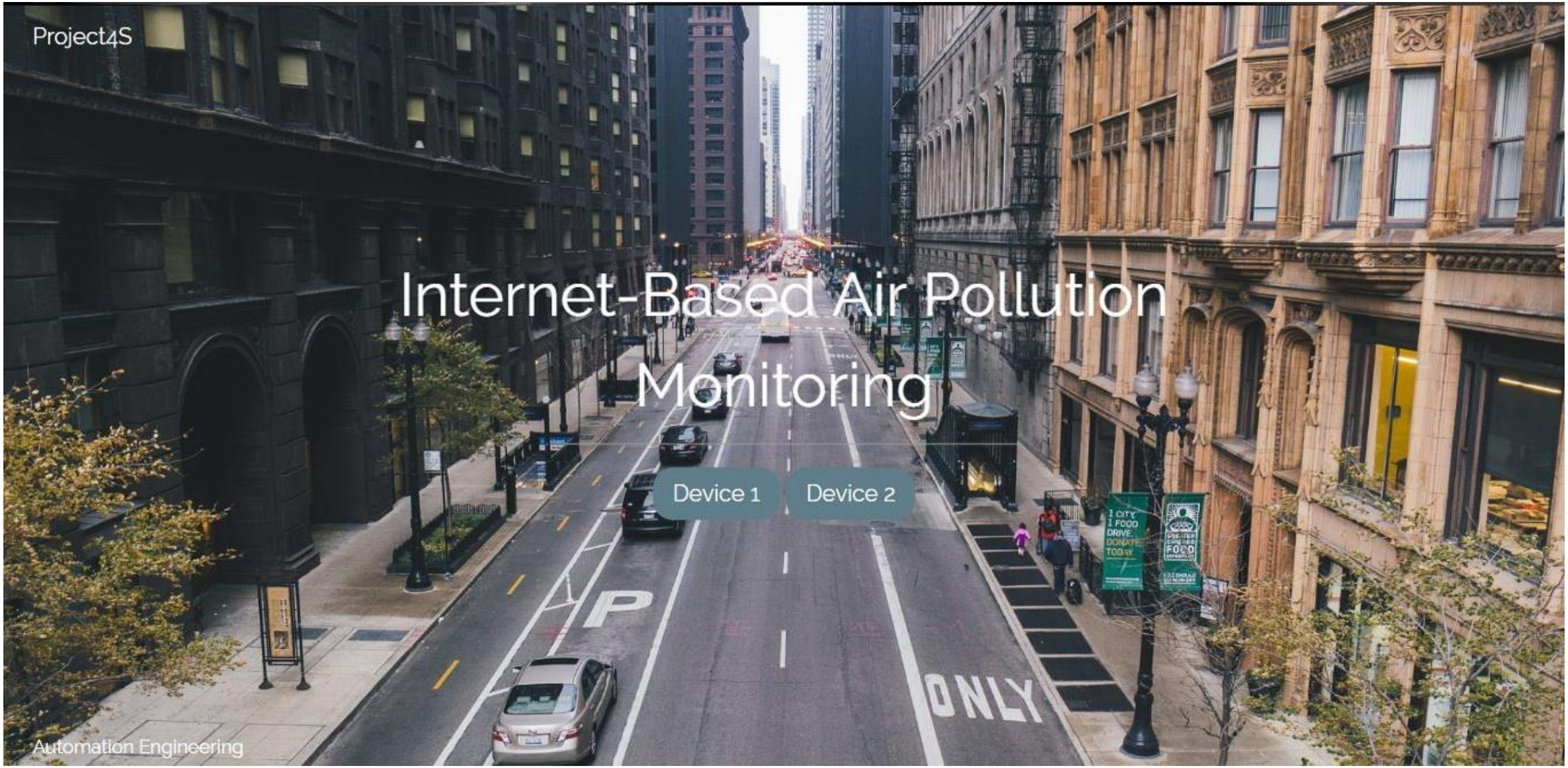
Create Database (phpMyAdmin)

	#	Name	Type	Collation	Attributes	Null	Default	Extra	Action
☐	1	sensor1_ID	int(11)			No	*None*	AUTO_INCREMENT	Change Drop Browse distinct values Primary
☐	2	sensor1_CO2	float			No	*None*		Change Drop Browse distinct values Primary
☐	3	Datetime	datetime			No	*None*		Change Drop Browse distinct values Primary

Upload file (Filezilla)



Website


Project4S
Internet-Based Air Pollution Monitoring
Device 1
Device 2
Automation Engineering

Air Pollution

CO2 Status Location History Device1

CO2 in the air?

Device 1

496.18 ppm

Datetime : 2017-05-26 22:17:01

Status

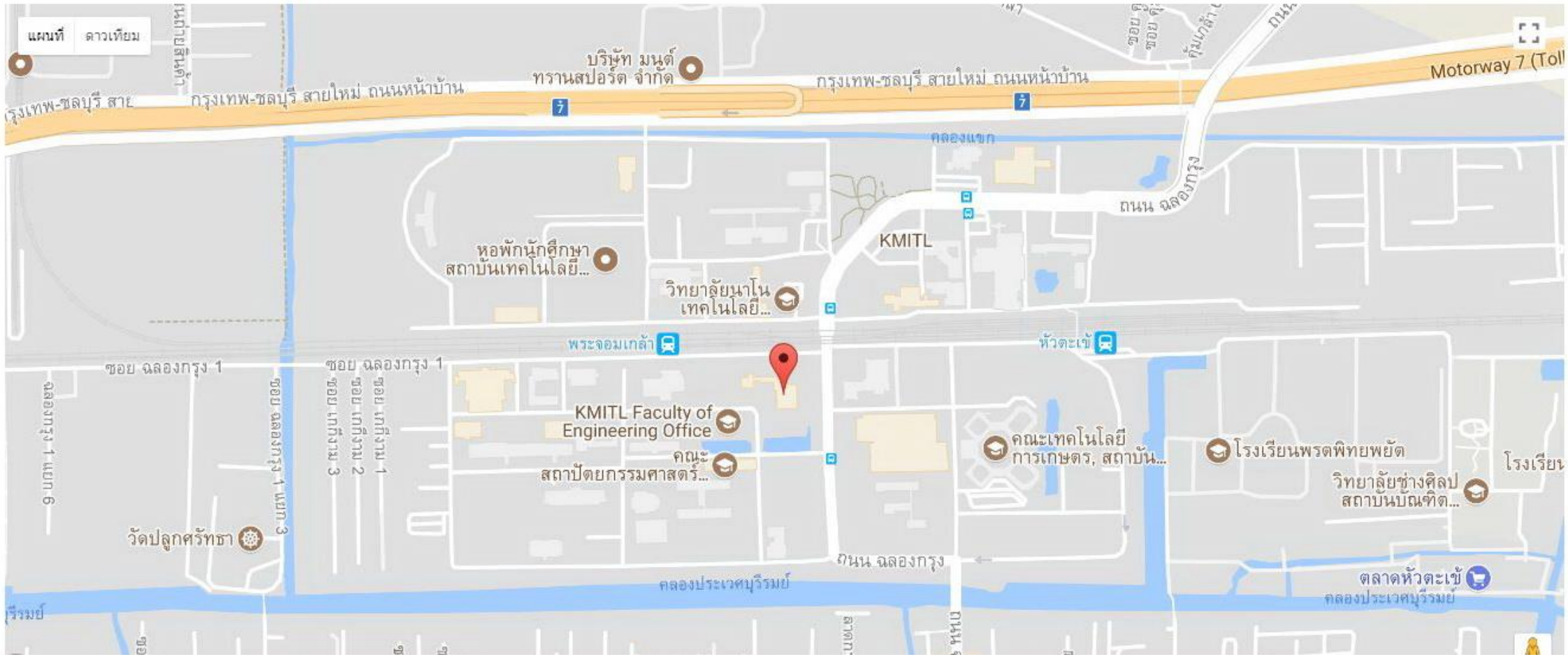
CO2 level

