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IOT Based Energy Consumption Monitoring Platform For Industrial Process

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ABSTRACT

Smart application has become more and more popular in recent years. It aims at helping people manage the various devices freely and build an autonomous environment. This project introduces a wireless solution based on Internet protocol to manage the industrial units easily.Smart application system can connect the various units together and provide a unified interface for users to interact with the monitoring block. Some main features are listed such as speed control ,motor control, load control, temperature control, and safety. As with the development of the Internet, Internet based remote monitoring and control solutions for industry has been proposed.

INTRODUCTION:

Electricity plays an important role in our life. Every moment of our life depends upon electricity. Electricity has several components and equipment helping human to transfer and regulate the distribution according to usage. The most crucial equipment of transmission and distribution of electric power is transformer.In power systems, an electrical equipment distribution transformer directly distributes power to the low-voltage users and its operation condition is an important criterion of the entire network operation. The majority of these devices have been in service for many years in different (electrical, mechanical and environmental) conditions.

EXISTING SYSTEM:

In existing system the device can controlled manually with the man power.if there is wastage of energy in the form of running devices in the industry, it results in huge loss of power and thereby contributing to the economical fall.When the machines goes abnormal condition, it indicated to the user via buzzer. Mainly, the automatic detection of cautious environment in the industry is quite less in the existing system. Some of the disadvantages of existing systems are Power wastages are more, Man power is needed,

Tendency for accidents to occur The main disadvantage in the existing system is the man power accidental conditions through which various load losses are evolved. .

PROPOSED SYSTEM:

Propose the automated monitoring of industrial loads using IOT and control using wireless sensor network. Temperature sensor is placed for monitoring the effect of surrounding temperature.The present project is focused on Industrial applications that will be continuously monitored through a set of sensors that constitutes a sensor module. The sensor module collects the relevant data to determine whether the applications to be monitored are working well under certain threshold values.The industrial devices like motor and load are monitored using temperature sensor and machine speed is controlled using IOT. From this energy is consumed. Then measure parameters are display using LCD.Then measured parameters will also updated to The IOT website.

LITERATURE SURVEY:

TITLE:USING THE INTERNET OF THINGS IN A PRODUCTION PLANNING CONTEXT

AUTHOR: Faustino Alarcóna ; David Pereza ; Andrés Bozaa

YEAR: 2016

DESCRIPTION: One of the most novel concepts that have been applied to companies in recent years is “Sensing Enterprises”. This

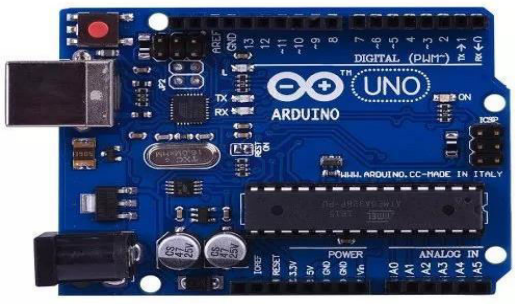
concept implies a drastic change in the way companies operate. Within the framework of this concept, another necessary and complementary concept arises, the so-called "Internet of Things" concept. It seems evident that the Internet of Things can generally help to improve the functioning of the processes undertaken in companies, particularly one of the key processes; the production planning process. Despite being able to find abundant information on both themes, and the apparent relevance that using the Internet of Things could have for the production planning process, no works that have jointly studied these matters were found. To bridge this gap, the present work intends to reflect on how the characteristics and advantages of the Internet of Things can be put to good use in the production planning process.

IN 2008,Theobjective of this paper is to present a remote laboratory in the context of power electronics education. New technologies and developments are compelling educators to deeply reflect on the traditional means of teaching.

Modern curricula require new ways of conception and implementation of innovative pedagogical approaches. Often, these new pedagogical approaches require novel technological realizations. Although e-learning facilities are increasingly being used in engineering education, often, they are based on simulations and/or emulations of virtual laboratories. This paper presents a remote laboratory facility that allows the students to conduct real power electronics reconfigurable experiments through the Internet, promoting a more efficient learning through online industrial automation operation using the Internet and Services.

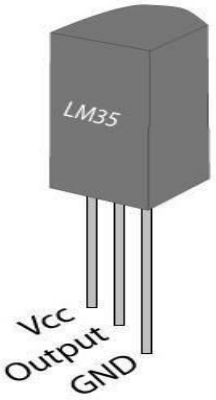
MODULES:

ARDUINO UNO



The Arduino Uno has a number of facilities for communicating with a computer, another Arduino, or other microcontrollers. The ATmega328 provides UART TTL (5V) serial communication, which is available on digital pins 0 (RX) and 1 (TX). Each of the 14 digital pins and 6 Analog pins on the Uno can be used as an input or output, using pinMode(), digitalWrite(), and digitalRead() functions. They operate at 5 volts. Each pin can provide or receive 20 mA as recommended operating condition and has an internal pull-up resistor (disconnected by default) of 20- 50k ohm. The Uno has 6 analog inputs, labeled A0 through A5, each of which provide 10 bits of resolution (i.e. 1024 different values).

