GENERATION OF ELECTRICITY FROM MULTIPLE SOURCES WITH IOT

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Abstract:
Nowadays, renewable energy sources are growing at a faster rate. Wind, nuclear, solar, thermal, and other energy sources already exist in large quantities. This system implemented a new system known as a sound absorption unit, which is used to absorb sound from human speech. This absorbed energy is retained in the battery and used as a source of energy in the future. This system also includes two additional devices, a peltier and a thermal unit, which absorb pressure and temperature input from humans. These devices are linked to a node MCU, which displays a live graph of the energy produced, such as sound, pressure, and temperature.

I. INTRODUCTION

Electricity is in very short supply. Imagine our lives without electricity; it's a daunting job. The population increases faster as the result their is a huge demand for electricity. As a result, we must move on to the other renewable energy source (fig1). Alternative energy is used because it is environmentally sustainable and environmentally friendly. Alternative energy takes the form of renewable energy, which means it provides a consistent and long-term source of energy. Alternative energy provides a solution to the increasing energy demand, but it also comes with a range of drawbacks [1] [3]. The materials used to create renewable energy are extremely costly. This device collects energy from a variety of sources, including strain, heat, and sound. Consider the possibility of converting noise emissions into a useful energy source.
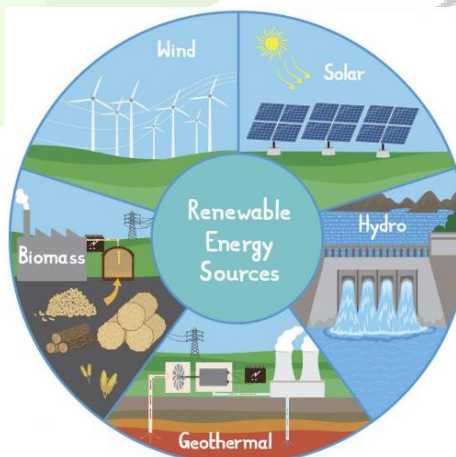

FIG 1. RENEWABLE SOURCE OF ENERGY

II. LITERATURE SURVEY

[1] Microcontroller based two axis solar tracking system : Solar energy is the technology used in this project. It makes use of a parabolic reflector to collect solar energy. The two-axis tracker is used to construct the parabolic reflector. Temperature probes test the sun's rays as they concentrate on the parabolic reflector. Solar PV panels avoid generating electricity when the sun sets or when they are heavily shaded. If we need electricity at that time, we must obtain it from a different source.

[2] A new approach to wind energy: This framework explains the benefits and drawbacks of wind energy. The wind's intensity is not constant, ranging from zero to storm power. This means that wind turbines do not consistently generate the same amount of energy, and they are noisy.

[3] Technical efficiency of coal based power plant in India: This article discusses the performance of coal-fired thermal power plants, as well as methodologies and research into the various power plants. Disadvantage: It is difficult to harness its strength. It can be expensive and necessitates additional testing.

[4] Prospects of nuclear energy for sustainable energy development in Bangladesh : This necessitates an analysis of renewable energy potential and the budget spent on resource installation in Bangladesh. Nuclear energy is a contentious means of generating electricity. Many individuals and conservation groups are worried about the nuclear fuel it needs.

[5] Study of piezoelectric material :It goes into the characteristics and types of piezoelectric materials. When a piezoelectric crystal is exposed to an electric field or when external charges are applied to its faces, strain occurs, causing the crystal's dimensions to change. Changes are occurring.

