AIR POLLUTION CONTROL USING IOT

AIR-PI:

The AirPi is essentially a Raspberry Pi, a cheap credit card sized computer, hooked up to various sensors with the programming to automatically read them, interpret these readings into meaningful information, and finally upload the data directly onto the internet.

We built our AirPi to measure temperature, relative humidity, air pressure, light levels, smoke, and the concentrations of the harmful gas pollutants carbon monoxide and nitrogen dioxide.

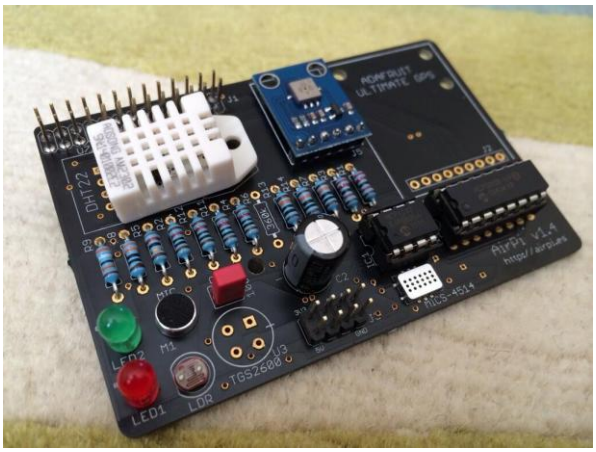
SAMPLE OUTPUT OF SIMULATED AIR-PI:

Time: 2014-06-04 09:10:18.942625
Temperature: 30.2 C
Pressure: 992.55 hPa
Relative_Humidity: 35.9000015259 %
Light_Level: 3149.10025707 Ohms
Nitrogen_Dioxide: 9085.82089552 Ohms
Carbon_Monoxide: 389473.684211 Ohms
Volume: 338.709677419 mV
Uploaded successfully

With AirPi, we can take matters into our own hands and monitor the air quality in our area. As well as the practical applications such as finding trends which can show which times of day the air is cleanest, you and those around you will become more aware of how you are affected by your region's environmental policies and have the knowledge basis upon which to push for change.

An internet connection can be supplied either via an Ethernet cable or a simple USB WiFi adapter which you plug directly into the Pi.

A screen is optional to view its measurements while offline. But AirPi can be configured to start automatically and upload data to the internet as soon as it is switched on, so a screen is not necessary to control it.



AIRPI

RELAY:

A **relay** is an electrically operated switch. Many relays use an electromagnet to mechanically operate a switch, but other operating principles are also used, such as solid state relays. Relays are used where it is necessary to control a circuit by a low-power signal (with complete electrical isolation between control and controlled circuits), or where several circuits must be controlled by one signal.

an electrical device, typically incorporating an electromagnet, which is activated by a current or signal in one circuit to open or close another circuit.

RELAY

HEPA- AIR FILTERS:

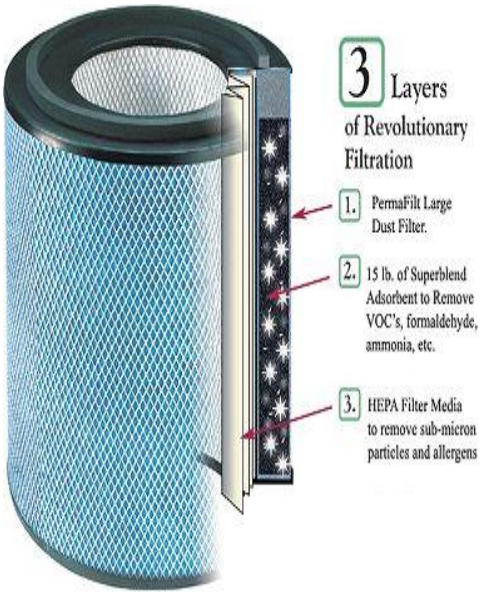
High-efficiency particulate arresting (HEPA) system is the one of the best air filter systems available in the market. Filters meeting the HEPA standard have many applications, including use in medical facilities, automobiles, aircraft and homes. To qualify as HEPA by US government standards, an air filter must remove (from the air that passes through) *99.97% of particles* that have a size of 0.3 µm.

HEPA filters are composed of a mat of randomly arranged fibers. The fibers are typically composed of fiberglass and possess diameters between 0.5 and 2.0 micrometers. Key factors affecting its functions are fiber diameter, filter thickness, and face velocity. The pollutant

particles are trapped (they stick to a fiber) through a combination of the following three mechanisms:

Interception- Impaction – Diffusion

Mechanism of motor can be controlled by connecting this device to IOT, So that depending on the level of pollution rate, the power supplied to the motor inside the filter can be varied. This motor is used to control the flow of air, depending on the pollution level, the speed, power consumed by this motor can be controlled.



HEPA FILTER

SCHEMATIC REPRESENTATION OF POLLUTION CONTROL SYSTEM: