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Sensor Based Alarm in Gas Industry to Alert Any Threats

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ABSTRACT: Most but not all fires emit smoke aerosols at some point during the combustion process. Therefore, most Conventional fire detectors are based on the detection of smoke by light scattering. As every fire is emitting specific gases it is reasonable to upgrade photoelectric fire detectors or even replace them for specific environments with gas sensor based technologies. In this paper we present some gas detection technologies which have the potential to be able to amend or replace existing systems for use especially in residential fire detectors. But here some restrictions apply when using gas sensors. Among others these are low cost, low power and long term requirements. We identified advantages but also some challenges of gas detection technologies by testing colorimetric gas sensors, gas sensitive field effect transistors and metal oxide sensors. As most technologies are not completely selective to the target gas and as there is not "the" fire with one specific mixture of combustion gases it is helpful to combine different sensing elements in sensor arrays where algorithms using pattern recognition methods like PLSDA, PCA etc. can be used to increase the prediction reliability and the false alarm robustness. Here we focused on typical combustion gases like CO, CO₂, NO, NO₂, NH₃ and H₂.

KEYWORDS: PLSDA, PCA, combustion gases like CO, CO₂, gas sensor, Temperature sensor and Humidity sensor.

I. INTRODUCTION

The first automatic smoke detector invented in 1940 was based on the measurement of the ionization current using americium-241 as a radioactive source [1]. The alpha radiation emitted ionizes oxygen and nitrogen in the air in the sensing chamber leading to a measurable ionization current which decreases when smoke particles are present. Although these materials are relatively safe in use the acceptance at least in Europe decreased in the past. Environmental and health issues occurred and using radioactive sources in fire detectors became undesirable. Although ionization detectors are still more sensitive as conventional photoelectric detectors ("point detectors") nowadays most residential fire detectors are based on smoke detection by light scattering using forward scattering and/or backward scattering combined with the detection of heat [2]. Some use multiple wavelengths (IR and blue) to decrease the detection limit and to suppress false alarms which in most cases are due to dust or water vapor. For specific environments there are also alternative techniques in use like flame detectors, linear optical detectors, aspirating smoke detectors and linear heat detectors (using Raman scattering in optical fibers) – to name just a few. Not all fires are emitting smoke (pure ethanol fires for example do not) and especially some hot open fires do not emit bigger quantities of smoke. But combustion gases are emitted from every fire and their detection can be helpful for an early fire detection. Paper is organized as follows. Section II describes automatic text detection using morphological operations, connected component analysis and set of selection or rejection criteria [3,4]. The flow diagram represents the step of the algorithm. After detection of text, how text region is filled using an inpainting technique that is given in Section III. Section IV presents experimental results showing results of images tested. Finally, Section V presents conclusion.

II. RELATED WORK

The float rides on the process liquid surface, precisely tracking liquid surface motion. Rising liquid level lifts the float, sliding the attraction sleeve up inside the enclosing tube and into the magnetic field to actuate the electrical or pneumatic switch [5]. This signals the presence of liquid. Subsequently, falling liquid level lowers the float, drawing the attraction sleeve out of the magnetic field to deactivate the electrical or pneumatic switch. This signals the absence of liquid. Magnetic float level switches are generally able to handle high-temperature applications, and sometimes prove useful for close interface detection. By using a permanent magnetic float level switch and reed contact the

switching operation is non-contact, free from wear and needs no powersupply [6]. All functioning of the magnetic float switch is fully independent of vibrations, bubble formations, foaming, conductivity, and harmful vapours.

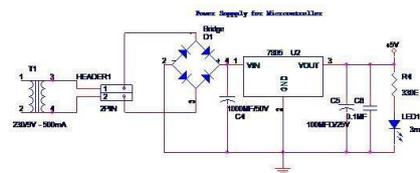
III. METHODOLOGY

We have proposed an Internet of Things (IoT) based on a real-time environmental monitoring system. Internet of Things (IoT) plays an important role in today's world through a vast and persistent system of sensor networks concerned to the Environment and its parameters [7-10]. This system deals with monitoring temperature, and gas using the sensor sand then this data is sent to the cloud An automatic saline level monitoring consists of Level sensors which are used to determine the status of liquid in the bottle whether it is normal or warning status.

The Bottle Reaches the low level, the buzzer will on and alert to the nurse, Cabin or Control room with Help of Wi-Fi. Wi-Fi is used to Monitoring the System from Anywhere.

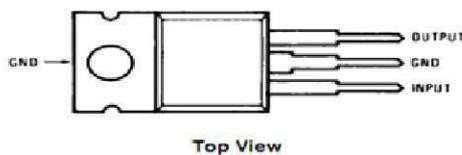
IV. EXPERIMENTAL RESULTS

According to the conventional model of current flow, current is defined to be positive when it flows through electrical conductors from the positive to the negative pole. In actuality, free electrons in a conductor nearly always flow from the negative to the positive pole. In the vast majority of applications, however, the actual direction of current flow is irrelevant. Therefore, in the discussion below the conventional model is retained(a).



(a).power supply using Micro Controller

Figure shows the basic connection of a three-terminal voltage regulator IC to a load. The fixed voltage regulator has an unregulated dc input voltage, V_i , applied to one input terminal, a regulated output dc voltage, V_o , from a second terminal, with the third terminal connected to ground. For a selected regulator, IC device specifications list a voltage range over which the input voltage can vary to maintain a regulated output voltage over a range of load current. The specifications also list the amount of output voltage change resulting from a change in load current (load regulation) or in input voltage (line regulation)(b). The series 78 regulators provide fixed regulated voltages from 5 to 24 V.



