TITLE: - GENERATION OF ELECTRICITY FROM WASTE MATERIALS

A project report submitted for fulfilment of the Bachelor of Technology Degree in Electrical Engineering under Maulana Abdul Kalam Azad University of Technology.

Institute of Engineering & Management
Y-12, Salt Lake, Sector-V, Kolkata-700091

Report

POWER SYSTEM-II PROJECT

(PCCEE20)

Department of Electrical Engineering for the Academic year

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Affiliated To

Maulana Abul Kalam Azad University of Technology
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CERTIFICATE
TO WHOM IT MAY CONCERN

This is to certify that the project report entitled **GENERATION OF ELECTRICITY FROM WASTE MATERIALS** submitted by

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Students of **INSTITUTE OF ENGINEERING & MANAGEMENT,** in fulfilment of requirements for the award of the degree of **Bachelor of Technology in Electrical Engineering,** is a bona fide work carried out under the supervision and guidance of **Assistant Prof. Ranjita Chowdhury** during the third year of the academic session of 2021-2024.The content of this report has not been submitted to any other Institute for the award of any other degree.

It is further certified that work is entirely original and its performance has been found to be quite Satisfactory.

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ABSTRACT

In the current year, shortages of the energy sources, changing the global climate, and world energy conflicts lead to negative effects on all levels of the society and threatened world stability was increasing These challenges can be decreasing the fossil fuel reserves to the growth of the world population, Global climate change, and increased in wastes levels (solid/liquid) and can be resulted to the electricity crisis. In several developing countries, the electricity crisis obstructs both socio-economic and technological sustainable evolution. Also, it leads to reducing job availability due to shutting down several industries or relocating to neighbouring countries to such an issue. The purpose of making this project is to generate electrical energy from waste materials like plastic, rubber, garbage, waste material, etc. and store that electrical energy in the battery through the circuit and use that electrical energy to operate the whole system. So, in this Project, we show successfully How to generate electricity by Waste Materials and Store electricity in Battery successfully.

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INTRODUCTION

In the present world, electricity is very necessary. So, to generate electricity we use many fuels like coal, gas, diesel, uranium, etc. These all fuels are in limited quantity. Which, we could up to 70 to 80 years. These fuels are used in different power plants to generate electricity. EX. In thermal power plants - coal, nuclear power plants - uranium, gas power plants – gas, and in diesel power plants - diesel is used as fuel to generate electricity.

The Purpose of Making this Project is to generate electric energy from waste Materials such a plastic, rubber, waste and waste etc. and to convert that less electricity energy into more high power electricity energy by electric coil , this process is called boosting Process . Normally waste is any undesirable substances which has been obtained as a outcome of all those Humans and Animals activities.

In This Project when burning start then heating generate and heating penal start converting heat to electricity and that electricity, we can see on multi meter display, we can see how much voltage generate by waste materials and we Electricity generating perfectly then automatic heating sensor on the output power supply then Big LED Bub start glowing and our idea everyone can see in live working, Our Idea 100% work for generating electricity by waste materials. So, this is our best live working idea.

1.1 PROBLEM STATEMENT

Nowadays, percentage of pollution is rise day by day.

1. Because of this we face environmental changes and climate changes.
2. Apart from this improper waste disposal can also have adverse health effects on humans as over the years it has been responsible for causing several diseases and in some cases even death.
3. Plastic is not disposal it affects the nature and produce harmful gases.

1.2 SOLUTION STRATEGY

For minimize the pollution this project is important, which is:

1. Generate electrical energy from waste material.
2. Minimize the pollution.
3. From this project 1250 hectares of land is save from storage of wastage.

