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Generating Electricity from Waste Materials

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Abstract:- In this project we have used waste materials for generating electricity. In this project we have shown one electricity generating zar box which when has waste materials like plastic, paper and other, then we burn that materials in zar box and when burning starts, heat going to the heating panel converts the heat energy into electricity, then we store that electricity in battery and use that electricity for bulb glowing and many other work. This is live working idea for generating electricity by plastic and waste materials. In this project, when electricity gets stored, at that time output power supply is off because we use heating sensor, so when electricity is stored perfectly, then heating sensor is turned on, and the output power supply and LED bulb start glowing and we can show the working of generating electricity by waste materials.

I. INTRODUCTION

The purpose of making this project is to generate electrical energy from waste materials like plastic, rubber, garbage and such stuff etc. and store that electrical energy in the battery through the circuit and use that electrical energy to operate the whole project. And the LED bulb is shown to be turned on as an indication of power supply provided, and the use of filters to control pollution from energy production. In this project, when burning starts then, heat is generated and heating panel starts converting heat energy to electricity and that electricity can be seen on multi-meter display. We can see how much voltage is generated by waste materials and when electricity is generating perfectly, then automatic heating sensor on the output power supply, indicating the big LED blub to glow. Our idea works for generating electricity by waste materials and when we burn anything, then pollution start generating so we use pollution control filter for controlling carbon pollution, so when carbon cross to filter then we store the carbon and carbon use any area in real life . So this is our best live working idea.

II. LITERATURE SURVEY

Now-a-days we have so many more ideas for generating electricity. Every day, everyone for making food burns so much matter that can be useful for some other purpose. So we made a different type of zar box. When someone wants to make food, so they might start burning some fuel, at that time, our zar box waste will burn extra heat which will be used for converting heat into electricity and that electricity can used in real life and also we can store that electricity . In India, there's one city for sure, that has tested successfully in converting waste into energy without harming the environment. Maharashtra's Solapur, where a waste-to-energy plant has daily generated 3 MW of eco-friendly power for the last two years, boasts of this success. Solapur has a population of 10 lakh and generates 5,000 tonne of municipal waste daily. Earlier, this waste was dumped in a landfill along the Pune-Hyderabad highway. This presented an ugly sight, and an unbearable stench for the commuters. Now, the pile has disappeared and has been replaced by a power plant of Organic Recycling System (ORS), a private firm that develops clean electricity from waste. This project from Solapur basically burns waste and generates direct electricity and there's no storage of electricity. But the project we are trying to make stores the electricity and then generates it.

III. BLOCK DIAGRAM

In this block diagram, the working is shown as when we burn waste material in the fire box then heat generating is sensed by heating panel and starts to convert heat into electricity and after that the electricity can be seen as LED Bulb glowing and that electricity goes to the circuit and after that in battery and starts to get stored as power and when electricity stored in battery then heating sensor turns on the output power supply and LED Bulb start glowing and pollution control filter starts working.

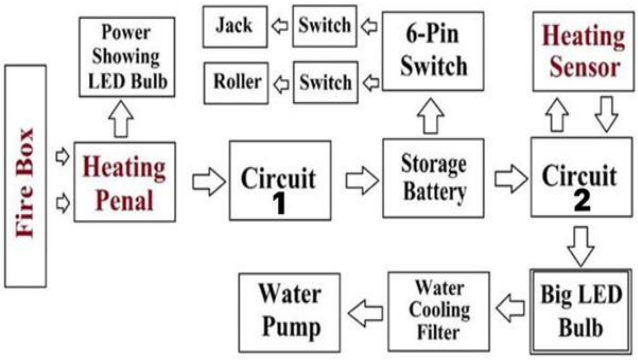

Fig no.1
Circuit 1: heating panel circuit.
Circuit 2: heating sensor circuit.

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IV. WORKING PRINCIPLE

A heating panel works by allowing photons, or particles of light or heat, to knock electrons free from atoms, generating a flow of electricity. Heating panels actually comprises of many smaller units called photovoltaic cells. (Photovoltaic simply means they convert heating or light into electricity.)

