International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056
Volume: 08 Issue: 07 | July 2021 www.irjet.net p-ISSN: 2395-0072

THERMOELECTRIC AIR CONDITIONING FOR AUTMOBILE APPLICATION

Barde Ketan[1], Sul Akash[2], Nagare Akshay[3], Barke Dasharath[4], Parjane Manoj[5]

[1-4]BE (Mechanical), SVIT, PRES Nasik, Maharashtra, India
[5]Professor, Dept. of Mechanical Engineering, SVIT College, Maharashtra, India

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Abstract - *. For air conditioning use of fuel also increases and all these are effect on the car efficiency also it makes more amount of emissions. As per Refrigeration principle, air conditioning and refrigeration consumes around 14% of the total worldwide electric power and also contributes emission, so as use of such refrigerants it get dangerous effect to environment i.e. the ozone depletion and also global warming. To solve the problem of emission, the thermoelectric Air conditioning can be used and it is beneficial to us. This system is noiseless, a there will be zero hazardous emission. So the system is totally pollution free. As the Peltier module is quite that is noiseless, compact in size and also the design might be easily. Air conditionings is uses in many automobile applications. Such as car, buses and etc.*

Key Words: Thermoelectric, air conditioning, refrigeration, emission, electric current.

1. INTRODUCTION

Currently used process using refrigerant can cause serious problems to us and the environment, also getting dependency on fuel. In this system air conditioning system is based on thermoelectric phenomenon. In this no use of compressor and pump for the refrigeration and use of fuel. Thermoelectric is an electrical module, which produces a temperature difference. Temperature difference is based on principle of Peltier effect. The thermoelectric module is a heat pump and has the same function as air conditioning. Our objective is to introduce the HVAC system using phenomenon of thermoelectric module. Which shall overcome all the disadvantages and demerits of existing air conditioning system.

Thermoelectric cooling provides an alternative and replicable solution to conventional system. Thermoelectric coolers are used for small or micro level cooling power unit. A thermoelectric module is an electrical module, which can make temperature difference as per current flow. The heat flow will turned by opposite to that of the direction of current. Although thermoelectric property was discovered about so many years ago. Thermoelectric devices has starting as recent years. The applications of thermoelectric vary from small application of refrigeration and Electronics package cooling to thermal imaging cameras and etc. It consist of cold plates, water chillers, portable insulin coolers.

1.1Problem Definition

The objective of this paper is to analyze the efficiency of applying thermoelectric devices to Automobile to gain place of the old air conditioning system to increase the efficiency of the automobile and reduce the pollution by reducing the ozone depletion. Also to be reduce the dependency on fuel.

2. WORKING OF DEMO MODEL

When the device is connected to supply, the potential difference is produced, which starts the doping of +ve charged electrons on one side of thermoelectric. For the other side -ve charged ions are get excited. Then the temperature (gradient) difference occur on both side of the device. The outside get hotter due to hot region of thermoelectric. The inner side zone will cooler than the ambient after some time period. For the heat exhaust to out of box purpose fan is used. Also fan used for the circulation of cold air and the dc fan attached to the close chamber. This will cooling of the working place.

A device will create a voltage when there is temperature (gradient) difference on each side. On the other hand when a voltage is applied to it, a temperature difference is created. The temperature difference is also known as Peltier effect. Thus Thermoelectric operates on the principle of the Peltier effect.

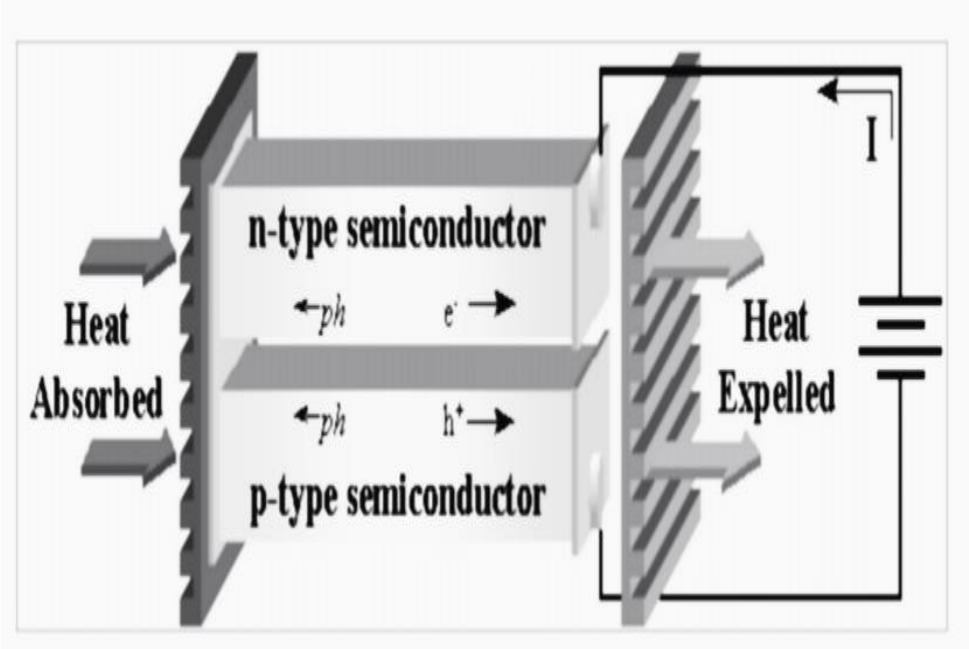

Fig (1) Thermoelectric

3. ADVANTAGES

- It Is Ecofriendly
- It Is Noiseless and Quite In Operation.
- No Emission from the System.
- No Ozone Depletion.

4. DISADVANTAGES

- It is only useful for micro level applications.
- It is more costly
- High maintenances

5. CONCLUSIONS

In this way we studied about thermoelectric phenomenon. We see by using this thermoelectric, we can run air condition unit of automobile application. We also get that for this thermoelectric we have to study the peltier effect and seeback effect. Also we get that this thermoelectric is limited up to micro level application.

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