

A Review on Microcontroller Based Boiler Monitoring System for Power Plant

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Abstract:

This is review paper on microcontroller based boiler monitoring system for power plant. In power plant cognitive radio (CR) is a detection device which involuntarily expose available channels in cellular spectrum & appropriately changes its transmission or reception parameters. In this paper, it suggest an conclusion for energy-efficient & spectrum- aware connection qualification in cognitive radio(CR) network. It permits each node to determine & regulate its transmission plan of action to supply minimum energy utilization without renounce end-to-end delay performance & also maximizes overall spectrum utilization. Spectrum sensing is one of the necessary limitation to be review in cognitive radio(CR) networks. Therefore, the safety aspect of spectrum sensing should be communicates kill fully. Using a Trust-Worthy conclusion, it enhance the trustworthiness of the Spectrum sensing in cognitive radio(CR)-Networks. It appratus using Network Simulator-2.

Keywords —Spectrum Sensing, Cognitive Radio, Efficient Communication, System Security.

I. INTRODUCTION

One of the original objectives of cognitive radio (CR) ad-hoc networks is to facilitate an systematic utilization of spectrum resources without organize with the original customer networks. CR-Network permit periodically connected mobile illegal nodes to achievement for the movement obtainable contacts & idle licensed channels for end-to end message delivery. Cognitive Radio (CR) is a key technology to appreciate Dynamic Spectrum Access (DSA) that qualify an unlicensed user (or,

secondary user) to flexible adjust its operating parameters and enterprise the spectrum which is unused by licensed users (or, primary users) in an convenient time serving manner. However, the awareness of CR-Networks also brings crucial research challenges that must be addressed. In particular, due to different node mobility and spectrum availability patterns, CR-Networks is frequently divided into uncertainly partitions. These partitions are essentially intermittently-connected & unsatisfactory in complete end-to-end paths. Hence, spectrum-aware flooding (SAF) is

more applicable for CR-Networks. In SAF, a message is first copied to a set of path nodes using obtainable channels. Then, one of these track nodes supply the message to the destination supply that it experience. Clearly, if the message is

In this paper, it suggest systematic communication between CR nodes & spectrum utilization. Secondly the security treat of spectrum sensing to make sure trustworthiness. It uses two selection schemes called node selection scheme(NSS) & channel selection scheme (CSS). The aim of NSS is to permit each node to check its gain in copying a message to a relay while inspect its transmission effort. Using NSS, each node conclude which paths should be used in order to provide minimum energy utilization without renounce end-to-end delay production. Based on CSS, each node conclude & switches to a permit

tried to be copied to all paths that do not have the message the end-to-end message delay can be minimized. However, such a forwarding plan is energy-inefficient & may cause a severe interference to primary user system. Hence, it is required to decide which path nodes & licensed channels should be used to reduce the energy consumption & high involvement for an systematic communication in CR-Networks.

channel to maximize spectrum utilization while keeping the involvement in a minimum level. This in time enables CR-Networks nodes to decide optimum path nodes & channels for an system atic communication in CR-Networks. The CR technology allow Secondary Users (SUs) to seek & utilize "spectrum holes" in a time & location-varying radio environment without bring about harmful involvement to Primary Users (PUs). This opportunistic use of the spectrum guide to new challenges to the vary in gobtainable spectrum. Using a Trust-Worthy conclusion, it upgrade the trustworthiness of the Spectrum sensing in CR-Networks.

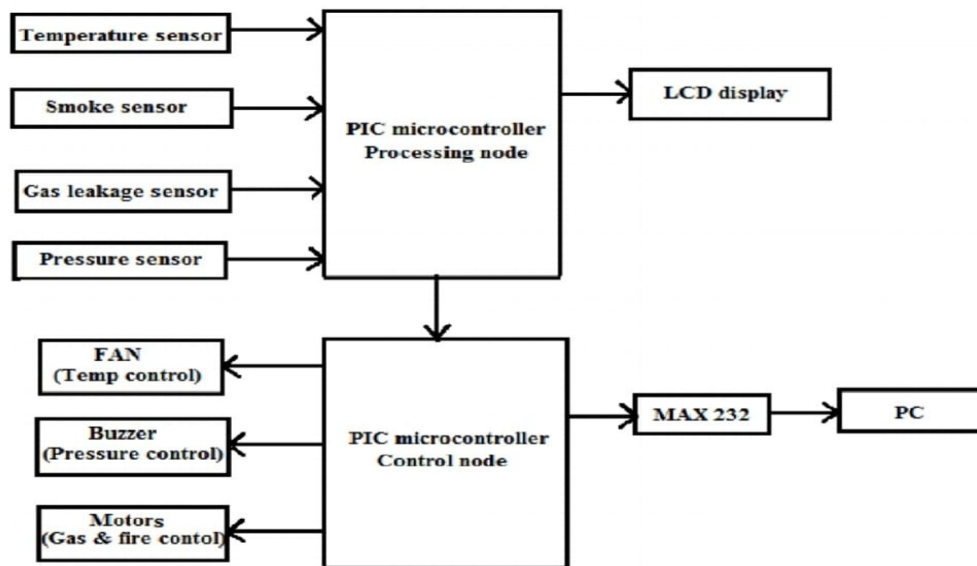


Fig 1. Block diagram of automation and control system using PIC microcontroller and CAN.

