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A REVIEW ON IOT BASED INDUSTRIAL AUTOMATION

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ABSTRACT:-Industrial Monitoring and Control is essential to collect all the relevant information, statistics and data related to the various industrial processes, motors, machines and devices employed in industry premises. This point is to control access, better usefulness and excellent consequences of mechanical items being produced. In this new period of innovation advancement controller and observing through correspondence procedures like ZigBee, RF, Infrared, methods are for the most part confined to straightforward application on account of their sluggish correspondence paces, distance and information security. In addition, they are easily affected by noise and bad weather conditions such as snow, fog and rain. In the present project, a new solution is adopted for the traditional monitoring and control of industrial application through the implementation of internet of things [IOT] using GPRS enable high quality communication, low cost and high security without the need for much hardware infrastructure in all the coverage areas of the GSM operator.

Key ward:-IOT, GPRS,GSM, LCD & Industrial Automation.

I. INTRODUCTION

In this 21st century, Industrial condition monitoring holds great importance and have uses in several areas ranging from keeping track of Industrial field Industrial condition, condition to

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industrial condition monitoring. Industrial condition monitoring would help in keeping track of different Fault behaviors including temperature, humidity and light intensity. Industrial condition Monitoring framework can be either strange or remote one. If there should be an occurrence of remote correspondence, the availability will be more helpful and easy to understand and Industrial condition checking would not need actual presence of the individual at the area [1]. Remote correspondence is the exchange of data over a distance without the utilization of wires. The distance included might be short [a few meters as in TV far off control] or long [thousands or a huge number of kilometers for radio correspondence]. GSM technology is the cheapest and the most convenient technology now being used for wireless communication. The wireless industrial condition monitoring system basically requires few basic modules such as GSM module, display module, sensors and microcontroller module [2].

II. SYSTEM DESCRIPTION

Our wireless Industrial condition monitoring System is an automated version of manually measuring temperature and sending the information to a distant data base wirelessly via sms. Our system has got almost everything robotized with the goal that we gat a benefit of this idea ie the continuous direct estimation of the boundaries [here temperature] through GSM module [SIM300],LCD JHD 162A and an ATMEGA-32 microcontroller [AVR coach Board]. The GSM module is associated with PC/Notebook through RS232 link. Windows has an inherent sequential observing programming called Hyper terminal to peruse the messages sent by present day. The framework model is displayed in figure 2.1 which says about connectivity of all mentioned devices. The LCD used in this project can be detached when we use the design for commercial purpose. LCD is attached to ATMEGA32 to simultaneously display the measured temperature, through which we can experimentally check whether the data is being sent is correct [1].

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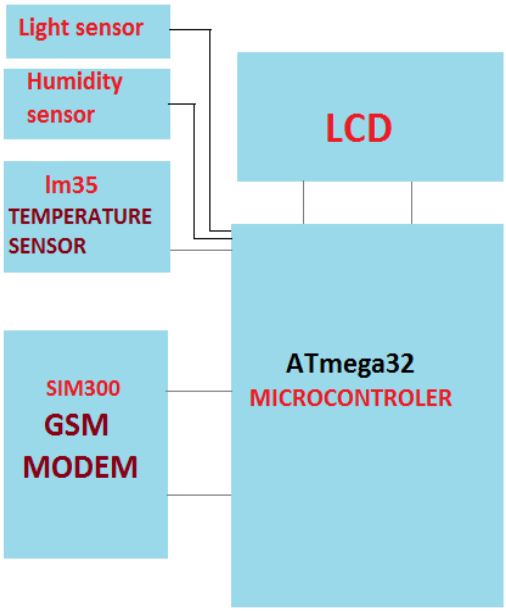

Fig. 2.1 Block diagram of system module

Following are the main components of the system.

2.1 LM35

The LM35 series are precision integrated-circuit temperature sensors. Its output voltage is linearly proportional to the Celsius temperature for a large range of temperature values. The LM35 thus has an upper hand over linear temperature sensors calibrated in ^{0} Kelvin, as the user is not required to subtract a large constant voltage from its output to obtain convenient Centigrade scaling. The LM35 need not use any external calibration or trimming to provide usual accuracies of 1/4^{0}C at room[moderate] temperature and 3/4^{0}C over a full -55 to +150^{0}C temperature range [5].

2.2 LCD JHD162A

A liquid-crystal display is a flat panel, electronic visuals display that uses the light modulating properties of liquid crystals. Liquid crystals does not emit light directly. The working of LCD depend on two sheets of polarizing material with liquid crystal to align so that it blocks out light and does not allow it to pass [10]. Each crystal behave like a shutter, it either allows light to pass through or blocks the light. It can function properly in the temperature range of -10^{0}C to 60^{0}C and has operating lifetime of longer than 50000 hours [at room temperature without direct irradiation of sunlight].

2.3 SIM300

SIM300 is a Tri-band GSM/GPRS engine whose working frequencies are EGSM 900 MHz, DCS 1800 MHz and PCSI1900 MHz SIM300 provides GPRS multi-slot class 10 capability and support the GPRS coding schemes CS-1, CS-2, CS-3 and CS-4. This GSM modern is compatible with its own unique phone number. Application is made through a 60 pins board-to-board connector that provides all hardware interfaces between the GSM and customers boards. [13].

2.4 ATmega32

The Atmel AVR ATmega32 is a low-power CMOS 8-bit microcontroller based on the AVR enhanced RISC architecture. By executing powerful instructions in a single clock cycle, ATmega32 achieves throughputs approaching 1 MIPS per MHz allowing the system designed to optimize power consumption versus processing speed [4]. ATmega32 development board is made from double sided PYH PCB board to provide extra strength to the connector joints. It also has 7805 voltage regulator. The heat sink dissipates the heat so that it can supply 1Amp current continuously without being over heated. It has switches for reset and power. All the ports are connected to standard 10 pin FRC pins.

III. WORKING OF SYSTEM

The LM35 is the temperature sensor connected to PA0 port of the ATmega32 microcontroller device. The output voltage is obtained in mill volts and is converted to digital value. The GSM modem and LCD are connected to microcontroller. The temperature can be monitored directly which is simultaneously shown on the LCD and a message is shipped off the portable by utilizing GSM methods at a similar case. The mechanical machine contains NODE MCU WIFI transmitter and NODE MCU microcontroller, Ethernet recipient and Internet show. The boundaries current, voltage, oil temperature of the business is constantly gets by the NODE MCU microcontroller and communicates through the Ethernet transmitter to the main station. The Ethernet receiver in the main station receives the signal and compares it to the reference rated measurement. If the received information is below the reference rated measurement it does not shows any variations or if it is above the reference rated measurements then that increased range is viewed by internet and indicated using LED and further damage can be avoided by shutting down the substation using relay from the main station.

IV. FEATURES OF THE SYSTEM

Advantages, limitations and features, of the fully automated lift disinfection system is as follows.

A. Advantages

- ✓ Whole system can be shut down for quick repairs and re-installation.
- ✓ Low maintenance.
- ✓ Fair efficiency

- ✓ High accuracy.
- ✓ Remote monitoring to avoid further power loss and time.

Fig 4.1 Hardwar Design

V. CONCLUSION

The ventures manages planning a straightforward and low Industrial condition checking framework utilizing LM35,LCD,SIM300 and ATmega32 microcontroller unit to screen mechanical state of the ideal area and send it to a mobile phone at far off area through SMS. The planned item module is at prelim stage and planned uniquely for temperature observing yet can be upgraded for checking other diverse sort of ecological and flaw conduct of area, which likewise can be practical.

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