EE356 – PROJECT PROPOSAL

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EE356 - Electronic Product Deign

Project Proposal

Title

Smart Gas Leakage Detector

Introduction

Home fires have been taking place frequently and the threat to human lives and properties is growing in recent years. Liquid Petroleum Gas (LPG) is highly inflammable and can burn even at some distance from the source of leakage. Therefore, developing the gas leakage alert system is very essential. Hence, this project presents a gas leakage alert system to detect the gas leakage and to alarm the people onboard.

The project entitled “Smart Gas Leakage Detector”, will be a great help in terms of preventing any danger caused by gas leakage. The idea behind our project is to detect the presence of LPG leakage as a part of a safety system and then, activating the sounding alarm and displaying the warning. In addition to this, the authorized person will receive a message informing him about the leakage.

Product Description

Specifications (Proposed)

- **BODY**

  Dimensions 170(L) x 95(W) x 40(H)mm

  Weight 300g

- **DISPLAY**

  Type LCD Display - Character

  Size 61.8(L) x 25.2(W) mm

  Resolution 16 x 4 characters

- **POWER RATINGS**

  Voltage Rating 5V DC

  Current Rating 2A

Functions

- Detect gas leakages as they are very small.
- Display the current situation when power is on.
- Activate a sounding alarm when a gas leakage is detected.
- Inform authorized person via SMS about the gas leakage.
- Ability to use in a vehicle.

Limitations

- GSM coverage

Market Analysis

After deciding the idea about "Smart Gas Leakage Detector", a comprehensive survey of the current products in market was done by us. We could identify a similar product in the market,**LPG Gas Leakage Detector** from **Elektrokit** brand. Following is a brief description about the features we identified in those products and how we are trying to make our product more attractive to a buyer.

Features of the product

- Use Wi-Fi technology for communication.
- Android App based handling.
- Up to limited authorized users can be configured.
- Rated voltage – 12V DC
- Equipment dimensions – 200(L) x 150(W) x 50(H)mm

Features added to overcome the issues

- Use GSM technology as anyone can use easily.
- Rated voltage – 5V DC
- Equipment dimensions – 170(L) x 95(W) x 40(H)mm
- Supplying power using a common mini USB charger.
- Any GSM network provider is supported.

Methodology

The Gas Leakage Detector will be designed using MQ6 Gas Sensor with Arduino.GSM SIM900 module is used for SMS communication. A buzzer is used for the sounding alarm and warnings are displayed using 16 x 4 LCD Display. Here, we are planning to use Arduino Pro Mini Microcontroller for interfacing Gas Sensor and GSM Module. Micro USB Module is used power up the device. By this, if there is a gas leakage the detector will detect that and sends a sounding alarm, displays the warning messages and sends SMS alerts to the authorized person who registered to the system.

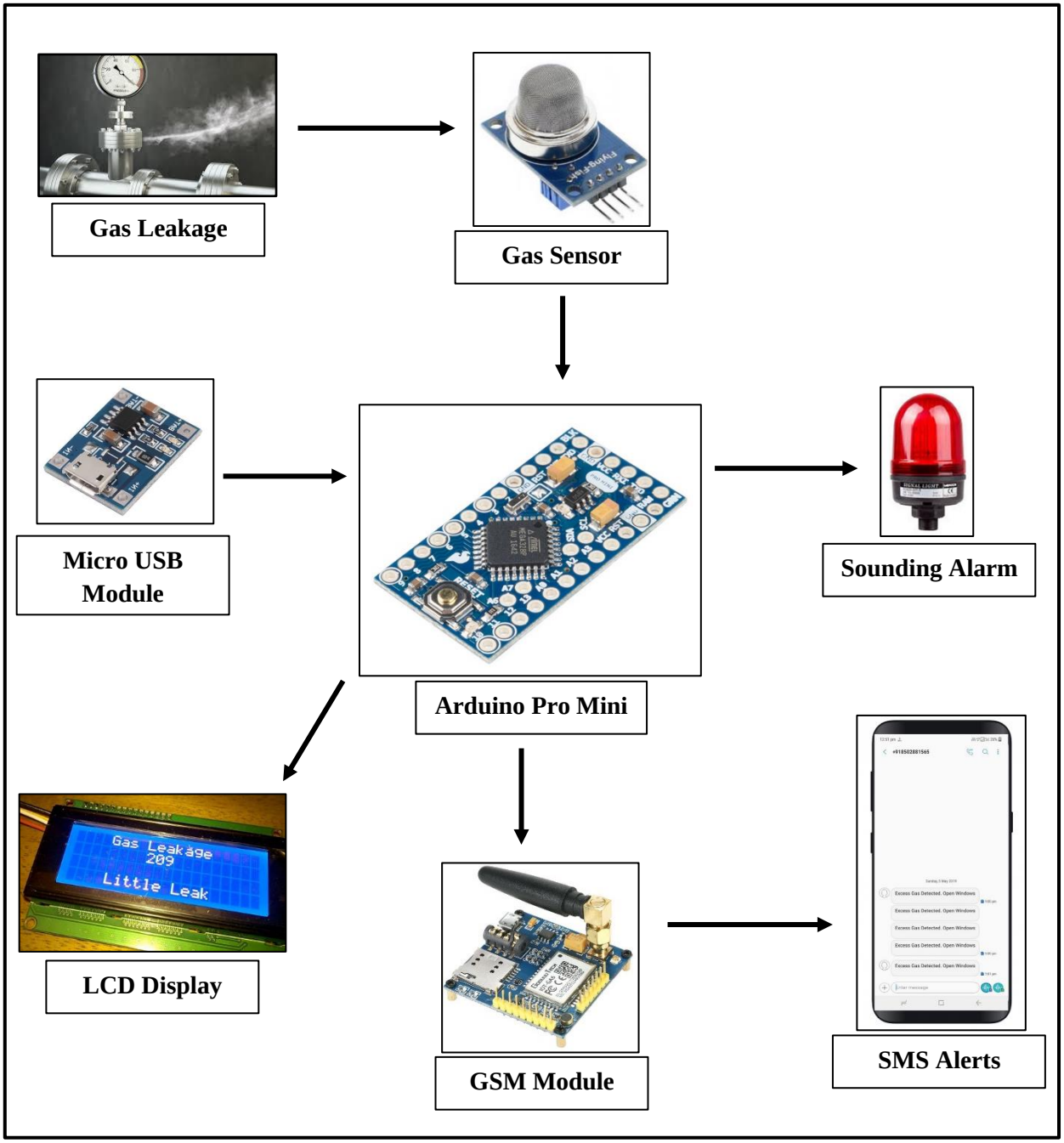

Figure 1 Device Block Diagram

Proposed Budget

Part	Unit Cost (Rs.)	Number of Units	Total Cost (Rs.)
Arduino Pro Mini	250	01	250
GSM SIM900 Module	1500	01	1500
Gas Sensor	350	01	350
Micro USB Module	30	01	30
16x4 LCD Display	800	01	800
Buzzer	20	01	20
Other Accessories			200
Encloser			500
Total Cost			**3650**

Time line

Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Selecting the project															
Designing the circuit and implementing															
Testing and calibrating the circuit															
Manufacturing as a sellable product															
Final testing of the product															
Final evaluation															