II LITERATURE SURVAY

- Presi.T.P, “PIC Microcontroller Based VehicleMonitoring System Using Controller Area Network (CAN)Protocol”,IEEE international conference 2012. This paper is concerned about implementation of PIC microcontrollerbased automation and control system for monitoring parameters of an industrial boiler. The monitoring parameters aretemperature, smoke, gas and pressure level of the boiler.
- Dogan Ibrahim, “Microcontroller based temperature monitoring and control”, ISBN: 0750655569, Elsevier Science &Technology Books. This paper is concerned about implementation of PIC microcontroller based automation and controlsystem for monitoring parameters of an industrial boiler. The monitoring parameters are temperature, smoke, gas and pressure level of the boiler.
- Kumar, M. A.Verma, and A. Srividya, Response-Time “Modeling of Controller Area Network (CAN). Distributed Computing and Networking, Lecture Notes in Computer Science Volume 5408, p163-174, 2009. This paper is concerned about implementation of PIC microcontroller based automation and control system for monitoring parameters of an industrial boiler. The monitoring parameters are temperature, smoke, gas and pressure level of the boiler.

III PROPOSED SYSTEM DEVELOPMENT

- PIC MICROCONTROLLER PROCESSING NODE :-Peripheral Interface Controller (PIC) is the world's small microcontroller that can be arranged to carry out a vast rangeof tasks. (PIC) peripheral interface controller microcontroller is an IC and its planning comprises of CPU, RAM,ROM, timers, counters and protocols like SPI, UART, CAN which are utilised for associating with other peripherals.
- TEMPERATURE SENSOR :-The LM35 series are correctness desegregated circuit temperature sensors, whose output voltage is linearly proportionalto the Celsius (Centigrade) temperature. The LM35 thus has an superiority over linear temperature sensors calibrated in Kelvin, as the user is not need to subtract a large constant voltage from its output to acquire suitable centigradescaling. The LM35 does not need any outer calibration or cutting to supply typical correctness of $\pm 1/4$ at roomtemperature and $\pm 3/4^{\circ}\text{C}$ over a full -55 to +150 $^{\circ}\text{C}$ temperature range. The LM35's low output impedance, linear output,and deman impending calibration make relate to readout or authority circuitry mostly easy
- SMOKE SENCER :-Fire sensor is also called as Light Dependent Resistor. A light dependent resistor or photo resistor or cadmium sulphide (CdS) cell is a resistor whose resistance drops with increasing incident light intensity. It can also be validated as aphotoconductor. A photo resistor is constuct of a high resistance semiconductor. If light drop on the device is of highsufficient frequency, photons absorbed by the semiconductor give bound electrons sufficient energy to jump into theconduction band. The resulting free

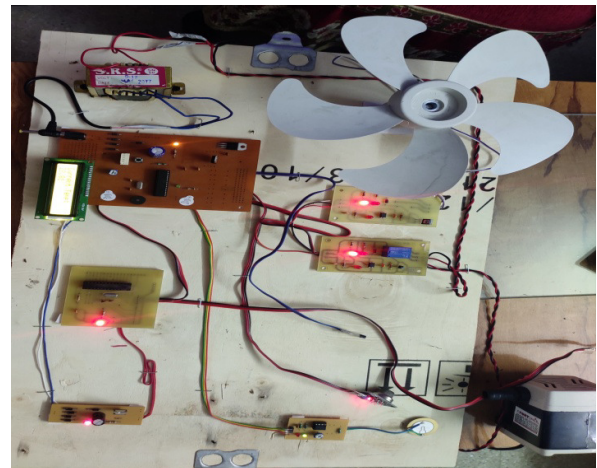
electron (and its hole partner) performance electricity, thereby lowering resistance.

