

Concept of Power Generation from Waste Heat Using Thermoelectric Generator

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Abstract— This paper presents the investigation of power generation using the mixture of heat and thermo-electric generators. A majority of thermal energy within the industry is dissipated as waste heat to the environment. This waste heat is often utilized further for power generation. The related problems of world warming and dwindling fuel supplies have led to improving the efficiency of any process being a priority. One method to reinforce the efficiency is to develop methods to utilize waste heat that's usually wasted. Two promising technologies that were found to be useful for this purpose were thermoelectric generators and heat pipes. Therefore, this project involved making a bench type, proof of concept model of power production by thermoelectric generators using heat pipes and simulated hot air.

Keywords: Waste Heat, Waste Heat Recovery, Thermoelectric Generator Module, Controller, Electricity

I. INTRODUCTION

In this paper the conversion of the heat energy in to power. By using this energy fan will operates and therefore the energy is stored in an exceedingly battery. The control mechanism carries the A.C ripples neutralizer, unidirectional current controller and 12V, from this battery supply will pass to the inverter and it is employed to drive AC/DC loads. The battery is connected to the inverter. This inverter is employed to convert the 12 Volt D.C to the 230 Volt A.C. This 230 Volt A.C voltage is employed to activate the masses. We are using 8051 microcontroller AT 89S52 with 16*2 LCD display the voltage from the values of battery. In this project we are using TEP Transducer .Transducer could be a device which converts one kind of energy in to a different kind of energy.

This includes electrical, mechanical, light and heat energy also. While the term transducer commonly implies the utilization of sensors/detector any device which converts energy considered as Transducer. The following literature papers are studies for the completion of prototype.

A. Field Of Invention

This invention relates to the inner Combustion machineries for production in industry. Among all research directions, waste heat recovery (WHR) is most concerned, because of the widespread existence and high accessibility of suitable resources. in line with India Bureau of Energy Efficiency , the advantages of WHR includes reduction within the process consumption and costs, reduction in pollution and equipment sizes, and also reduction in auxiliary energy consumption. While there are variety of devices to meet WHR, thermoelectric generator (TEG) has been utilized in most automotive applications. A thermoelectric power

generator could be a solid s device which waste heat into current which works on seebeck effect.

B. Background of Invention

In recent years, warming and therefore the limitations in use of energy resources increase environmental problems with emissions. The odds of thermoelectric frameworks' commitment to "green" innovations, explicitly for squander heat recuperation from industry depleting vent gases. Vast quantities of waste heat are discharged into the earth's environment much of it at temperatures which are too low to recover using conventional wattage generators. The proposed structure could be a distributed multi-section and multi-stage network. The target is to tackle problems facing the standard single-stage system and to advance TEG application in automotive settings.

Bottom of Form

C. Objectives

The current research is that specialize in a technology, which is ready to convert the thermal energy contained within the exhaust gas directly into electrical power. during this project concept it invented exhaust gas-based thermoelectric power generator for an industry application. during this invention, the exhaust gas gases within the pipe provide the warmth source to the thermoelectric power generator. So, this project proposes and implements a thermoelectric waste energy recovery system from the exhaust heat from running machineries. The secret's to directly convert the warmth energy from automotive waste heat to voltage employing a thermoelectric generator. While the electrical power generation by such a system is ready to get remains relatively small at a maximum of 10 W from one TEG module, rapid progress in materials research can make the ambitious objective of generating higher watts by all means of feasible proposition.

II. BLOCK DIAGRAM

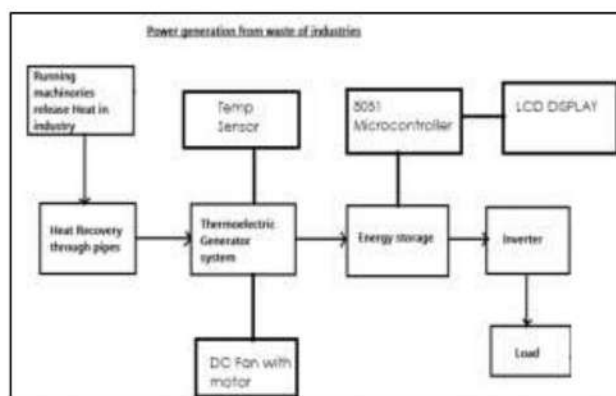


Fig. 1: Block Diagram