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LPG LEAKAGE DETECTION WITH PREVENTION AND AUTOMATIC CYLINDER BOOKING WITH ALERT SYSTEM

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Abstract: *In today's technology there has been rapid development which forces the human life in several appearances due to different fields so we need to adopt the technology and make their life better. This system detects the leakage of the gas and alerts the user about it and then sends the SMS to the user with the help of GSM module. Mostly people engaged with their works in companies or any other places at that time we will see the SMS, and we can't control the gas leakage which cause fire in house. In order to avoid this problem whenever the gas leakage exceeds the abnormal level it wills automatically turnoff the regulator by using relay driver circuit. In our house many times LPG gets empty. Advance LPG booking through IVRS or online which is most troublesome for the uneducated people and busy working individuals to book the gas cylinder. so the system continuously monitor the level of the present LPG using load cell and gas reaches below the threshold value around 14Kg it will automatically send the SMS to the user as well as LPG gas providing agency with the help of relay driver circuit. This system also senses the room temperature using temperature sensor.*

Keywords: MQ-2 Sensor, Load cell, Arduino, Temperature sensor, Relay Driver circuit, GSM Module.

I. INTRODUCTION

LPG gas is a mixture of propane, butane, flammable mixture of hydrocarbon and natural gases, it was produced by Dr. Walter Snelling in the year 1910.propane and butane can easily cause the fire in hotels, homes, industries. Gas leakage due to various problems resulting in both financial loss and human life. In day to day life human life can busy with their own works, and they don't about the lack of awareness about gas leakage and cylinder booking. Without human intercession it cans automatically booking the cylinder when gas reaches minimum threshold value. In recent years the number of deaths were increased due to explosion of the gas.LPG is heavier than air. Unlike natural gas and these will flow along floors and tend to settle in low spots such as basements. There are two main dangers from this. The first one is, if the mixture of LPG and air is within the explosive limits and there is an ignition source. The explosion limits of propane and butane are 2.15 and 9.6, 1.9 and 8.5 and ignition temperature range is 493-604 °C and 482-538 °C. Natural gas is 4.7-15 and ignition source is 482-632 °C. The second one is suffocation due to LPG displacing air causing a decrease in oxygen concentration. In order to avoid this problem to detect the gas leakage is easy due to smell but controlling the gas leakage is very important in human's day life. With the help of temperature sensor we will sense the room temperature.

II. LITERATURE SURVEY

In the year 2011 a paper: "Design and Implementation of Economic Gas Leakage Detector" was written by A.Mahalingam, R.T.Naayagi, N.E.Mastorakis, they detect the gas leakage and providing immediate alarm or intimation to the user Later in 2013 a authors Rahul Varma, Rajeev Kumar designed the" GSM based gas leakage detection system". This project when gas leakage exceeds the peak value it alerts the surrounding people about the leakage through the SMS.

In the year 2014 Hitendra Rawat,Ashish Kushwah, Khyati Ashthana and Akanksha Shivare proposed the"LPG Gas monitoring and automatic cylinder booking with alert system". These report focus on the measure the weight of the cylinder it reaches the minimum threshold value it automatically sends the SMS to the LPG agent.

In the proposed system we designed the" LPG leakage detection with prevention and Automatic cylinder booking with alert system ".These project focus on detects the gas leakage ,when the gas leakage exceeds the abnormal level ,it automatically turns off the valve and it also the sense the surroundings temperature. When the weight of the cylinder reaches the threshold value, it will automatically booking the cylinder with help of GSM module.

III. BLOCK DIAGRAM

The main platform of this project is Arduino which is based on the platform of Microcontroller. It is an open source and easy programming.

The other principle part we are utilizing is Strainguage Load cell. Load cell other name is a Weight sensor, which senses the weight of the cylinder. It alerts the user when the weight of the cylinder reaches the threshold value.