

# IOT BASED GADGET FOR GAS LEAKAGE AND MONITORING

## ● *IDEA 1*

1. The Gas leakage is one of the big problems with industrial sector, residential milieu and gas functioning vehicles like CNG (Compressed Natural Gas) buses, cars etc. One of the contraceptive methods to stop accidents associated with the gas leakage is to install a gas leakage detection device at vulnerable places. The system detects the leakage of the LPG using a gas sensor and uses the GSM to alert the person about the gas leakage via SMS. When the concentration of LPG in air exceeds a certain level, the sensor senses the gas leakage and the output of the sensor goes LOW. The detection is done by the gas sensor, through the microcontroller the LED and buzzer are turned ON simultaneously. An alert is provided to the user, sending an SMS to the programmed mobile number.

## ● *IDEA 2*

2. *We purpose a system to come across LPG fuel leakage situations and offer a security alert to supposed customers. We right here endorse to build the gadget the use of a MQ5 gas detection sensor. If the LPG sensor senses any gas leakage from storage, gas sensor is going stumble on it this sign is monitored by using the microcontroller and it'll perceive the gasoline leakage. Now the microcontroller is turn on LED and buzzer. After few milliseconds put off, microcontroller*

*instructions driving force circuitry for exhaust fan to turn the fan on to release the gasoline outdoor from the room and concurrently microcontroller commands every other circuitry a relay circuitry to shut the fuel knob. In our proposed machine we designed two motive force circuitry one to power motor to close knob. And any other is relay circuitry in which relay is used to switched on and rancid for exhaust fan. Microcontroller is programmed by using embedded c language. It's far the complete control of the task. It controls the Exhaust fan, LED, Buzzer and when LPG leak takes place. The enter/ output ports of the microcontroller used for this.*

## ● IDEA 3

*3. The sensing material in TGS gas sensors is metal oxide, most typically SnO<sub>2</sub>. When a metal oxide crystal such as SnO<sub>2</sub> is heated at a certain high temperature in air, oxygen is adsorbed on the crystal surface with a negative charge. Then donor electrons in the crystal surface are transferred to the adsorbed oxygen, resulting in leaving positive charges in a space charge layer. Thus, surface potential is formed to serve as a potential barrier against electron flow. Inside the sensor, electric current flows through the conjunction parts (grain boundary) of SnO<sub>2</sub> micro crystals. At grain boundaries, adsorbed oxygen forms a potential barrier which prevents carriers from moving freely. The electrical resistance of the sensor is attributed to this potential barrier. In the presence of a deoxidizing gas, the surface density of the negatively charged oxygen decreases, so the barrier height in the grain boundary is reduced. The reduced barrier height decreases sensor resistance. Working Model Working Regulated power supply is fed to MCLR Pin of PIC16F877 Microcontroller which is also supplied with crystal oscillator frequency (i.e.) from OSC 1 and OSC 2 for the working of the microcontroller. With the help of step down transformer of 230V AC primary to 0-12V, 500mA secondary power supply is taken from main supply. Full-wave rectifier and a capacitor filter provide the output voltage and then fed to 5-volt regulator (LM7805) whose output is used as power supply for*

*IC's and microcontroller. Furthermore, temperature sensor and gas sensor connected to the microcontroller. The Complete Connection Diagram consists of the Microcontroller Circuit, GSM Module, Power Supply, GAS Sensor Module and Exhaust Fan. The Power Supply is fed to the GSM Module. The output of the sensor goes low as soon as the MQ-5 Gas Sensor senses any gas leakage from the storage. This is detected by the microcontroller and the LED & buzzer are turned ON. After the delay of a few milliseconds, the exhaust fan is also turned ON for throwing the gas out and the microcontroller continues sending message as "GAS LEAKAGE" to a predefined mobile number using GSM Module.*

## ● **ADVANTAGES :**

- 1. Low cost*
- 2. Low power consumption*
- 3. High accuracy*
- 4. It also detects alcohol so it is used as liquor tester.*
- 5. The sensor has excellent sensitivity combined with a quick response time*

## ● **DISADVANTAGES :**

- 1. No prevention of fires possible with kit.*
- 2. Applicable only as an indicator/alarming device.*
- 3. It works only when at 5V power supply is given.*
- 4. Its sensitivity depends on Humidity and temperature.*
- 5. It is a little sensitive to smoke.*

