**INTELLIGENT GAS LEAKAGE DETECTION SYSTEM**

**OBJECTIVE**

* Detect Gas Leakage (like LPG leak, Butane leak, Methane leak) or any such petroleum based gaseous substance that can be detected using MQ5 Sensor.
* Setup an SMS based Alert Mechanism and send 3 SMS (3 alert messages) to 2 specified mobile numbers (input inside the Arduino program).
* Produce a sound alarm upon gas leak and stop the alarm once gas leak is under control (gas presence in atmosphere is under normal range).

**DESCRIPTION**

IOT and Arduino based gas leakage detection system senses the gases with the help of an MQ5 gas sensor. MQ5 gas sensor interfacing with Arduino is implemented in this project. The Signal from this sensor is sent to the Arduino microcontroller. The microcontroller is connected to a Buzzer and IOT module (ESP8266). IOT gas leakage detector project is implemented using an ESP8266 chip. This is a Wi-Fi module which is used for connecting microcontrollers to Wi-Fi network and make TCP/IP connections and send data. Data, which is sensed by these sensors, is then sent to the IOT.  The IOT module then sends the data over to a website. Once the gas leakage is detected, the buzzer is turned ON and a ‘Leakage detected’ message is sent to the mobile. The Pre-requisite for this gas leakage detection and the smart alerting project is that the Wi-Fi module should be connected to a Wi-Fi zone or a hotspot.

**TECHNICAL SPECIFICATIONS**

We will use the following components for developing the Intelligent Gas Leakage Detection System:

* **ESP8266 WI-FI MODULE:** The ESP8266 Wi-Fi Module is a self-contained SOC with integrated TCP/IP protocol stack that can give any microcontroller access to your Wi-Fi network. The ESP8266 is capable of either hosting an application or offloading all Wi-Fi networking functions from another application processor.
* **MQ5 GAS SENSOR:** MQ5 module is useful for gas leakage detection (in home and industry). It is suitable for detecting H2, LPG, CH4, CO, Alcohol. Due to its high sensitivity and fast response time, measurements can be taken as soon as possible.
* **ARDUINO:** Arduino is an open-source electronics platform based on easy-to-use hardware and software. Arduino boards are able to read inputs - light on a sensor, a finger on a button, or a Twitter message - and turn it into an output - activating a motor, turning on an LED, publishing something online.
* **4V POWER SUPPLY:** It is an electrical device which is used to power the circuit.
* **BUZZER:** It is an audio signalling device which gives an alarm when it detects the gas leakage.
* **LED:** Light Emitting Diode will be used along with the buzzer. It will light up soon the sensor detects the gas leakage.
* **ON/OFF SWITCH:** It the device which is used to turn on and off the circuit.

**APPLICATION, ADVANTAGE AND FUTUTRE OF THE PROJECT**

* IOT and Arduino based Gas leakage detection system can be installed in Homes, Hotels, LPG Cylinder storage areas. The main advantage of this project is that it can determine the leakage and send the data over to a website, where it can be monitored and corrective actions can be taken.
* If appropriate measures are taken quickly after it is reported over the IOT, it can help in saving the loss of lives and property.
* We can enhance the gas leakage detection system project to detect toxic gases. Further, we can add Smoke and Fire Detectors to detect fire.

**TEAM MEMBERS AND INDIVIDUAL RESPONSIBILITIES**

1. **PARAS TOMAR (20171CSE0486):** Research,Coding, Circuiting.
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3. **PRIYANKA P S (20171CSE540):** Research, Documentation, Assisting.