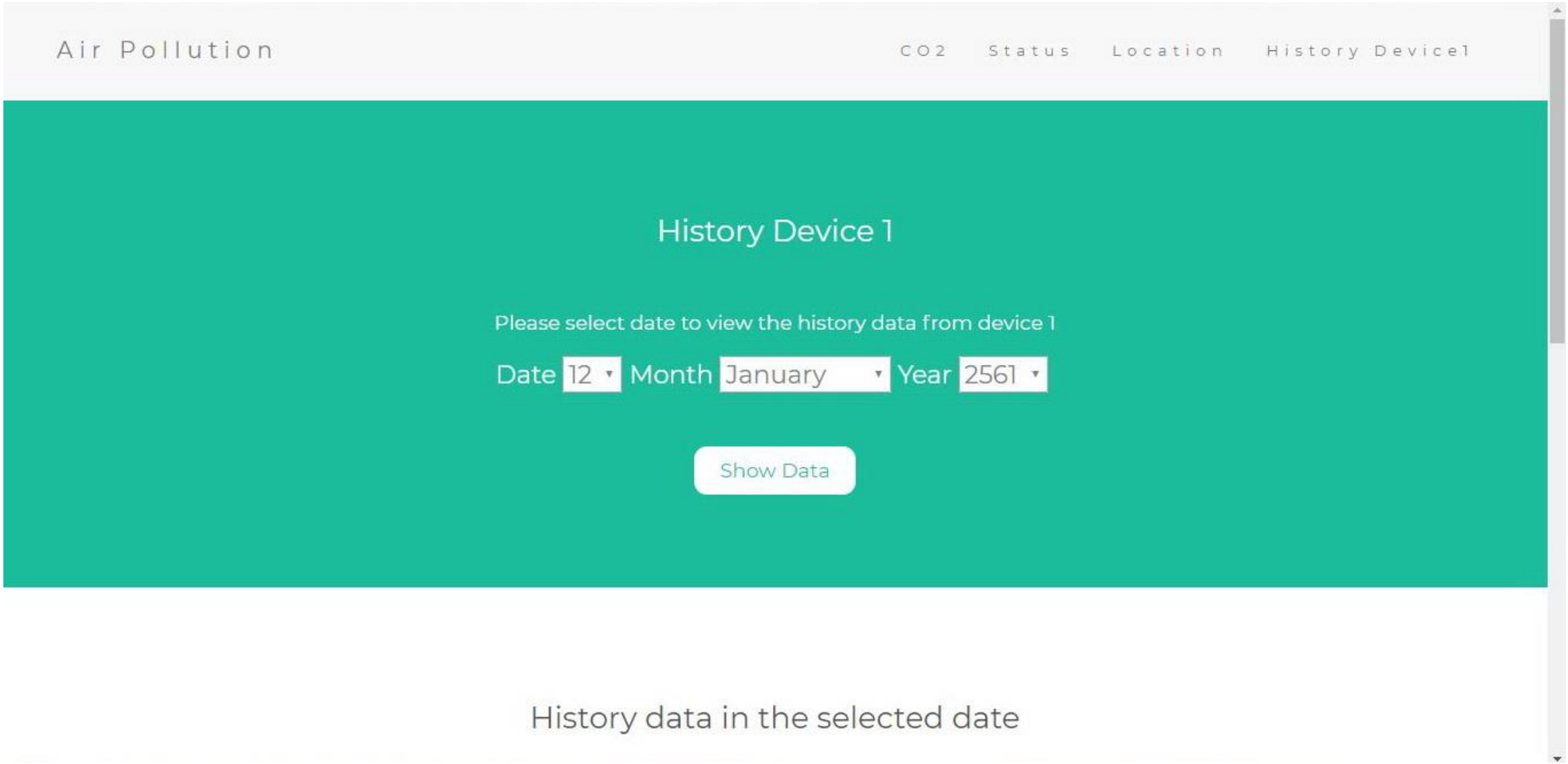
- Normal (< 1000 ppm)
- Warning! (1000 - 4000 ppm)
- Danger!! (> 4000 ppm)

