

Parameter Monitoring And control Using GSM Architecture

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Abstract - In today's world development of technologicis made it possible to introduce industry automation system into almost all manufacturing fields.Using this technology we can monitor and control the temperature of boilers from anywhere nothing but remote controlling.In this project we are presenting system for monitoring and controlling temperature using GSM architecture.

Key Words: industry automation, remote controlling, temperature of boilers, GSM architecture.

1.INTRODUCTION

In 'Parameter Monitoring and Control using GSM architecture" system we are going to monitor and control the temperature of sensor conveniently and efficiently. Now a days. Industry automation is necessary to make labour's life easier and also for industry safety.In our system there are two parts. One part is near to the boiler to sense the temperature and other part is in control room to monitor and control temperature.

2. PROJECT OVERVIEW

In our project we use GSM architecture . It is the main unit of project. We also use Arduino Uno. LCD display is used to show current temperature. Relay is used to turn ON and OFF. We use thingspeak website. On this website we continously update the temperature of boiler so we can check it from anywhere.By using this project we can detect the increase or decrease in temperature by the sensors installed in boilers and notify owner and start automation system in real time when temperature exceeds or decreases.

3.PROPOSED SYSTEM

Proposed system is industrial automation that will control the various parameters of boilers and also provide control over parameters over long distance.

3.1 SYSTEM REQUIREMENTS

3.1.1 arduino uno

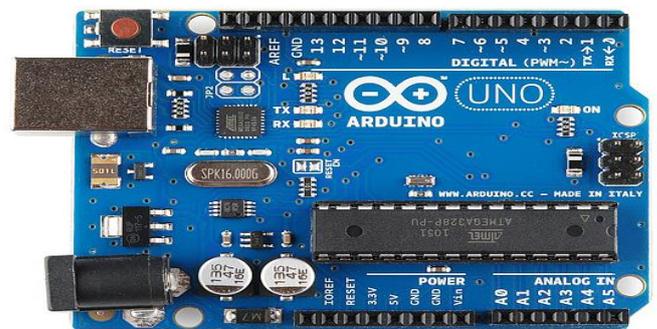


Fig -1: Arduino uno

It is microcontroller board having ATMEGA 328 AUR microcontoller. Arduino does not need a seprate piece of hardware in order to load new code onto the board. We use USB cable.

3.1.2 LCD Display Module



Fig-2: LCD Display Module

LCD display having 16 pins which are connecting to first section and also to another section. LCD is use to show the temperture of sensor and also give warning message.

3.1.3 Wireless Module

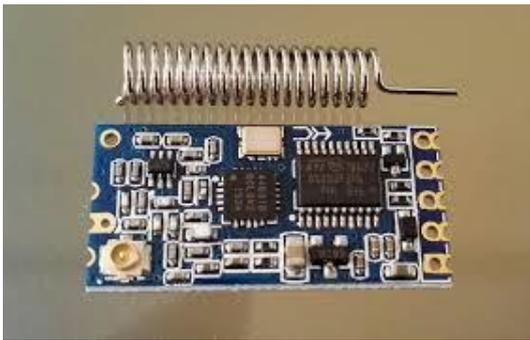


Fig-3: Wireless Module

This is HC-12 Wireless module. This module is used to transmit and receive signals. It is also called a transceiver. We use this to send messages to the control room and receive messages in the control room.

3.1.4 GSM Module



Fig-4: GSM Module

This is a GSM model. In our project, we send warning messages when the boiler's temperature exceeds the threshold temperature value. For sending warning messages to the user, we use the GSM model.

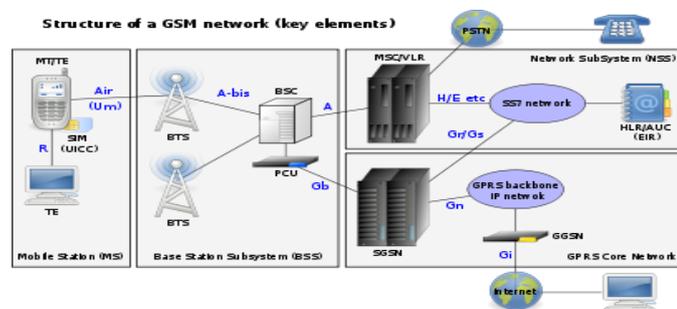


Fig-5: Structure of GSM

3.1.5 LM35 temperature sensor

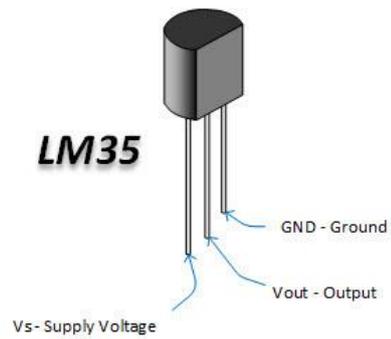


Fig-6: temperature sensor

The LM35 is one of the most commonly used temperature sensors, which will be used to measure temperature with an electrical output proportional to the temperature (in °C). It can measure temperature more accurately compared to thermocouples and should not need that the output voltage is amplified. The LM35 has an output voltage that is proportional to the Celsius temperature. The scale factor is .01V/°C.