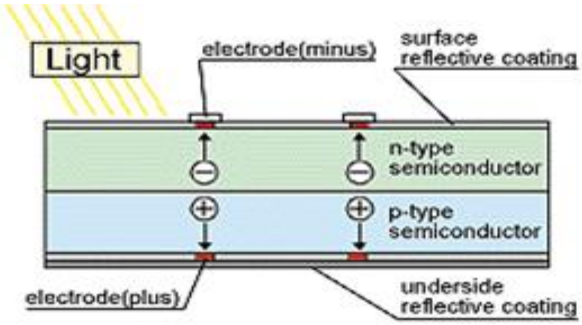

Fig no. 2A p-n junction is formed by placing p-type and n-type semiconductors next to one another.

The p-type, one with less electron, attracts the surplus electron from the n-type to stabilize itself. Thus the electricity is displaced and generates a flow of electrons, otherwise known as electricity. When heat hits the semiconductor, an electron springs up and is attracted toward the n-type semiconductor. This causes more negatives in the n-type semiconductors and more positives in the p-type, thus generating a higher flow of electricity. This is the photovoltaic effect.

V. METHODOLOGY

The first step before the project implementation was to review the project scope and research area. Then the next task was to design the mechanical structure and electrical structure of the conveyor belt which is to be built. Then, if all the design had been finalized, the implementations of the hardware and the circuitry took place. Reaching the peak of the project, the programming segment took place especially for the heating penal output, heating sensor sensing process and output to the LED Bulb glow for. Last but not least, certain modification on the circuitry and soft-ware took place in order to make the system perform in finer movements. Thus, troubleshooting process also took place to correct certain faulty processes while the system was performing its task.

VI. HARDWARE SPECIFICATIONS

- Heating Penal
- Heating Sensor
- Capacitor 25v/1000uf
- LED Bulb
- Resistor
- DC motor 3000 RPM
- Battery 4.5V
- PCB
- Jack System
- Switch
- IN4007
- Wire

VII. ADVANTAGES

- We can generate electricity by solid waste like plastic, glass, etc.
- We can generate electricity within seconds anywhere and anytime.
- Cost is very less.
- It can generate electricity depending on heating panel voltage and zar box size.
- We can generate carbon and make many products by carbon.

VIII. LIMITATIONS OF THE SYSTEM

- We cannot burn waste materials in large quantity so we can generate electricity only at a normal level.
- We can control pollution 100% when we burn plastic and other.

IX. FUTURE DEVELOPMENT

- Effectiveness of this project can be improved by following:
- We can make high quality heating panel for generate high electricity.
- We can make large level burning box with easily heating panel connecting system
- We can make best storage system by generate electricity by waste materials.

X. APPLICATIONS

Waste-to-energy plants burn municipal solid waste (MSW), often called garbage or trash, to produce steam in a boiler that is used to generate electricity. MSW is a mixture of energy-rich materials such as paper, plastics, yard waste, and products made from wood.

- Biogas.
- Power Generation.
- Anaerobic Digestion.
- Gasification.
- Incineration.
- Energy Technology.
- Biomass.
- Feedstock

XI. CONCLUSION

Electricity by waste material project is successful and we have shown how to control pollution by pollution control filter. When we have made our complete project then we have checked its full working, that time its working was very good without any problem. So our project is best for working and showing how to generate electricity by waste materials. The waste to energy plants across the world have been initiated in varying capacities and varying degrees of

success. But one cannot ignore the impact of global waste to energy market and its impending growth in the next few years. The market is expected to grow by 5.9 percent on an annual basis to reach a whopping $37 billion by 2020, from nearly $25 billion in 2013. The Waste to Energy Research and Technology Council is keen to boost growth in the market with the introduction of best waste to energy technologies, collaborating with its agencies based in Brazil, Chile, Italy, China, and India. The real-life plants and their staggering impact will help other plants to follow suit in leveraging waste to useful energy while conserving land resources worldwide.

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