Device 1

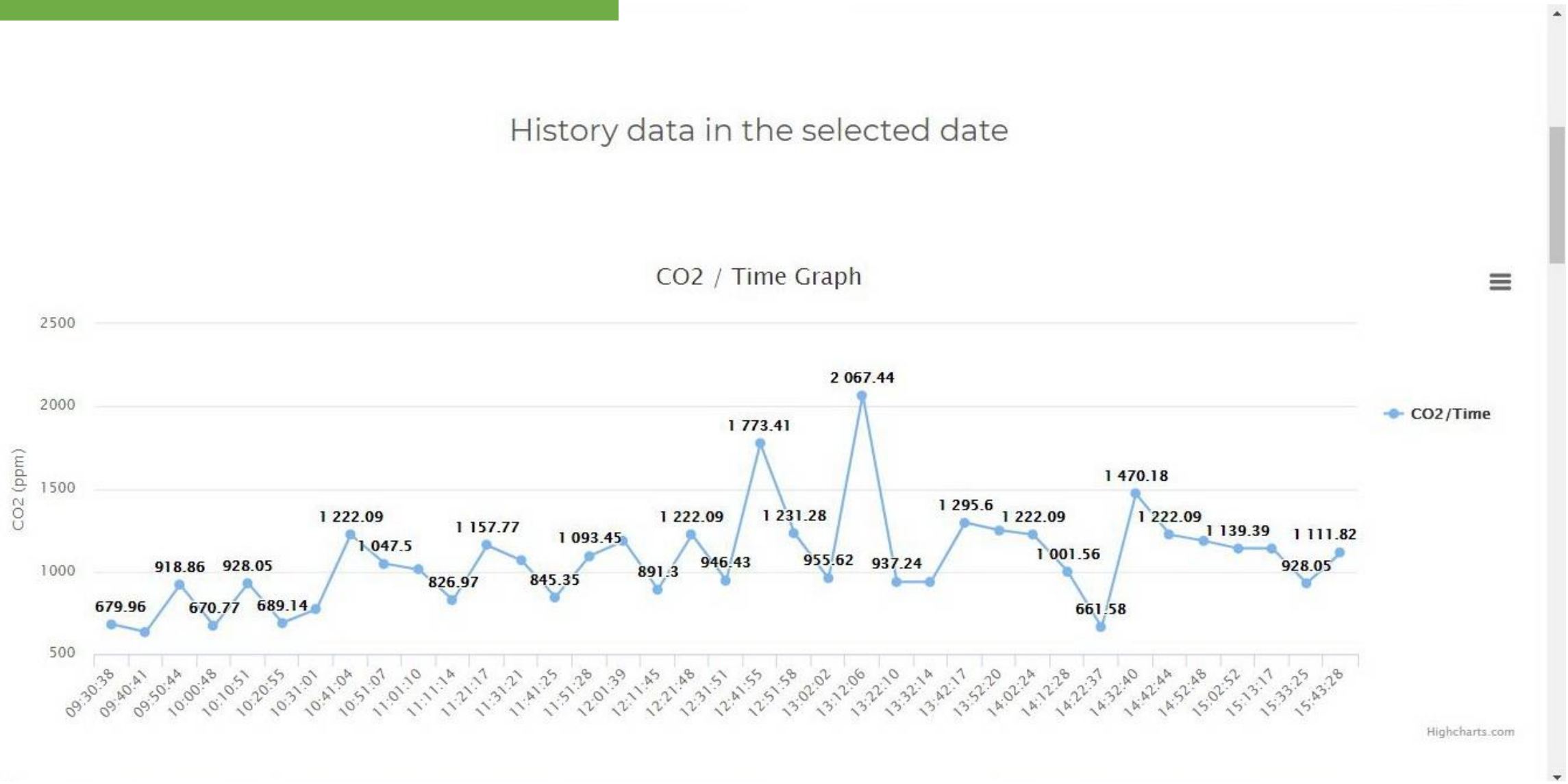
Normal

Location


แผนที่
ดาวเทียม
บริษัท มนต์ทรานสปอร์ต จำกัด
กรุงเทพ-ชลบุรี สายใหม่ ถนนหน้าบ้าน
Motorway 7 (Toll
คลองแขก
ถนน ฉลองกรุง
KMITL
หอพักนักศึกษา สถาบันเทคโนโลยี...
วิทยาลัยนานาเทคโนโลยี...
พระจอมเกล้า
หัวตะเข้
ซอย ฉลองกรุง 1
ซอย ฉลองกรุง 1 แยก 6
ซอย ฉลองกรุง 1 แยก 3
ซอย เกษมสันต์ 3
ซอย เกษมสันต์ 2
ซอย เกษมสันต์ 1
KMITL Faculty of Engineering Office
คณะสถาปัตยกรรมศาสตร์...
คณะเทคโนโลยีการเกษตร, สถาบัน...
โรงเรียนพรตพิทยพยัต
วิทยาลัยช่างศิลป สถาบันบัณฑิต...
วัดปลูกศรัทธา
ถนน ฉลองกรุง
คลองประเวศบุรีรมย์
ตลาดหัวตะเข้


Air Pollution
CO2
Status
Location
History Device1
History Device 1
Please select date to view the history data from device 1
Date 12
Month January
Year 2561
Show Data
History data in the selected date