- **GAS LEAKAGES SENCER** :-The semiconductor flammable gas sensor expose the presence of combustible gas and smoke at application from 300 to10,000 ppm. The sensor's simple analog voltage attachment need only one analog input pin from your microcontroller.This sensor expose the concentrations of inflammable gas in the air and products its reading as an analog voltage. Thesensor can operate at temperatures from -20 to 50°C and consumes below 150 mA at 5 V.
- **PRESSURE SENSOR** :-A pressure sensor measures liquids, typically of gases or Pressures. Pressure is an appearance of the force need to stopa fluid from expanding, and is generally stated in terms of force per unit area. A pressure sensor generally peeform as atransducer; it generates a signal as a purpose of the pressure imposed. For the cause of this article, such a gesture iselectrical.
- **LCD DISPLAY** :-LED display is used to display the accept data in hex values. LCD display also can be used, which will show thecommunicate ASCII values of the received data. The display node can also carry a computer which continuouslymonitors the data coming from the sensor nodes
- **COOLING FAN** :-To cool these elements, fans are used to move warmed up air away from the elements and draw cooler air over them.The exhaust fan is controlled by+5V brushless DC motor via a motor driver (ULN2803) which is connected to themicrocontroller. If thereceive temperature sensor data is higher than the

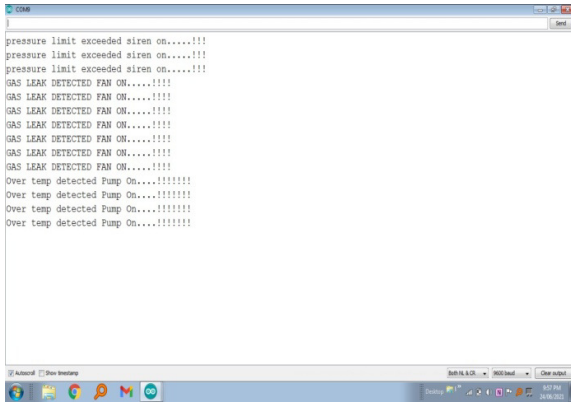
prearranged limit, the exhaust fan will startrotating continuously.

- **BUZZER** :-A beeper or buzzer is an electronic signaling device. It most frequently contain of a number of switches or sensorsconnected to a control unit that decides if and which button was pushed or a preset time has lapsed, and generallyilluminates a light on the suitable button or control panel, and sounds a warning in the form of a continuous orintermittent buzzing or beeping sound.

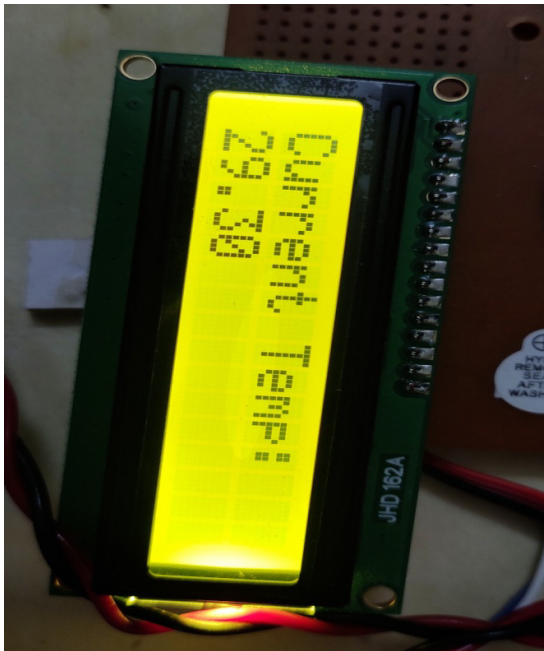
IV. CONSTRUCTED PROJECT IMAGE



V.RESULT



```
COM1
pressure limit exceeded siren on.....!!!!
pressure limit exceeded siren on.....!!!!
pressure limit exceeded siren on.....!!!!
GAS LEAK DETECTED FAN ON.....!!!!!!
GAS LEAK DETECTED FAN ON.....!!!!!!
GAS LEAK DETECTED FAN ON.....!!!!!!
GAS LEAK DETECTED FAN ON.....!!!!!!
GAS LEAK DETECTED FAN ON.....!!!!!!
GAS LEAK DETECTED FAN ON.....!!!!!!
GAS LEAK DETECTED FAN ON.....!!!!!!
GAS LEAK DETECTED FAN ON.....!!!!!!
Over temp detected Pump On.....!!!!!!
Over temp detected Pump On.....!!!!!!
Over temp detected Pump On.....!!!!!!
Over temp detected Pump On.....!!!!!!
```



VI. CONCLUSIONS

Thus it permits each node with message to conclude whether to copy the message to a path node by advance its transmission attempt in order to supply a enough level of message detain. Using a channel collection scheme suppy spectrum application while it reduces the involvement level to original system. Using trustworthy algorithm, it upgradethe trustworthiness of the Spectrum sensing

in CR-Networks. It authorize network nodes toadaptively adjust theircommunication plans according to dynamically changing network environment.

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