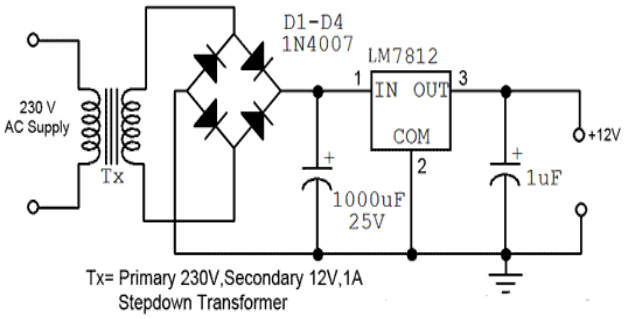
TEMPRATURE SENSOR



LM35 is a precision IC temperature sensor with its output proportional to the temperature (in ^{o}C). The sensor circuitry is sealed and therefore it is not subjected to oxidation and other processes. With LM35, temperature can be measured more accurately than with a thermistor. It also possess low self-heating and does not cause more than

^{o}C temperature rise in still air.

POWER SUPPLY:

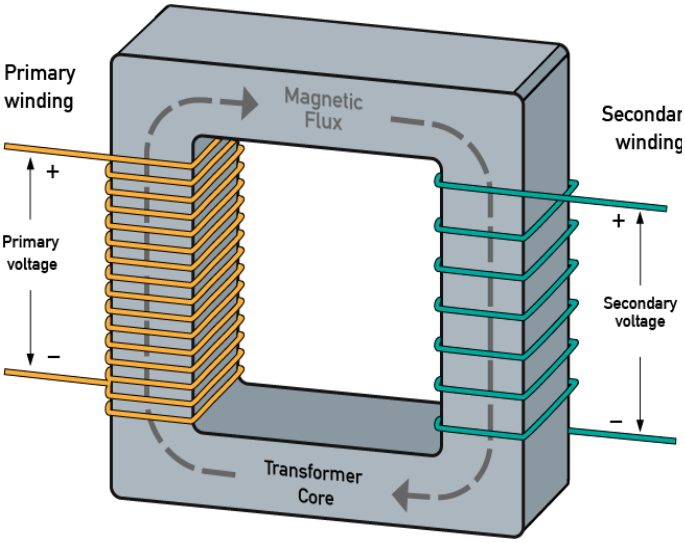


Power supply is a reference to a source of electrical power. A device or system that supplies electrical or other types of energy to an output load or group of loads is called a power supply unit or PSU. The term is most commonly applied to electrical energy supplies, less often to mechanical ones, and rarely to others.

FIRE SENSOR

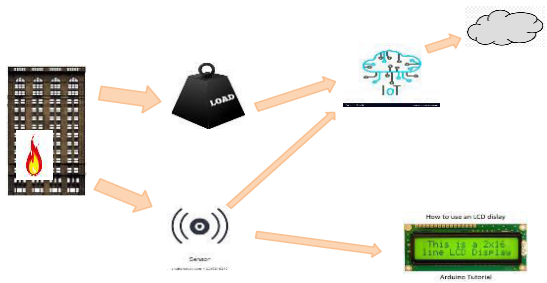
IR based flame sensor is used. It is based on the YG1006 sensor which is a high speed and high sensitive NPN silicon phototransistor.It can detect infrared light with a wavelength ranging from 700nm to 1000nm and its detection angle is about 60°. Flame sensor module consists of a photodiode (IR receiver), resistor, capacitor, potentiometer, and LM393 comparator in an integrated circuit. The sensitivity can be adjusted by varying the on board potentiometer. Working voltage is between 3.3v and 5v DC, with a digital output. Logic high on the output indicates presence of flame or fire. Logic low on output indicates absence of flame or fire.

TRANSFORMER



- Transformers convert AC electricity from one voltage to another with little loss of power. Transformers work only with AC and this is one of the reasons why mains electricity is AC.

ARCHITECTURE:



CONCLUSION:

Thus we built a system for monitoring and controlling of industrial environment by using new emerging technology of internet of things. This system gives efficient solution than other systems. In this system we collect the data from the sensor and made it available to the user from remote location anytime. Hence it will become low cost, high efficient embedded system. The advantages of the developed system are to have a continuous monitoring over industrial applications and also control them if going beyond their threshold conditions.As sometimes it will be late in this process and it will harm to property as well as life. For this purpose we are developing a system for Industrial Automation using IoT with the help of Artificial Intelligence to make system automated which will take intelligent decisions.

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