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Research Article

RENEWABLE ENERGY MONITORING AT COLLEGE CAMPUS

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ABSTRACT

In present non-renewable energy source is decreasing day-by-day due to it overuses. . In the 21st century, non-renewable sources are no longer fit to full fill our demand. Thus we required by using a conventional source like wind and solar we need to generating energy. This especially important country likes India where supply to demand ratio is very low. In this paper, we identify the geographical area for solar and wind energy generation at low cost. We can achieve and monitor atmospheric weather condition such as temperature, humidity, light intensity etc. Our system is designed which gathered all the parameter which are essentially of weather monitoring system.

INTRODUCTION

Weather monitoring system has been continuously monitoring system and thus we calculate and determine atmospheric conditions via sensors. Whether is determine by basic factors such as temperature, humidity, cloudiness, visibility, pressure and wind etc.

Sun is the major contributor of our planet heat energy from sun create imbalanced in the temperature also wind which are different placed to placed in different regions. The sea plays a regulating effect on the climate, due this.

We are design a system, which can predict whether a particular places/areas is suitable for establishment to which there is an significant difference in the temperature, pressure and humidity between the interior regions of the country and the coastal areas. Especially country like India has several geographical advantages for implementation of power plants based on the renewable energy sources such as wind and solar. The tropic of cancer passes through Indian sub-continent, so the temperature factor is abundant to suitable all the needs of solar energy generation. Indian sub-continent is also near to the equator which gives into a tropical climate and monsoons. This type of climates is characterized by highly and regular winds across over the country.

In fact, temperature conditions at very good particularly, In the states like Gujarat, Maharashtra, Rajasthan, Madhya Pradesh (M.P) & Chhattisgarh (C.G). However, analysis of weather in this regions are done foe these within the states to identify naturally cloudy or shadow regions like the solar power plant as well as wind energy generation of plant. We are design and implemented at low cost and reliable system/module. We use Wi-Fi router in module for collecting all type of sensor data (temp, wind, solar radiation) etc. Then we can see the all reading directly on the PC as well as mobile.

Work Done

At the time of designing this device, priority was given to make it as simple as possible. This would be a benefit in terms of conforming to the available manufacturing techniques on website and lowering costs so that this prototype be further produced in large quantities.

The key Parameter to Maximize Performance in the design are

1. Anemometer
2. Lux Meter
3. Wi-Fi Router
4. RTC
5. DHT-11
6. SD Storage

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Block Diagram

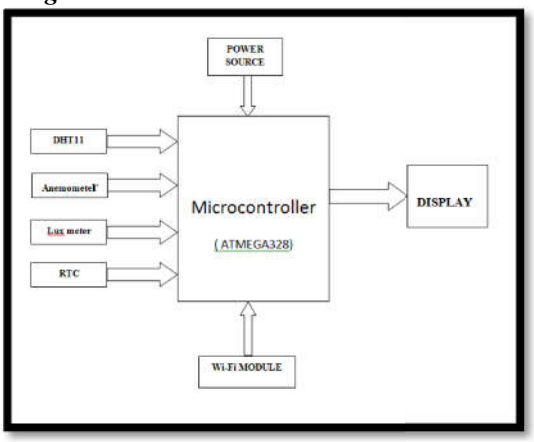

Fig 1 Block Diagram of System

The major Components of Weather Monitoring system are as follows

1. Microcontroller atmega328
2. Anemometer
3. Lux Meter
4. dht11
5. Wi-Fi Router
6. RTC

Weather Monitoring Module

The weather station is built around open source microcontroller boards and electronic component. which our module is setup on the top of building being light in weight on indoor section of model sensors are setup for calculating the required the parameters and it stores in digital SD card (memory card). In this way calculate it for weekly, monthly and yearly on that basis.

Measured Variables

The prototype whether station only measures six fundamentals whether data; temperature humidity, barometric pressure, wind speed, solar radiation. The prototype ran for one month the gathered data for this month test run were then interrupted and analyzed to determine developed whether monitoring system for the desired specification of project.

Monitoring Hardware

Our system is mainly based on microcontroller (Atmega328); it is the main interactive part of our system. It can also work as multifunctional work as in our project. Also required some intended sensor hardware are used in module such like as for temperature, humidity and wind speed on which application uses that sensors. Dht11 is used measured temperature and humidity. For solar radiation lux meter is used and for calculating wind anemometer is used. The above data is store micro SD card and real time clock (RTC) is used to detect date and time.

Data Logging & Visualization

By using this various sensors it can collected a lot more data and I was created to display current readings and logged data visualized through a graph which can be further display shown with the microcontroller to interface with an SD card whether data recording during the setting interval and WI-FI module is also used for the continuously data collection.

Fig 2 Module of weather monitoring system

Fig 3 Location of the system

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