(b). Three-Terminal Voltage Regulators

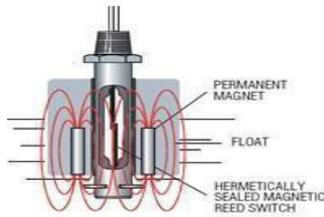
(PCINT14/RESET) PC6	1	28	PC5 (ADC5/SCL/PCINT13)
(PCINT16/RXD) PD0	2	27	PC4 (ADC4/SDA/PCINT12)
(PCINT17/TXD) PD1	3	26	PC3 (ADC3/PCINT11)
(PCINT18/INT0) PD2	4	25	PC2 (ADC2/PCINT10)
(PCINT19/OC2B/INT1) PD3	5	24	PC1 (ADC1/PCINT9)
(PCINT20/XCK/T0) PD4	6	23	PC0 (ADC0/PCINT8)
VCC	7	22	GND
GND	8	21	AREF
(PCINT6/XTAL1/TOSC1) PB6	9	20	AVCC
(PCINT7/XTAL2/TOSC2) PB7	10	19	PB5 (SCK/PCINT5)
(PCINT21/OC2B/T1) PD5	11	18	PB4 (MISO/PCINT4)
(PCINT22/OC0A/INT0) PD6	12	17	PB3 (MOSI/OC2A/PCINT3)
(PCINT23/AIN1) PD7	13	16	PB2 (SS/OC1B/PCINT2)
(PCINT0/CLK0/ICP1) PB0	14	15	PB1 (OC1A/PCINT1)

(c).Pin Diagram of Node MCU

shows how one such IC, a 7805, is connected to provide voltage regulation with output from this unit of +5V dc. An unregulated input voltage V is filtered by capacitor $C1$ and connected to the IC's IN terminal. The IC's OUT terminal provides a regulated + 12V which is filtered by capacitor $C2$ (mostly for any high-frequency noise). The third IC terminal is connected to ground (GND). While the input voltage may vary over some permissible voltage range, and the output load may vary over some acceptable range, the output voltage remains constant within specified voltage variation limits. These limitations are spelled out in the manufacturer's specification sheets. There are two types of voltage regulator they are 78xx series and 79xx series

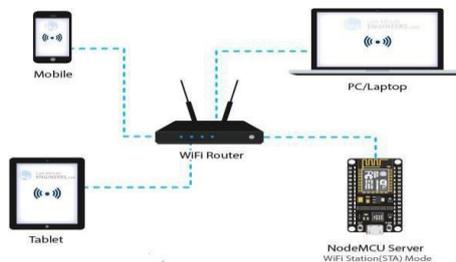
Liquid Level Switch:

Liquid Level Float Switches operate on a direct, simple principle. In most models, a float encircling a stationary stem is equipped with powerful, permanent magnets. As the float rises or lowers with liquid level, the magnetic field generated from within the float actuates a hermetically sealed, magnetic reed switch mounted within the stem. The stem is made of non-magnetic metals or rugged, engineered plastics. When mounted vertically, this basic design provides a consistent accuracy of $\pm 1/8$ inch. Multi-station float switches use a separate reed switch for each level point being monitored. the concept of harnessing magnetic fields to work in liquid level switches. However, it's a little harder to understand a reed switch. A reed switch consists of two ferromagnetic contact tips called, 'reeds,' that are encased in a glass tube. As the magnet passes by the contacts in the encased reed switch, they are drawn or touch and complete a signal circuit between the two lead wires(d).



(d). Liquid Level Float Switches.

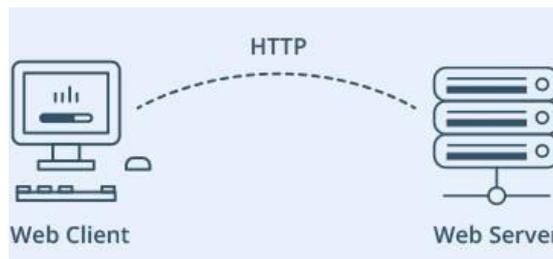
One of the greatest features ESP8266 provides is that it cannot only connect to an existing WiFi network and act as a Web Server, but it can also set up a network of its own, allowing other devices to connect directly to it and access web pages. This is possible because ESP8266 can operate in three different modes: Station mode, Soft Access Point mode, and both at the same time. This provides possibility of building mesh networks and Station (STA) Mode. The ESP8266 that connects to an existing WiFi network (one created by your wireless router) is called Station (STA)(e).



(e). ESP8266 as HTTP Server using Wi-Fi Access Point (AP) mode.

HTML:

HTML is a computer language devised to allow website creation. These websites can then be viewed by anyone else connected to the Internet. It is relatively easy to learn, with the basics being accessible to most people in one sitting; and quite powerful in what it allows you to create. It is constantly undergoing revision and evolution to meet the demands and requirements of the growing Internet audience under the direction of the » W3C, the organisation charged with designing and maintaining the language.



(D).HTTP SERVER POINT NETWORK



(F).HTML USING CONTROL OF ANY THREATS OCCUR IT

V. CONCLUSION

This work is an attempt to provide home and industrial safety systems. This system is tested for various sensors for detecting gas excess temperature. Accordingly, it is noted that average time required to detect LPG leakage isles as compared to CNG at the same PPM. The system also works effectively and gives alert for excess temperature detection above 50°C for any change in condition. Information will updated in web page.

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