

Pipeline Gas Leakage Controller in Apartments Using Sen-1327

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ABSTRACT

Leakage in pipeline gas is a noteworthy issue with mechanical division, private premises bringing about lethal mishaps. One preventive way to stop mischances connected with the gas leakage is to introduce gas leakage location and controller unit at defenseless places. The point of the task is to present a framework that can consequently recognize and stop gas spillage primarily in lofts. Gas sensors are used which has high affectability for LPG recognition and weight sensor has been utilized to recognize the most extreme and least estimation of weight. This paper gives a practical and profoundly touchy framework for LPG gas spillage controlling in flats. The framework utilizes SEN-1327 which identifies the gas spillage and weight sensor which distinguishes the variety of weight. The spillage and weight is controlled by VB programming both consequently and physically. In the event that spillage is distinguished, the valve is shut by the instrument of engine. The engine is associated with the PC through a physical interface link.

KEY WORDS: SEN-1327, RS232 CABLE, VB Programming.

1. INTRODUCTION

About the project: The undertaking manages programmed recognition and control of LPG spillage in flats. The current frameworks manage recognition and implication to the powers of the spillage however no preventive move is made. This framework beats this disadvantages, by shutting the valve straightforwardly if there should arise an occurrence of a spillage.

LPG comprises of blend of propane and butane which is a very combustible. As it is unscented Ethanethoil is included as effective odorant, so spillage can be effortlessly distinguished. The primary segments of this procedure are LPG sensor, weight sensor, RS 432 link, visual essential for equipment interface. At the point when the spillage of LPG happens, the proposed framework detects the break by method for a SEN-1327 sensor; subsequent to detecting the sensor's yield is given to the Analog to advanced converter. The yield of which is given to the controller where the system for checking the hole condition is running. The estimation of least and most extreme spillage and the weight is given as far as hexadecimal or parallel frame and is utilized to control the valve in shutting or opening of the valve relying on the reference esteem. MQ6 is a semiconductor sort gas sensor which identifies the gas spillage. It can recognize gas fixations anywhere in the range of 200 to 10000 ppm. The sensor's yield is an Analog imperviousness to microcontroller where Analog-to-Digital converter that converts a physical amount to a computerized number which speaks to the amount's abundance. The transformation is done to quantize the data, so it fundamentally presents a little measure of mistake. The A/D converter is interfaced to the PC utilizing the RS232 link. The equipment interface connected with VB programming controls the valves amid spillages, in this way ceasing gas stream.

Lpg sensor: SEN-1327 Semiconductor Sensor is used as the LPG. SEN-1327 consists of SnO_2 as the sensitive material gas sensor. For clean air it has lower conductivity. Conductivity of the sensor is higher on the gas focus rising when the objective ignitable gas exist. Straightforward electro circuit is utilized to change over change of conductivity to relate yield sign of gas focus. Sensitivity of the SEN-1327 is high affectability to Propane, Butane and LPG and also it possess additionally reaction to Natural gas. To recognize distinctive ignitable gas particularly Methane gas sensors are used. Methane gas sensors are suitable for diverse application. The SEN-1327 can recognize gas fixations anywhere in the range of 200 to 10000 ppm. The sensor's yield is a simple resistance which is joined with an ADC.

A/D Converter: ADC 0803 device is an analog-to-digital converter (which is abridged as ADC, A/D or D/A) which is used to convert a voltage to a digital number. This digital number represents the amplitude of the quantity. Quantization is done by ADC converter and also introduces an error. An ADC often performs number of transformation ie "samples" the input) occasionally. The outcome of an ADC determines the accuracy and quality of the quantized value. The sampling rate of ADC determines the actual bandwidth of an ADC and also by how it handles errors such as signals tend to indistinguishable. The important factors including the resolution, linearity and accuracy influences the ADC dynamic range. Resolution means ability of an ADC to quantize a signal. Effective number of bits (ENOB) is used to summarize the dynamic range of an ADC. ENOB is the average number of bits it returns for every time measurement and not noise. Resolution and ENOB are equal in an ideal ADC. Quantization error is neglected if an ADC operates at a sampling rate greater than two times the signals bandwidth. The quantization error will affect the performance of the dynamic range of even an ideal ADC.

RS232 Cable: RS-232 is the widely recognized serial interface and boats as a standard part on many of the Windows-perfect PC desktops. RS232 standard is a nonconcurrent serial specialized technique. The word serial means, that the

data is sent one piece at once. Offbeat lets us know that the data is not sent in predefined time openings. Information exchange can begin at any given time and it is the undertaking of the recipient to identify when a message begins and closures.

System Descriptor:

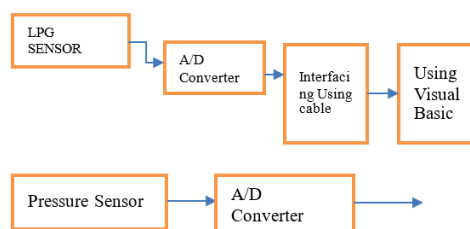


Figure.1. Block Diagram

Pressure Sensor: A pressure sensor is used to measure pressure of gases or liquids. Pressure is defined as the force that is used to stop a fluid from being expanding, and is normally explained in terms of force per unit area. A pressure sensor is otherwise called as a transducer. A pressure sensor generates a signal which is a function of the pressure that is applied to it. In a huge number of regular applications weight sensors can likewise be utilized to by implication measure different variables, for example, liquid/gas stream, speed, water level, and elevation. Weight transducers, weight transmitters, weight senders, pressure indicators, piezometers and manometers are various names for the weight sensors. Pressure sensors can be improved in technology, design, performance, application suitability and cost. Worldwide at least 300 companies are making pressure sensors worldwide and as a result there are at least 300 technologies. Pressure sensors are designed even to measure in a dynamic mode for capturing very high speed changes in pressure. Some applications include for an engine cylinder measuring of combustion pressure or in a gas turbine. P materials named as quartz are utilized for manufacturing pressure sensors. Some pressure sensors to be seen in some traffic enforcement cameras, i.e., when the pressure is applied to a pressure sensor, the sensor tends to complete or break an electrical circuit which is otherwise called as break switch.

