"Generating Electrical Energy Using Biogas With Peltier Effect"

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ABSTRACT

Due to the increasing demand for fossil fuels and environmental threat, a number of renewable sources of energy have been studied worldwide. An attempt is made to assess the suitability of alternative fuels like Methanol, Ethanol, Hydrogen, Natural Gas, LPG, CNG, LNG, Biogas and biodiesel for diesel engine operation with and without modification in its existing construction. The main objective of this paper is to investigate Bio-gas generation and Factor affecting the biogas generation from various organic matter by biological breakdown. The investigated results show that biogas is the cheapest non-conventional energy produce from various organic waste.

This work present the efficient generation of electricity using the principle of see back effect which is the phenomenon In which a temperature difference between two dissimilar semiconductor produces a voltage difference between two substance.

The higher temperature difference, the higher voltage is produces. Here to innovative way of harvesting energy is proposed i.e. one from direct sunlight using Fresnel lens during daytime and one from simple heat source candle during night time. Generating electricity with wind energy and solar panel is common now days and moreover the cost is high . The aim of this paper is to generate electricity in remote areas where electricity still irregular and insufficient,

The design module produces power in small watt for application in low power consumption electronic products event of the absent of wind and solar energy .The total output voltage of current 4.3mA with a total power of the 31.64 watt and produce DC 7.6 volt which is the enough to light low power LEDs and charging mobile phones

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I. INTRODUCTION

Recently adjustment of law development of technologies and business movement have encouraged the transition to a recycling based society. Biogas energy is being watched with keenest interest as environmently – friendly, alternative energy source instead of petroleum. It is purposed that biomass energy will be introduce worldwide in large quantities. Particularly for japan, which lags behind other industrialised nation in the widespread adoption of environmently friendly, energy source the utilization of "biomass from waste" such as waste wood, wood chips, sludge, garbage, edibles oil waste and animal refuse, represent a promising alternative energy source, which would serve TO PROTECT the environment from the symptoms of industrialization, such as global warming.

This project present example of a methane fermentation facility and a sewage water treatment plant. In addition, an overview of these system is presented.

These day the demand of electricity is rising tremendously with 5the growing industries and household electrical appliances. To fulfill these daily requirements different energy sources like coal, water, wind and solar energy are employed at a very high cost. From all these source, energy is extracted and utilized but the demand for a power is still at large. Even though the world is fast changing AND DEVELOPING THERE are still many village and far flung area where electricity is not reached and still a demand. From some thee power generation method after harvesting energy, heat is simply waste as byproduct into the environment. If such heat can be converted even in a small mill watt range. It can be reuse in domestic low power lighting And in running low power consumption electronic product. According to thermodynamic law of energy also known as law of t conservation of energy, energy cannot be create nor destroy but can be transform from one from to another. Thermoelectric device which work with the [principle of see beck effect convert temperature gradient between the two junction into voltage and vice versa can be utilize to harness electricity from heat.

of various pollutants like ash in case of a coal power plant, smoke in case of diesel power plant, radioactive material in case of nuclear power plant. Maintaining these pollutants is not an easy task and it also requires a lot of money. So we have to find some other methods to produce electricity.

II. CONSTRUCTRION OF BIOGAS

The construction of biogas electricity generation project is as follow:
One plastic tank is used here which has one inlet pipe and one is outlet pipe. And one outlet opening is provided at the tank for passage of gas.
One another plastic/rubber pipe is used for outlet of biogas from tyre tube.
One valve is provided there for controlling the flow of biogas.
Nozzle is provided at the pipe outlet, for increasing the pressure of biogas.
SEEBECK ARRAGEMENT:-
In see beck arrangement GI sheet is used and two conductor are connected for completion of circuit.
One wooden box is used here for producing temperature difference situation.
In this wooden box two iron containers are kept.
The gas nozzle is connected with one iron tank from them.