III. EXISTING SYSTEM

Wind power presently addresses a significant and developing wellspring of environmentally friendly power. Enormous breeze turbines (with limits of up to 6-8 MW) are broadly introduced in power dissemination organizations. Expanding quantities of coastal and seaward wind ranches, going about as force plants, are associated straightforwardly to control transmission networks at the size of many megawatts. In spite of the fact that breeze power plants littly affect the climate contrasted with petroleum derivative force plants, concerns have been raised preposterous created by the rotor sharp edges, visual effects, and passings of birds and bats that fly into the rotors (avian/bat mortality). The current framework is to burn-through the most extreme sun powered energy through sun based panel.A Solar Tracker is a gadget onto which sun oriented boards are underlying which tracks the movement of the sun guaranteeing that greatest measure of daylight strikes the boards everywhere on the day. Sun based following permits more energy to be delivered on the grounds that the sun based cluster can stay adjusted to the sun. Albeit sun oriented energy can in any case be gathered during overcast and stormy days, the proficiency of the nearby planetary group drops. Sun powered boards are subject to daylight to viably accumulate sun based energy. In this manner, a couple of shady, stormy days can have an observable impact on the energy framework. You ought to likewise consider that sunlight based energy can't be gathered during the evening.

IV. PROPOSED SYSTEM

There are many sources of energy that go unnoticed, such as public area noise, industries, and so on. This system includes a NodeMcu IoT microcontroller for integrating multiple devices. The sound absorption unit [4] absorbs sound by vibrating at the same frequency as voice. The pressure of moving particles is measured using the Peizo electric transducer . The pressure is converted into electric energy in this way. The thermal system is used to determine the temperature difference between the person and the surrounding environment. With a DC-DC converter, these sources of energy are stabilised and boosted as voltage, and then retained as energy in the battery. Electric energy is converted from the source of sound, temperature, and pressure energy. The server has been modified with the provided power and battery power via IOT.

V. ARCHITECTURE

The proposed system consist majorly of three main modules. That begins with sound absorption unit, thermoelectric material and piezoelectric transducer that give the energies to the system. The next major part is Iot server that is used to track the voltage that is generated by first module .The last part is to boost up the energy generated and to save the energy into the battery. Finally ,the generated energy is sent to the Dc loads.
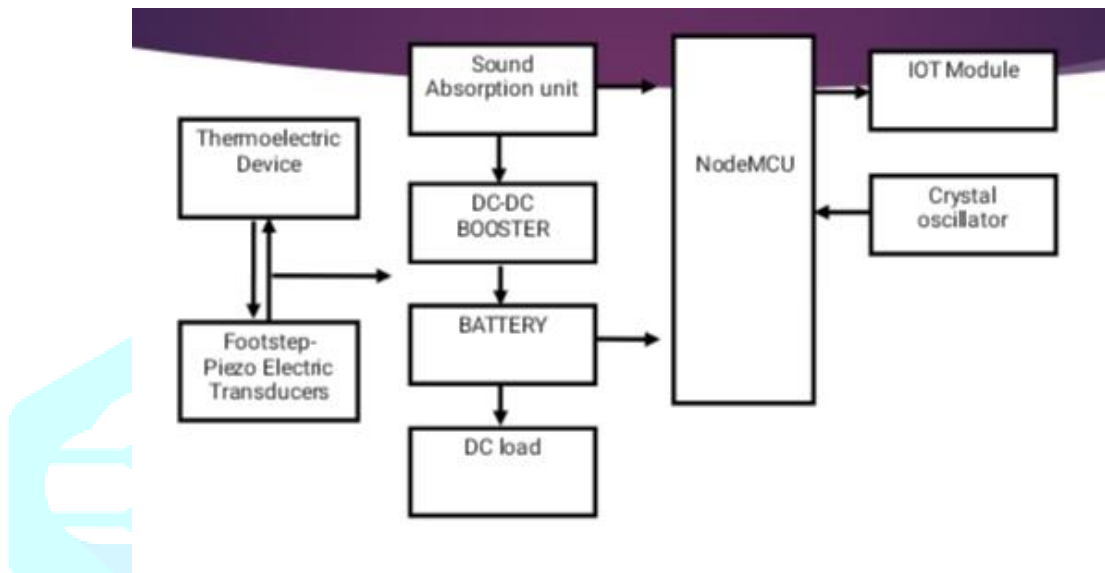
FIG 2. ARCHITECTURE DIAGRAM