3.1.5 Push button

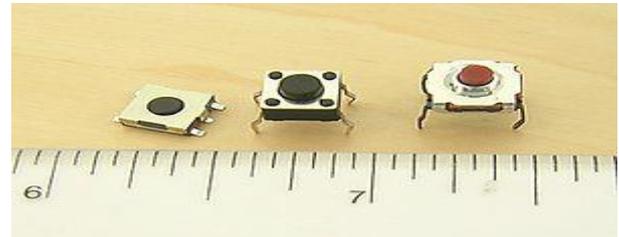


Fig-7: Push button

This is a push button. Push buttons are used to set the threshold temperature. In our project, we used 5 push buttons: enter, menu, increment, decrement, and set.

3.1.6 Relay



Fig-8: Relay

A relay is an electrically operated switch. Initially, all relays are ON. When the temperature of any sensor increases or decreases, the corresponding relay will turn OFF.

3.1.7 Arduino 1.8.10

Arduino is an open-source electronics platform supported easy-to-use hardware and software. Arduino are ready to read inputs - light on a sensor, a finger on a button, or a Twitter message - and switch it into an output - activating a motor, turning on an LED. You can tell your board what to try to do by sending a group of instructions to the microcontroller on the board. To do so you use the. Over the years Arduino has been the brain of thousands of projects, from day to day objects to complex scientific hardware.

3.1.8 Thingspeaks

ThingSpeak is an analytics platform service that provides you to aggregate, visualize and analyze live data streams. ThingSpeak provides instant visualizations of data posted by your devices to this site. With the ability to execute MATLAB® code in ThingSpeak you can perform online analysis, visualization and processing of data. ThingSpeak is also used as a prototyping and proof of concept IoT systems that require analytics.

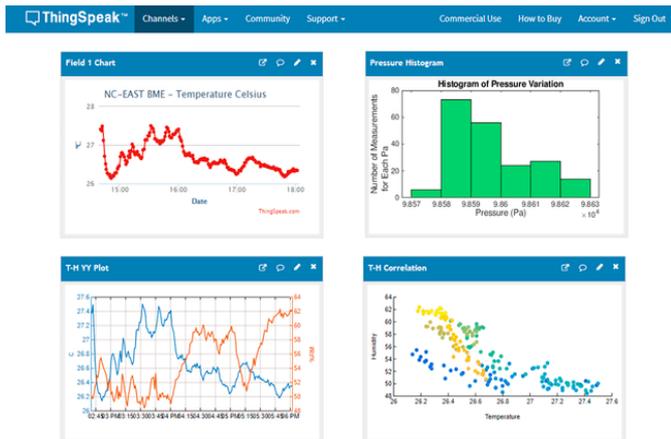


Fig-9:Website view

3.2 Block diagram

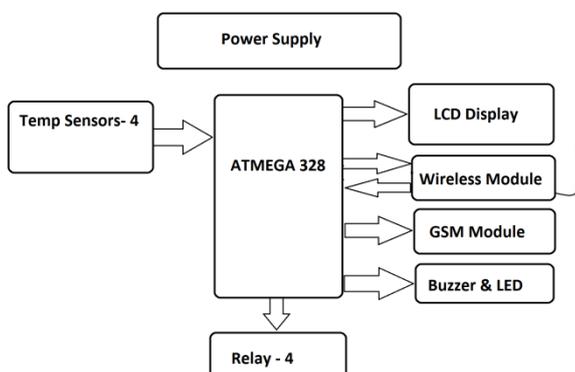


Fig-10:Block diagram

The temperature of the boilers and having a pressure sensor measures the pressure of the boiler. The obtained

values of Parameters levels are measured the data is transferred to the Arduino microcontroller. The microcontroller read the available data and processed. Interface the sensor, LCD, and MAX 232 serial port driver with a microcontroller. Transfer the parameter values are interfacing to Arduino microcontroller and also send the parameter values through GSM to owner or any responsible person.

4.METHODOLOGY

Parameter monitoring and controlling using GSM architecture is based on basically two sections. First section which will be placed near boiler area and second one is placed in the controlling area.