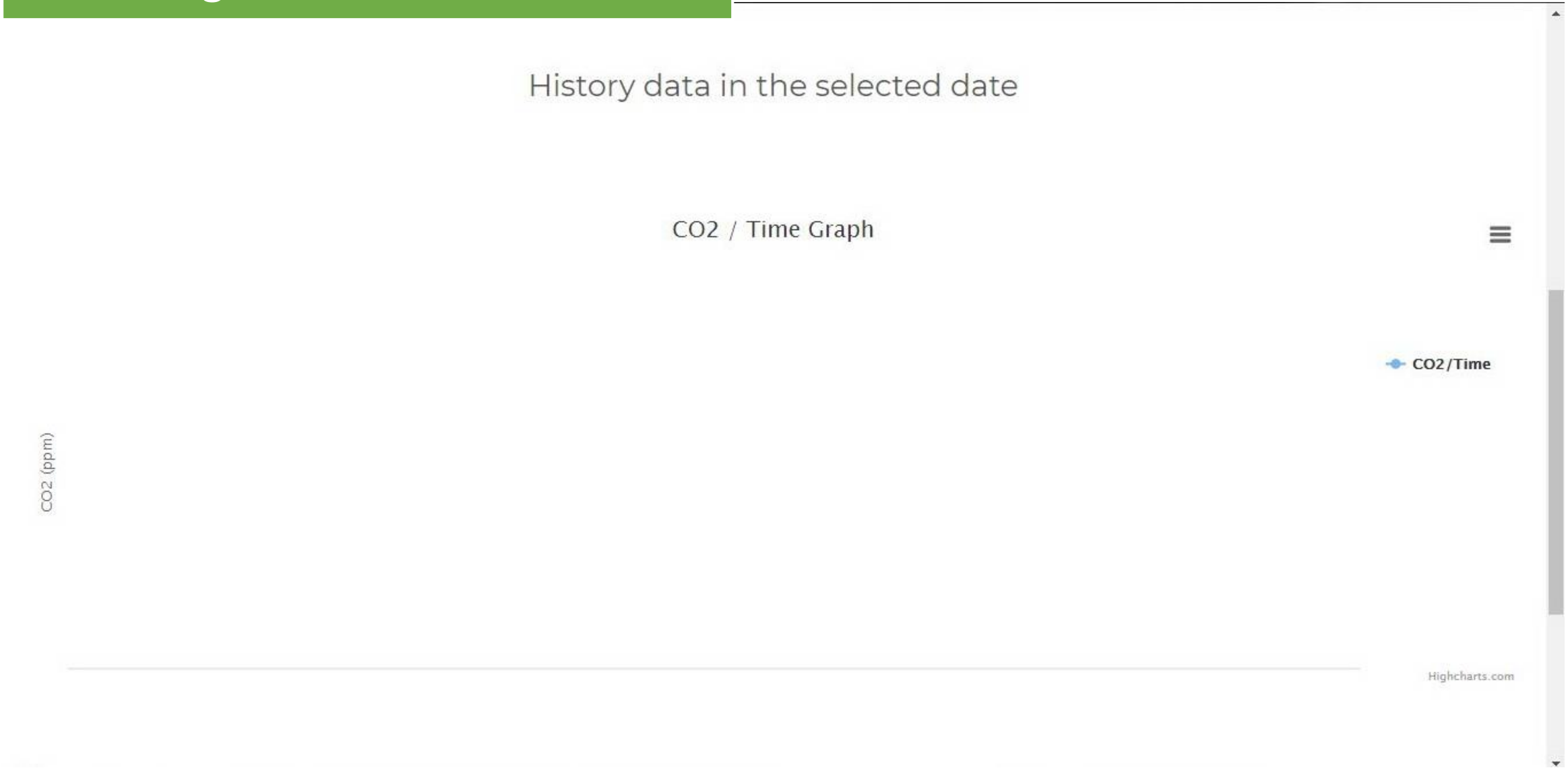
Have Data in Selected Date



Have Data in Selected Date

Date/time	CO2
2017-04-25 09:30:38	679.96
2017-04-25 09:40:41	634.01
2017-04-25 09:50:44	918.86
2017-04-25 10:00:48	670.77
2017-04-25 10:10:51	928.05
2017-04-25 10:20:55	689.14
2017-04-25 10:31:01	771.84
2017-04-25 10:41:04	1222.09
2017-04-25 10:51:07	1047.5
2017-04-25 11:01:10	1010.75
2017-04-25 11:11:14	826.97

Nothing Data in Selected Date



Conclusion

Conclusion

The results showed that the amount of Carbon dioxide in each location will have a different value depending on the environment. Ventilation And human activities.

The system can increase the number of gas sensors to increase efficiency of air quality measure. And, use the solar cells or battery as the power supply to the system, to reduce restrictions on the installation of the equipment and measured in the external environment.

Thank you