VI. IMPLEMENTATION

We used hardware such as piezoelectric, sound absorption unit, thermal device, and Iot module in this proposed system.   When the human ear absorbs sound (air pressure vibrations), the diaphragm vibrates, and this vibration is converted to electrical signals that are sent to the brain. Sound absorption device will operate solely on the basis of this definition. These waves cause a pressure oscillation, which transforms sound energy to electrical energy. The third law of thermodynamics is followed. The mechanical energy is absorbed by the piezoelectric material . The piezoelectric system absorbs sound waves that are travelling close by and creates strain due to friction, causing nearby atom disruptions in the surface, which causes positive and negative charges to move, resulting in the flow of electric energy. A thermoelectric generator (TEG), also known as a Seed back generator, is a solid-state system that uses the Seed back effect to directly transform heat flux (temperature differences) into electrical energy (a form of thermoelectric effect). Heat engines are similar to thermoelectric generators, but they are less bulky and have no moving parts. TEGs, on the other hand, are usually more costly and inefficient. Thermoelectric peltier are concerned with the amount of temperature difference generated near the peltier module. Metal is an excellent conductor of electricity and heat. One end is kept warm, while the other is kept cold. Heating thermo electric material at one end makes the electrons motion from hot end to cold end.The current passes through due to the motion of electrons. The electric current produced is proportional to the size of the temperature difference. The pressure applied to the piezoelectric material is converted into electrical energy. The root of pressure may either be the weight of moving vehicles or the weight of people walking over it. The piezoelectric material's output is not constant. According to the literature review, the piezoelectric material can generate ac voltage. Ac voltage is produced when pressure is applied to the piezo element. The friction, force applied to the surface is taken as a linear electromechanical interaction between mechanical and electrical state in crystalline by the piezo electric transducer. These gauge the amount of pressure, force, and acceleration applied to the surface. The voltage is produced by each and every footstep, and thus electricity is generated. The NodeMcu microcontroller is used in this device to track the unit of energy provided by each unit. The data is sent to the Blynk app, which is an IoT platform application that allows us to visually display the linked device's charts in NodeMcu. The Arduino is a text editor used for writing the code of programming languages like c ,c++, embedded etc. It connects the hardware and communicate with them via USB cable .whenever we execute a code the hardware connection is established and a communication is created among the hardware and IDE. Thus ,the voltage is generated and the output voltage is sent to a dc loads.

VII. ,CONCLUSION

This paper discusses the importance of energy and how we can produce energy in an unnoticed manner. The main aim of this device is to turn squandered energy into a usable renewable energy source. The lack of electricity can be greatly minimised by using this form of renewable energy. We can reduce noise emissions by converting noise energy from factories, public areas such as airports, traffic signals, and other sources into electric energy. Established systems, such as wind, solar, and hydro, are extremely costly to build. The proposed system avoids costly charges by using sound as a source of energy, which is a revolutionary technology that we have integrated into the production of electricity from multiple sources.

VIII. REFERENCES

[1] KESDM: Rencana Strategis Ditjen EBTKE. J. Energi Media Komun. Kementeri. Energidan Sumber Daya Miner. 2, (2016)

[2]qbal, Sajid; et al. (2014). Study of bifurcation and chaos in dc-dc boost converter using discrete-time map. IEEE International Conference on Mechatronics and Control (ICMC'2014) 2014 .

[3] Quevedo, P.M. De, Contreras, J.: Optimal Placement of Energy Storage and Wind Power under Uncertainty. 9, (2017).

[4] The Iraqi Journal For Mechanical And Material Engineering, Vol.17, No4, Dec 2017 EXPERIMENTAL STUDY OF SOUND ABSORPTION PROPERTIES OF REINFORCED POLYSTER BY SOME NATURAL MATERIALS Dr. Muna S. Kassim Al-Mustansiriya University

[5] Piezo materials-(1.)Mael guennou- titzeffp

[6] The Quartz Page: Quartz Structure. Quartzpage.de (2010-10-23). Retrieved on 2012-06-21.