WORKING

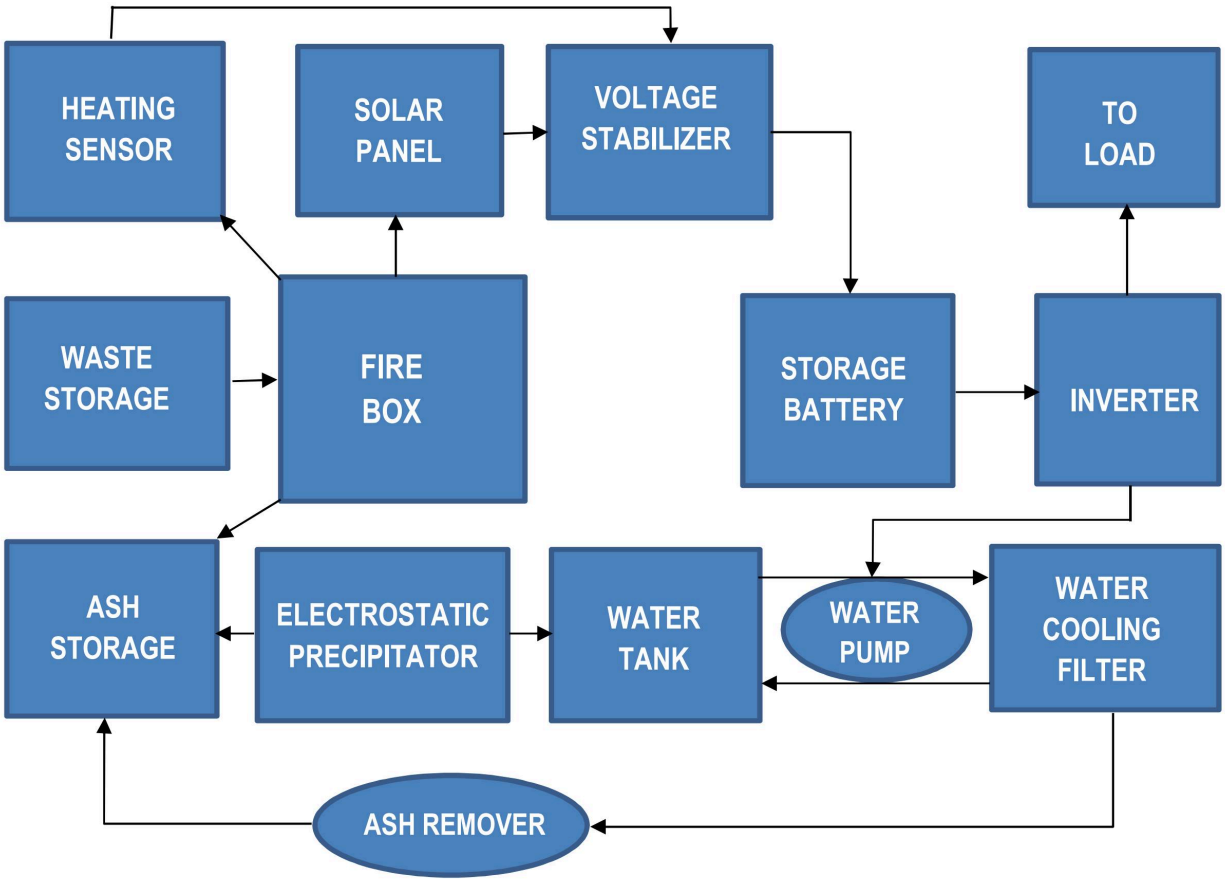
When we start burning the waste material in the burning box the heating panels will start collecting the heat energy generated in the burning box by waste material. The heat energy collected by heating panel will be converted into the electrical energy.

The generated electrical energy will be seen in circuit box with led glowing. The generated electrical energy will transfer to the batteries through the power boosters. The batteries will not dissipate the energy back because a diode is connected to it.

The batteries relate to the heat sensor and LED bulbs. Whenever the heat sensor will start conducting the batteries allow energy to flow will start conducting and LED bulbs will glow.

