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# *Implementation of Smoke Detector using Sensor and Op-Amp*

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***Abstract***

*Objective of the project is to inform the people against the polluting air and people lose their lives in residential fires. For industrial safety and to detect LPG(2,000ppm), I butane (10,000), propane, methane (1000), smoke, and other few dangerous gases present in the air. This project is cost effective (low cost) and it can be portable easily.*

***Keywords:*** *Op-Amp, Smoke Detector, Sensor*

## INTRODUCTION

Is a device that detects the presence of gases in an area employs an audible alarm to alert people detects combustible, flammable, and toxic gases. Part of a safety system. A smoke detector is a device that senses smoke, typically as an indicator of fire. Commercial security devices issue a signal to a fire alarm control panel as part of a fire alarm system, while household smoke detectors, also known as smoke alarms, generally issue a local audible or visual alarm from the detector itself.

***Block Diagram:***

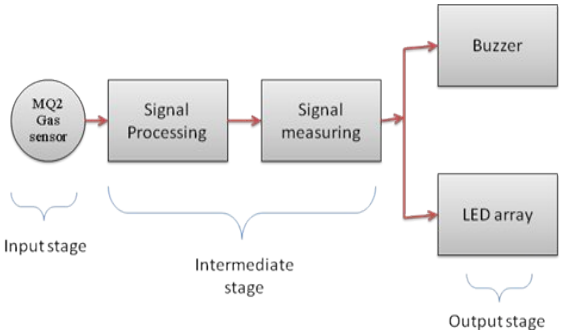


***Figure: 1***

***Working:***

In clean air, donor electrons in tin dioxide are attracted toward oxygen.

This creates barrier to electric current flow. In the presence of reducing gases, the surface density of adsorbed oxygen decreases. Electrons are then released into the tin dioxide, allowing current to flow.

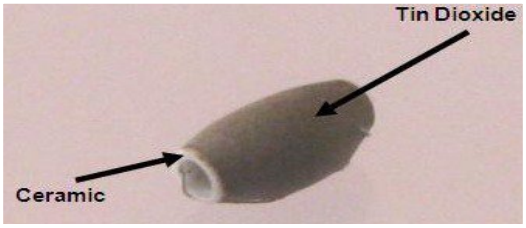


***Figure: 2***

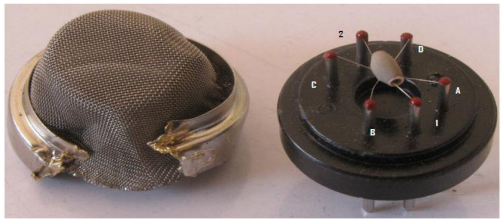

***Figure: 3***

***Circuit diagram:***

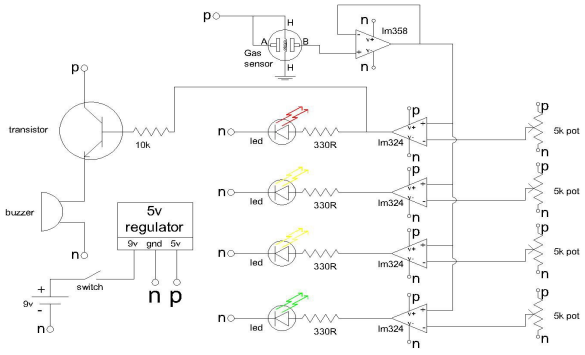


***Figure: 3***

**APPLICATION**

It is used in domestic gas leakage detection and in industrial combustible gas detection. It is a Portable detector.

It also used in alcohols breathe tests. Detection of harmful gases in mines

Environmental monitoring and fire detection early warning is the key to escaping a house fire. Interconnected smoke detectors increase the likelihood that all occupants in a home will hear an alarm regardless of where the fire originates. Adding a wireless connection to smoke detectors enables additional features that increase safety and convenience. Examples include: automatic notification sent to fire department, easily retrofit existing installations, remote notifications of alarm event

**ADVANTAGE**

Good sensitivity to combustible gases in wide range(1000-10000ppm).Long life and low cost. Simple drive circuit. Compact and portable. No maintenance. Less energy consumption. A monitored smoke detector makes a loud beeping noise, much like an unmonitored sensor. However, this type of system also alerts your monitoring center of the problem. From there, the monitoring center will call you and notify the proper authorities so they can either assist your family or help save your home.

**CONCLUSION**

Smoke detector is low cost and portable device. It can monitor the polluting air or for best protection, a combination type of smoke detector is available. The combination type has both an ionization type sensor and a photoelectric (optical) sensor, which is more sensitive to smoldering fires. Firefighters are sworn to protect and serve the people in their community. Home safety visits are a powerful and effective tool to protect and serve. When you respond to a fire and the people are waiting for you outside, they are safe and you and the other firefighters are safer too.

When your fire department takes on the task of implementing a program such as this, you can take comfort knowing that your work will make your community a safer place to live.

**REFERENCES**


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