4.1 First section

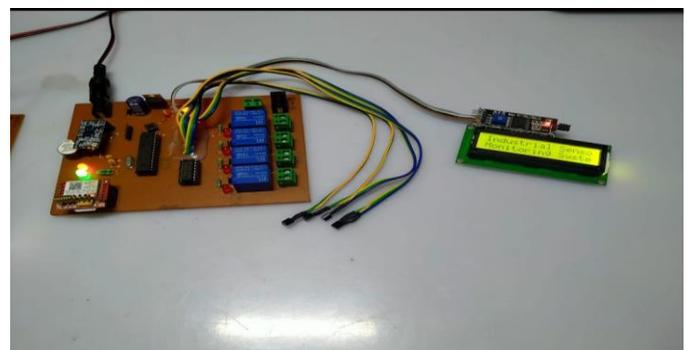


Fig-10:First Section

This is the first section of our project. We kept this part near to the boilers to sense the temperature. Sensors are interface to ATMEGA 328. Sensors continuously sense the temperature of boiler and give data ATMEGA 328. LCD display is connected to ATMEGA 328. This LCD display show the current temperature of boiler. Firstly we set the threshold value for temperature. In case if temperature of boiler goes above threshold value then there is buzzer to give warning. Warning message is also show on the LCD. Whenever temperature increases or decreases, arduino control the gas pipe connection. Wireless module is use to send data to the control room.

4.2 Second section

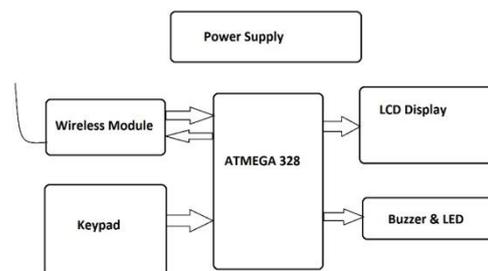


Fig-11:block diagram of second section

This is the second section of project. This section is placed in the control room. It receives the data from section 1

through wireless module. There is also LCD display to show current temperature of boiler. So from control room we can check the current temperature of boiler. Buzzers are also there to give warning and warning is also show on LCD. We can set threshold temperature from control room also by using keypad. Also data is updated on website.

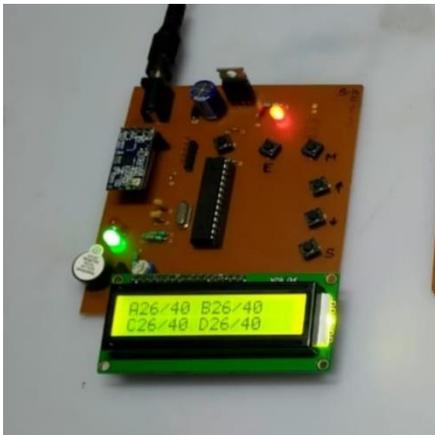


Fig-12: Second section

5 RESULT

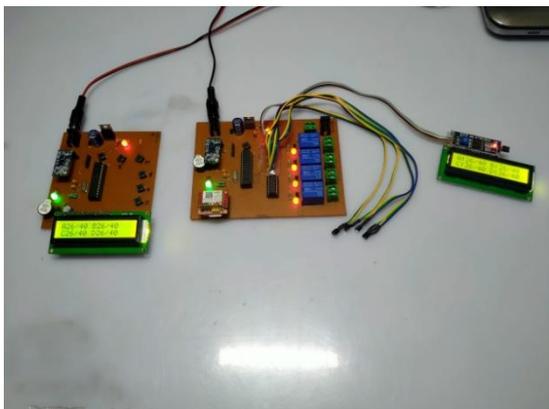


Fig-13: Parameter monitoring and controlling using GSM architecture model

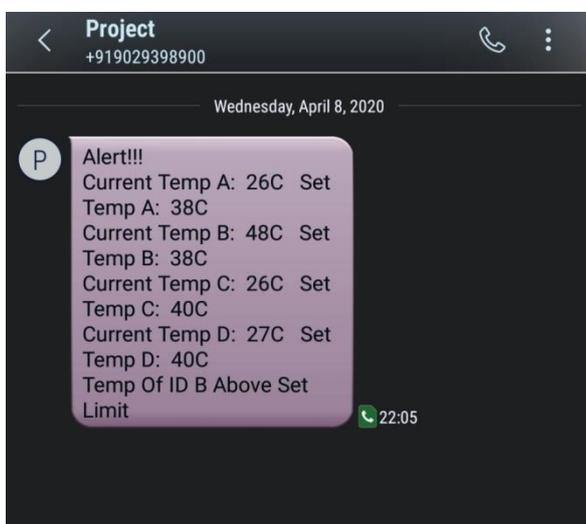


Fig-13: Monitoring message from model

6 CONCLUSION

We designed the System which reduces human efforts and provide automation. Proposed system is cheap, reliable and components are easily available. It is also portable and easily upgradable. System provides reliable security and energy efficiency for user. GSM is one of the upcoming technologies and is used in this project too.

