SOLAR PANEL MONITORING DEFECT AND INDICATION SYSTEM THROUGH IOT

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Abstract- These days renewable vitality and vitality recuperation are considered the foremost productive techniques to decrease the budgetary and natural disadvantages of the over the top utilization of fossil fuel .In order to meet long haul power request without hurting the environment, it is vital to center more on renewable vitality and offbeat sources for power era. Nonetheless, most of the examinations have been paying consideration on sun based vitality. We are utilizing sun powered panel to deliver the vitality but we are not able to screen the voltage created.
Keywords—renewable vitality, fossil fuel

1.INTRODUCTION

Fossil power plays a crucial part for the power era all over the world. As energy consumption is expand slowly, the complete world counting our nation is confronted with a issue of need of backup control. The fundamental concept begin the purpose of show is observing and controlling the voltage is yield of sun based board at removed area utilizing web of things(IOT).Power generated by sun power board is checked in real time and over hauled in server. Server updating helps real time following and observing of solar power produce in sun based ranched by utilizing advanced processor which would be a 16-bit micro controller. moreover GSM server as an vital part as it in mind full for controlling the stack on the field and send information to the receiver through code signal an coordinators wired and wired less arrangements permits quick development of technologies by making strides exhibitions and efficiency.

2. EXISTING SYSTEM

In the existing system the sensor used to monitor and collect the information about the climate condition of the form like temperature , humidity, day and night mode and also to check the power generator on the field GSM based wireless sensor network as the features of high band with and rate , non line transmission ability large scale data collection and high cost effective as it has the capability of video monitoring we are simply using solar panel without monitoring value reproduced and loss of voltage from the solar panel they are know system has been implemented to find this values from the solar panel. So we are producing a method to find this value from the solar panel.

3. PROPOSED SYSTEM

In the purposed system we are implementing system to monitor and also finding the lose of voltage from the solar panel. Here we are using voltage sensor to read the output voltage produced from the solar panel and this value will be monitored by the micro controller and the details will be send to web pages through the IOT module. We are finding the loss of voltage from the solar panel by LRD sensor. The light intensity from the LRD sensor will compare with the voltage sensor and the values will also send to the web page through internet of things.

4.MODULE DESCRIPTION

1. Sensor data Acquisition
2. Preprocessing
3. Data transceiver
4. Send Data to Server
5. Monitoring sensor data
6. Local Host with user interface

4.1 Sensors Data Acquisition

- The sensors receive the input signal.
- These values are recorded.
- Sensors are used.

4.1.1 Voltage Sensor

- The Voltage Sensor(Fig 1) block represents an ideal voltage sensor that is, a device that converts voltage measured between two points of an electrical circuit into a physical signal proportional to the voltage.
- Connections + and – are electrical conserving ports through which the sensor is connected to the circuit

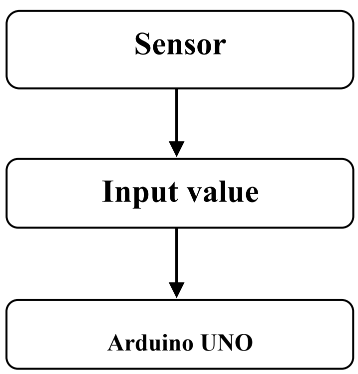

Fig1 sensor input

4.2 Preprocessing

- To convert the analog values to digital values for displaying the values in html page.
- The values obtained from the sensors are passed to the microcontroller Arduino UNO.
- Arduino consists of both a physical programmable circuit board and a piece of software or IDE.
- It used to write and upload computer code to the physical board.
- USB cable is used to load a new code onto the board.
- Pin 1 serves a power source.

4.2.1 Analog input

- Pin 6 is the Analog In**.**
- These pins can read the signal from an analog sensor
- This value is converted into a digital value.

4.2.2. Digital Output:

- Pin 7 is the Digital Out.
- These pins can be used for both digital input and digital output.

4.2.3 Connecting Hardware:

In this module,(Fig 2) connecting the hardware components like sensors, power supply, motor and buzzer to the Arduino board.

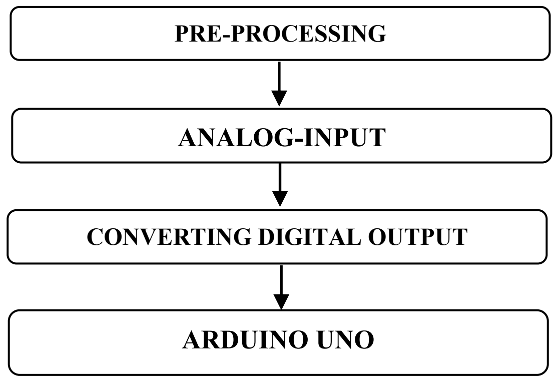

Fig 2 Connecting Hardware

4.3 Data transceiver:

The Serial Peripheral Interface (SPI) bus is a synchronous serial communication interface specification used for short distance communication, primarily in embedded systems. An Arduino is actually a microcontroller based kit which is basically used in communications and in controlling or operating many devices. The Arduino Ethernet Shield R3 (assembled) allows an Arduino board to connect to the internet. It is based on the Wiz net W5100 Ethernet chip (datasheet).The processed data is sent to SERVER via Ethernet Accordingly, real-time data can be stored and monitored at Cloud servers.