DESIGNED MODEL

3.1 Block Diagram



3.2 Components Description

3.2.1 Heating Panel :

A heating panel works by generating electricity when particles of light heat, or photons, knock electrons free from atoms, setting them in motion. This flow of electrons is electricity, and heat panels are designed to capture this flow, turning it into a usable electric current. Simply put, a Heating panel works by allowing photons, or particles of light or heat, to knock electrons free from atoms, generating a flow of electricity. Photovoltaic simply means they convert heating or light into electricity. This heating panels will collect the heat energy and will convert the heat energy into the electrical energy.

3.2.2 Heating Sensors :

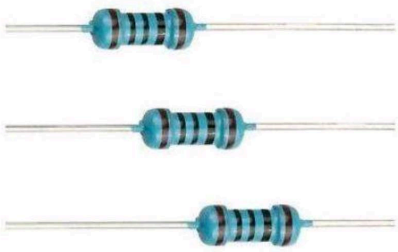
The tip of the sensor has a spring that is attached to a rod, leading up to the gauge needle. The spring sits inside the stems sensing end. When heat is applied to the sensing coil, movement in the coil is created which causes the needle in the gauge to move – thus displaying the temperature. This sensor will sense the heat energy generation.

3.2.3 Capacitor :

The capacitor is a component which has the ability or "capacity" to store energy in the form of an electrical charge producing a potential difference (Static Voltage) across its plates, much like a small rechargeable battery. In this process the capacitor work to collect the electrical energy and store and will send the electrical energy to battery by connection of and series and parallel to increase the voltage double.

3.3.4 Resistor :

A resistor is a passive two-terminal electrical component that implements electrical resistance as a circuit element. In electronic circuits, resistors are used to reduce current flow, adjust signal levels, to divide voltages, bias active elements, and terminate transmission lines, among other uses. High-power resistors that can dissipate many watts of electrical power as heat. A battery converts chemical energy into electrical energy by a chemical reaction. The chemicals are kept inside the battery. It is used in a circuit to power other components. A battery produces direct current (DC) electricity. The battery used store the energy generated.



3.3.5 4V-Battery :

A battery converts chemical energy into electrical energy by a chemical reaction. The chemicals are kept inside the battery. It is used in a circuit to power other components. A battery produces direct current (DC) electricity. The battery used store the energy generated.

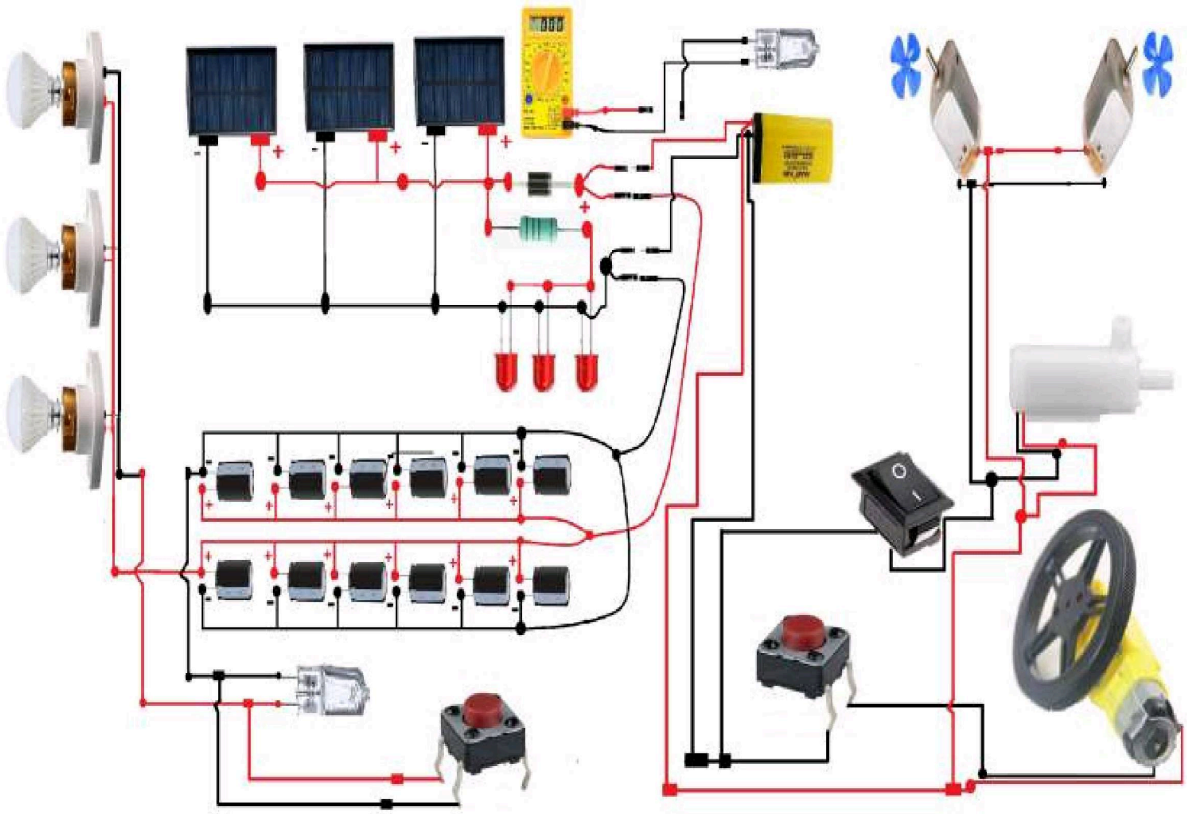
3.3.6 DC Water Pump :