One is kept for cooling by application of ice. Then the GI sheet is kept in such a way that it is accessible for both these temperature

III. CONSTRUCTION OF PELTIER EFFECT

A Thermoelectric generator (TEG), also called as see beck generator, is a solid state device that convert heat (Temperature difference) directly into electric energy through a phenomenon called the see beck effect (A form a thermoelectric effect) Thermoelectric generator function like heat engine but are less bulky and have no moving part however; TEGs are typically more expensive and less efficient. Thermoelectric generator could be used in power plant in order to convert waste heat into additional electric power and in automobiles as automotive thermoelectric generator to increase fuel efficiency. Another application is radio isotope thermoelectric generator which is used in spaced probes, which has the same mechanism but used radio isotopes to generate the required heat different.

IV. WORKING OF PELTIER EFFECT

The thermoelectric effect is the direct conversion of temperature differences to electric voltage and vice versa via a thermocouple.[1] A thermoelectric device creates a voltage when there is a different temperature on each side. Conversely, when a voltage is applied to it, heat is transferred from one side to the other, creating a temperature difference. At the atomic scale, an applied temperature gradient causes charge carriers in the material to diffuse from the hot side to the cold side.

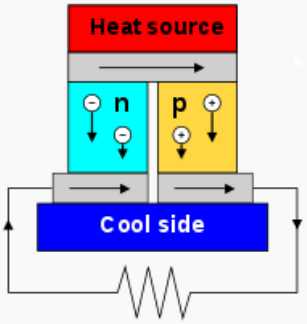
This effect can be used to generate electricity, measure temperature or change the temperature of objects. Because the direction of heating and cooling is affected by the applied voltage, thermoelectric devices can be used as temperature controllers.

The term "thermoelectric effect" encompasses three separately identified effects: the Seebeck effect, Peltier effect, and The Seebeck and Peltier effects are different manifestations of the same physical process; textbooks may refer to this process as the Peltier–Seebeck The Thomson effect is an extension of the Peltier–Seebeck model and is credited to Lord Kelvin.

Joule heating, the heat that is generated whenever a current is passed through a conductive material.

One tyre tube is used here. It also has two opening one is for inlet of gas and other is for outlet of gas.
One plastic/ rubber pipe is provided in between plastic tank and tube and also one opening valve is fitted in the way of pipe.

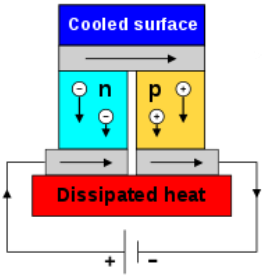
SEEBECK EFFECT (HEAT SIDE)



A thermoelectric circuit composed of materials of different Seebeck coefficients (p-doped and n-doped semiconductors), configured as a thermoelectric generator. If the load resistor at the bottom is replaced with a voltmeter, the circuit then functions as a temperature-sensing thermocouple.

To measure a temperature difference; an absolute temperature may be found by performing the voltage measurement at a known reference temperature. A metal of unknown composition can be classified by its thermoelectric effect if a metallic probe of known composition is kept at a constant temperature and held in contact with the unknown sample that is locally heated to the probe temperature. It is used commercially to identify metal alloys. Thermocouples in series form a thermopile. Thermoelectric generators are used for creating power from heat differentials.

PELTIER EFFECT (COOL SIDE)



When an electric current is passed through a circuit of a thermocouple, heat is evolved at one junction and absorbed at the other junction. This is known as the Peltier Effect. The Peltier effect is the presence of heating or cooling at an both the side.

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V. RESULT CONCLUSION

Producing renewable energy from organic waste.
Producing valuable fertilizers for agricultural.
Reduces the global warming effect by reducing methane formation from organic waste and animal dung.
Methane has 21 time more global warming effect than the carbon dioxide.Controlled parameter may increase the production of biogas.
Biogas may convert into bio-methane for automobile fuel.

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