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GAS LEAKAGE DEDUCTION WITH AUTO SHUT-OFF

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ABSTRACT: Latest surveys have provided us an atrocious information that, these days, deaths due to domestic fire accidents have taken a giant leap, especially in India. Among the causes of such mishaps, LPG leakage accidents top the list. Though this issue is becoming more crucial with passing days, no exact remedial systems have been designed. The systems available in present day markets are capable of just alerting people in case of a gas leakage. But, so far, no systems have been designed to obstruct the main cause of the accident – the leakage. Now, when man has already set his foot on the other planets, and is planning to start a life there, the technology he uses must also escalate. This gave us an idea to develop a system to control the leakage at its onset. Like the existing systems, this system provides LCD, buzzer and SMS alerts. But the innovation of our proposed system lies in its ability to shut off the gas cylinder's regulator automatically. Thus the system takes the entire responsibility of providing the safety measures, while the user can just luxuriate. The prime motive of this system is to save lives. After all, LPG cylinders in households are to eliminate rawness, not lives.

INTRODUCTION

An unexpected increase in accidental domestic fire deaths revealed by the latest statistics suggests that a review of home fire safety is needed. One of the most common reasons of domestic fire is leakage of LPG gas. And we still do not have any proper solution for the same. Safety equipments after fire catches are available but nothing is there to avoid the fire itself. Now when technology has reached up to the moon, conquering the universe, there has to be something to prevent fire due to LPG gas leak at houses. This encouraged us to give the society a technology that can prevent such fire. Like the previous systems, this system also provides LCD, buzzer and SMS alerts. But the innovation in our proposed system lies in its ability to shut off the gas cylinder's regulator automatically. This prevents the occurrence of any accidents, by its own, without human assistance. Implementing this application can be useful for companies, houses, etc., which can save lives of people.

REPUTATION BASED SYSTEM

Our proposed system requires only a supply from a DC battery. It monitors continuously for the LPG gas leak in the house. In case, the gas level exceeds the normal, it provides an LCD display of the gas level along with a buzzer alarm which continues till the gas level

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comes back to normal. It also sends the message "GAS LEAKAGE", to a pre-defined number. In addition to this, it turns on the exhaust fan to expel the leaked gas. But the main emphasis of this novel system lies in its ability to stop the leakage. It turns off the regulator automatically. All these operations take place simultaneously, such that, the hazards due to gas leakage are prevented, and also, the gas is conserved rather than being wasted.

The proposed system consists of following steps,

The gas leakage is detected using a gas sensor MQ5. Once when the gas leakage is detected the information is passed to the microcontroller PIC16F877A. When the particular threshold level is reached. The microcontroller begins its process. It provides an LCD display along with the buzzer alarm which continues till the gas level comes back to normal. It also sends the message "GAS LEAKAGE", to a pre-defined number using a GSM module. In addition to this, it turns on the exhaust fan to expel the leaked gas. The main emphasis of this novel system lies in its ability to stop the leakage. It turns off the regulator automatically. All these processes take place simultaneously.

Final outlook of the project



RESULT

The leakage detection system available in the market works on AC power supply. It is efficient in detecting gas leakage. It gives LCD alert accompanied by a continuous buzzer alarm. It also sends SMS alerts. But the system does not have the facility of auto shut-off. The present system does not have the capability to prevent further leakage (i.e.) it cannot turn off the regulator automatically. Our proposed system requires only a supply from a DC battery and it provides the LCD display along with a buzzer. It also has an auto shut-off system. All these processes take place simultaneously. All these operations take place simultaneously, such that, the hazards due to gas leakage are prevented, and also, the gas is conserved rather than being wasted.

CONCLUSION

By the realization of the above proposed system one can learn many aspects of a digital electronics circuit. This will give the complete knowledge of designing microcontroller based system and developing embedded software. From the consumers' point of view, this system not only helps in averting accidents caused by gas leakage, but, it also paves the way for conservation of gas by preventing undesired leakage.

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