It is a small water pump that operates on direct current (DC) power with a voltage rating of 6 volts. It is typically used for applications where a low flow rate of water is required, such as in aquariums, fountains, and small water features. The pump is designed to be compact and portable, making it easy to install and use in a variety of settings. Overall, a 6V DC water pump is a versatile and efficient solution for moving small amounts of water in a range of applications.

3.3 Methodology

When we burn waste materials, then heating panels convert heat to electricity and Red LED bulb glowing by electricity for showing electricity power, After that circuit take electricity and give to battery for Battery Charging, And waste materials burning running in burning box, and there is heating sensor and when heating sensor is heated by heating.Then Heating sensor turn On the LED bulb, (Because Heating sensor work as an on/off switch). After that you can See Full successfully Generating Electricity by Waste Material.

3.4 Connection Diagram



RESULT

In this prototype when we are start heating waste material inside jar box the heat generated will be collected by heating panels. The heating panels will collect the convert the heat energy into the electrical energy and that will be transferred to circuit board. Which is constructed with IN4007 Diode and capacitor connected in series and parallel because in to increase the generated energy and push to store in the battery. Then the heating sensor is will be sensing the heat and connect circuit to output of LED Bulbs and the bulbs will glow until the energy getting stored and until the heating sensor sensing the energy generation. The bulb will glow uninterruptedly while the energy generation and battery storage. This stored energy can be used for anything. In the present situation waste material at any place, we can see with some procedure collect everything and we can use the prototype to generate the more energy for utilization. With this we came know that the energy generation by this method is very easy with some precaution. This prototype helps us to know about waste utilization.

APPLICATION & SCOPE

- The aim of this project is to find a good solution to optimize pollution.
- The main challenges and barriers for reducing plastic waste in mixed waste and residual waste streams, hereby stimulating prevention and recycling of plastic waste.
- Promoting recycling of plastic polymers as a substitute for virgin plastic.
- The main application of these system is to generate electricity. This is the only major application of this project. After the generation of electricity, we can use it for other application such as agriculture, industrial, residential use, etc.

CONCLUSION

In this project we show how to generate electricity by waste materials is successfully and we show in project how to control pollution by pollution control filter, when we making complete our project then we check it's full working, that time he's working is very good without any problem so our project is best for working and showing, how to generate electricity by waste materials. From this project we generate electrical energy from waste material with minimum pollution is about 50%. Because of this project 1250 hectares of land is save from storage of wastage. As compare to thermal power plant it generate less pollution is about 0-5%.

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