7 FUTURE SCOPE

This project can be applied to homes as well as offices. Furthermore this project can be extended to incorporate a video camera to keep an eye inside the house. GSM module is used to control the system from distant area by sending secret key. Critical area sensors monitoring using wireless system is the problem faced by many industries. Pressure sensor can be used. System can be control on voice command.

REFERENCES

1. Oke Alice O., Adigun Adebisi A., Falohun Adeleye S., and Alamu F. O. , “DEVELOPMENT OF A PROGRAMMABLE ELECTRONIC DIGITAL CODE LOCK SYSTEM” , International Journal of Computer and Information Technology (ISSN: 2279 – 0764) Volume 02– Issue 01, January 20132
2. Mohammad Amanullah “MICROCONTROLLER BASED REPROGRAMMABLE DIGITAL DOOR LOCK SECURITY SYSTEM BY USING KEYPAD & GSM/CDMA TECHNOLOGY”, IOSR Journal of Electrical and Electronics Engineering (IOSR - JEEE), Volume 4, Issue 6 (Mar. - Apr. 2013).
3. Ashish Jadhav, Mahesh Kumbhar, Mahesh Walunjkar, “FEASIBILITY STUDY OF IMPLEMENTATION OF CELL PHONE CONTROLLED, PASSWORD PROTECTED DOOR LOCKING SYSTEM” , International Journal of Innovative
4. P. K. Gaikwad, “DEVELOPMENT OF FPGA AND GSM BASED ADVANCED DIGITAL LOCKER SYSTEM”, International Journal of Computer Science and Mobile Applications, Vol.1 Issue. 3, September- 2013.
5. Annie P. Oommen, Rahul A P, Pranav V, Ponni S, Renjith Nadeshan, “DESIGN AND IMPLEMENTATION OF A DIGITAL CODE LOCK”, International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering, Vol. 3, Issue 2, February 2014.
6. Arpita Mishra, Siddharth Sharma, Sachin Dubey, S.K. Dubey, “PASSWORD BASED SECURITY

- LOCK SYSTEM”, International Journal of Advanced Technology in Engineering and Science, Volume No.02, Issue No. 05, May 2014.
7. E.Supraja, K.V.Goutham, N.Subramanyam, A.Dasthagiraiah, Dr.H.K.P.Prasad, “ENHANCED WIRELESS SECURITY SYSTEM WITH DIGITAL CODE LOCK USING RF &GSM TECHNOLOGY”, International Journal of Computational Engineering Research, Vol 04, Issue 7, July – 2014.
 8. KawserWazedNafi, TonnyShekhaKar, SayedAnisulHoque, “ AN ADVANCED DOOR LOCK SECURITY SYSTEM USING PALM TOP RECOGNITION SYSTEM”, International Journal of Computer Applications (0975 – 8887), Volume 56– No.17, October 2012.
 9. 9S.Ramesh, SoundaryaHariharan and ShrutiArora “MONITORING AND CONTROLLING OF BANK SECURITY SYSTEM”, International Journal of Advanced Research in Computer Science and Software Engineering, Volume 2, Issue 10, October 2012.
 10. Sadeque Reza Khan, Ahmed Al Mansur, AlvirKabir, ShahidJaman, NahianChowdhury “DESIGN AND IMPLEMENTATION OF LOW COST HOME SECURITY SYSTEM USING GSM NETWORK”, International Journal of Scientific & Engineering Research, Volume 3, Issue 3, March - 2012.
 11. Ushie James Oгри, DonatusEnangBasseOkwong, AkaisoEtim “DESIGN AND CONSTRUCTION OF DOOR LOCKING SECURITY SYSTEM USING GSM” , International Journal Of Engineering And Computer Science ISSN:2319-7242, Volume 2 Issue 7 (July 2013).
 12. A.O. Oke, O.M. Olaniyi, O.T. Arulogun, O.M. Olaniyan “DEVELOPMENT OF A MICROCONTROLLER-CONTROLLED SECURITY DOOR SYSTEM.” The Pacific Journal of Science and Technology, Volume 10.Number 2. November 2009 (Fall).