Algorithm for Proposed System: The whole framework procedure is clarified underneath in point of interest by regulated procedure.

Step 1: LPG sensor (SEN-1327 sensor module) is utilized to distinguish the LPG gas spillage.

Step 2: Pressure sensor distinguishes the most extreme and least scopes of the weight.

The yield from LPG and weight sensor is as simple.

Step 3: A/D converter is utilized to change over the simple yield to advanced yield.

Step 4: The yield is interfaced to PC OS by an interface RS 232 link.

Step 5: The VB writing computer programs is made to close and open the valve.

Step 6: The valve is being controlled by the engine.

Step 7: The engine is interfaced by the physical interface.

Hardware Description: A gas spill locator circuit is used that distinguishes the spillage of LPG gas and also it alarms the client through varying media signs. This gas spill locator circuit works with the 9Volts PP3 battery. Zener diode ZD1 is utilized to change over 9V into 5V DC in order to drive the gas sensor module.

The gas spillage circuit utilizes the SEN-1327 gas sensor module from Rhydo LABZ. Its yield goes off high when the gas level reaches or surpasses certain point. There will be a preset in the module and is used to set the limit. The gas spill circuit is interfaced with the SEN-1327 gas sensor module by means of a 4-pin SIP header.

A SEN-1327 gas sensor is utilized as a part of the gas sensor module. The SEN-1327 sensor can likewise be utilized to identify burnable gasses, particularly methane.

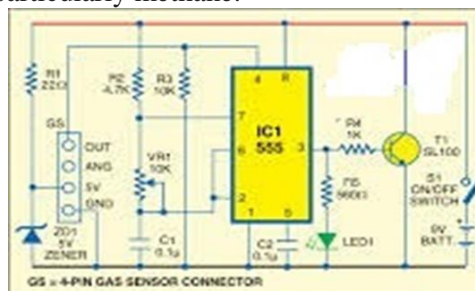


Figure.2. Detection Circuit

2. METHODS & MATERIALS

Methodology

Motor: (1kg motor with 45rpm)

Motor is utilized to control the turning heading either clockwise or anticlockwise. The clockwise bearing for shutting and the anticlockwise course is for opening. The engine is connected to the gear. The whole process is controlled by the engine.

Valve closing: The valve is shut by the working of engine by End guideline. In the event that there is a spillage recognized, the VB writing computer programs is done to make the green to red color. Within 10 seconds the valve is shut manually. Or following 10 seconds the quality is shut naturally.

In RS-232, client information's are separated as time-arrangement form of bits. The standards are used to transmit both synchronous and asynchronous information's. In spite of the information control device, the connection between DTE and DCE are done by a number of control. Each information or control device just works in one direction, that is, motioning from a Data Terminal Equipment to the joined Data Communication Equipment or the vice versa. The transmission and receptions are done by separate circuits. The information's are exchanged simultaneously in both direction, and also interface can work in a full duplex manner. Character encoding and framing of information's are not characterized by the standard.

Voltage levels such as logic one and logic zero levels for the information transmission and signal control lines are controlled or defined by RS-232 standard. Common ground pin's valid signals are either in the range of +3 to +15 volts or the reach -3 to -15 volts as for the ground/common pin; consequently, the range between -3 to +3 volts is not a valid RS-232 level. For data conveyance lines (TxD, RxD and their optional channel counterparts) logic high is characterized as a negative voltage, the sign condition is called "mark". Logic low is positive and the sign condition is termed "space". Control signals have the inverse polarity. The asserted or active state is positive or dynamic voltage and the deasserted or inactive state is negative voltage. Examples of command lines incorporate solicitation to send (RTS), clear to send (CTS), data terminal ready (DTR), and data set ready (DSR).

RS-232 driver components have incorporated circuit to produce the required voltages from a 3 or 5 volt supply. RS-232 drivers and receivers must be able to hold indefinite short circuit to ground or to any voltage level up to ± 25 volts. The signal changes between levels, is also controlled.

Once the spillage was recognized, the red shading can be visualised. Thus the framework sends a sign to the engine for shutting the valve. Thus the valve is shut either physically or automatically. The valve can be opened once the framework is cleared and restarted. The interfacing and using so as to work of the framework can be imagined Visual Basic programming. A project has been made to show the spillage condition and non-spillage conditions. Here green shading demonstrates the spillage in the pipeline. Thus the adjustment in shading can be pictured and identified. Once the valve is shut the framework changes to its introductory shading green which means no spillage and the stream of gas is in an arrangement.

Performance Evaluation: The two storey apartment consists of two floors and the main gas station. The LPG gas is stored in the LPG gas storage tank. The main value is placed with the gas storage tank. The two inlet valves are placed in floor 1 and 2 respectively.

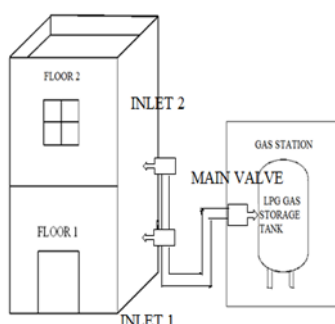


Figure.3. Generated output

3. CONCLUSION

Therefore the pipeline gas spillage controller in lofts is executed with programmed and manual valve closure utilizing VB. Thus the spillage is identified and controlled and incredible devastation is maintained a strategic distance from.

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