4.4. Connect To Server:

In this module, we are going start the connection between the arduino to server by clicking the button event, once we start the server all the data will be received by the computer from the Arduino.

4.5 Monitoring Sensor Data:

- We monitor the sensor data frequently with the help of sensor.
- The sensor sends the value to the Arduino and from there we store an the DB.
- In this module, the stored data are used for statistical data analyze. The real-time data are considered to be historical data later to predict.

4.6 Local host With User Interface:

- Concisely, a web server (Fig 3)is run at the gateway for hosting a web-page which is user-friendly and able to represent both raw and processed data in text forms. The web-page provides functions such as a log-in form with a username and a password, or a searching tool.

Fig 3 solar Panel Kit

5.ARDUINO ARCHITECTURE

Arduino's processor(Fig 4) basically uses the Harvard architecture where the program code and program data have separate memory. It consists of two memories- Program memory and the data memory .The code is stored in the flash program memory, whereas the data is stored in the data memory. The Atmega328 has 32 KB of flash memory for storing code (of which 0.5 KB is used for the boot loader), 2 KB of SRAM and 1 KB of EEPROM and operates with a clock speed of 16MHz.The most important advantage with ARDUINO is the programs can be directly loaded to the device without requiring any hardware programmer to burn the program. This is done because of the presence of the 0.5KB of Boot loader which allows the program to be burned into the circuit. All we have to do is to download the ARDUINO software and writing the code.

ARDUINO Uno consists of 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz crystal oscillator, a USB connection, a power jack, an ICSP header, and a reset button ARDUINO can be power either from the pc through a USB or through external source like adaptor or a battery. It can operate on a external supply of 7 to 12V. Power can be applied externally through the pin Vin or by giving voltage reference through the IO Ref pin.The ARDUINO Uno can be powered via the USB connection or with an external power supply. The power source is selected automatically .External (non-USB) power can come either from an AC-to-DC adapter (wall-wart) or battery. The adapter can be connected by plugging.The board can operate on an external supply of 6 to 20 volts. If supplied with less than 7V, however, the 5V pin may supply less than five volts and the board may be unstable. If using more than 12V, the voltage regulator may overheat and damage the board. The recommended range is 7 to 12 volts.

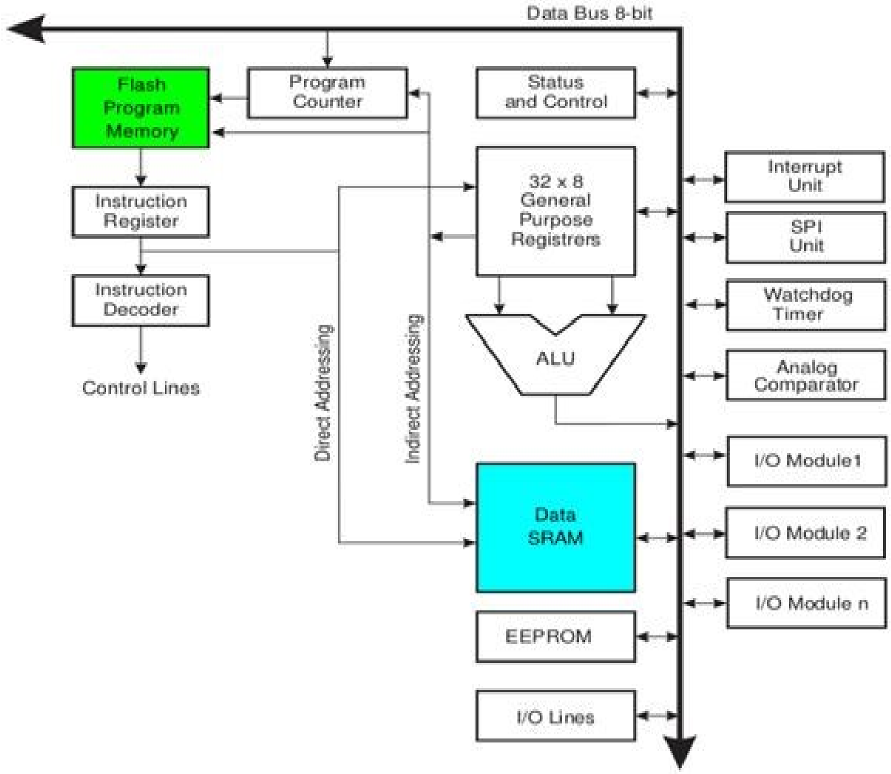

Fig 4 ARDUINO Architecture

6.CONCLUSION

Implementing renewable energy are the non conventional type of energy which can be continuously relished by natural process. The solar panel voltage generation is one among the better solution for clean energy production by monitoring and controlling the voltage generated by our proposed system we could overcome the drawbacks of earlier proposed systems has a low operating cost and finds its application in remote areas and also this method reduces the man power required .This system efficient about 95%.Thus it is reducing the electricity issues.

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