Multi-Parameter Continuous Monitoring Device

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Abstract

The challenge is to assemble a sensing package which continuously sends accurate data measurements to the cloud for analysis. This project includes the selection of sensors to meet the requirements of the customer. The sensors will be wired to a microcontroller which sends the data into a user-friendly format by the sensor to the cloud. Which will be then visualized for interpretation.

Introduction

FACS provides various solutions to companies whose duty is to ensure the safety of patients, faculty, or anyone who will be inside the facilities from potential environmental hazards. They do not manufacture the sensors that many of these companies will use to monitor and protect the environment. FACS wants to design a low-cost robust monitoring system that can be flexible to all their clients' needs. FACS prides themselves in learning everything they can about their clients so that they can effectively provide the best solution to protect public health and reduce the client's liabilities

Methods and Materials

Through many hours of research and deliberation with FACS, the following sensors were used in this unit for the purposes of Particle Counting of 6 particle sizes, pressure differential, tempurature, relative humidity, & CO2 levels respectively:

- Particles Plus Custom model 8306
- Setra Model 264
- Sensiron SCD30

The units packaging was designed to comply with all necessary hospital requirements.

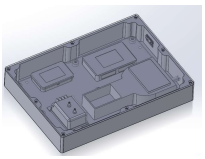
Results

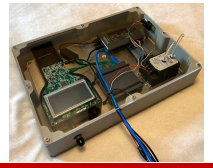
The completed unit's sensors meet all the needed ranges and tolerances that are specified from FACS for the unit. The following is the specifications of the designed unit:

1. Airborne particulate:	0.3µm – 25.0µm
2. Pressure differential:	+/-0.25 in. W.C.
3. Tempurature:	-40ºC – 70ºC
4. Relative Humidity:	0.0% – 100%
5. CO2 Level:	0 – 40,000ppm

All 5 of the above conditions are displayed and stored in the InfluxDB cloud server to be tracked graphically as a rolling average.

Unit Design





InfluxDB Display

Conclusions

FACS was provided with an all in one unit that provides the ability to measure all the required environmental conditions. The unit collects the data form the surrounding environment and sends them in a single array to be stored and displayed in a graphical digital interface.

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