

# Design and Manufacturing of Automotive Air Conditioning System to Remove the Fog using TEG/TEC Effect

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**Abstract:** Fog is a natural weather condition that can cause visibility to become zero. It can cause vehicle accidents. Nowadays the air conditioners are very efficient and reliable but it has some demerits. According to the International Institute of Refrigeration, air conditioning and refrigeration consumes around 15% of the total worldwide electricity and also contributes to the emission of CFCs, HCFCs, and CO<sub>2</sub> etc. Due to the use of such refrigerants it leads to many harmful effects to our environment i.e., global warming. For air conditioning use of fuel also increases and all these are affecting the car efficiency. To overcome the problem of emission and fulfil the mismatch between the demand and supply of energy consumption the thermoelectric Air conditioning can be used. This system is not going to be noisy, there will be no hazardous emission to the environment so the system is totally eco-friendly. As the Peltier module is quite compact in size the design can be easily acquired according to space and need.

**Keywords:** Refrigeration, Peltier Plate, Peltier Effect, Seebeck effect, etc.

## REFERENCES

1. Akshay Thalkar, Pranav Vaidya, Sagar Nikam; "Study of Thermoelectric Air Conditioning for Automobiles", Volume: 05 Issue: 01 | Jan-2018
2. Santosh Doifode Prof. A. M. Patil; "Review of Thermoelectric Air to Air Cooling for Cars", Volume 3, Issue 4, April 2014
3. Manoj S. Raut, Dr.P. V. Walke; "Thermoelectric Air Cooling for Cars", Vol. 4 No.05 May 2012
4. Ssenoga Twaha, Jie Zhu, Yuying Yan, Bo Li; "A Comprehensive Review of Thermoelectric Technology: Materials, Applications, Modelling and Performance Improvement", July 2016
5. Khaled Teffah, Youtong Zhang and Xiao-long Mou; "Modeling and Experimentation of New Thermoelectric Cooler-Thermoelectric Generator Module", March 2018 F Susanto, A T A Salim, N Romandoni1, N Wahyudi1, B Indarto, Z M A Junaedi1,
6. K A Basyar1, J A Furqan1, G A B Putra1; "Application of Thermoelectric Generator TEG Type Parallel Series Electric Circuit Produces Electricity from Heat Rocket Stove", ICIASGA 2020
7. Zhe Zhang, Yuqi Zhang, Xiaomei Sui, Wenbin Li and Daochun Xu; "Performance of Thermoelectric Power-Generation System for Sufficient
8. Recovery and Reuse of Heat Accumulated at Cold Side of TEG with WaterCooling Energy Exchange Circuit", October 2020
9. Seyed Mohsen Pourkiaei, Mohammad Hossein Ahmadi, Milad Sadeghzadeh, Soroush Moosavi, Fathollah Pourfayaz, Lingen Chen, Mohammad Arab Pour
10. Yazdi, Ravinder Kumar; "Thermoelectric cooler and thermoelectric generator devices: A review of present and potential applications, modeling and materials", vol. 186, November 2019

11. Dongliang Zhao, Gang Tan; "A review of thermoelectric cooling: Materials, modelling and applications", INIS volume 46, Issue 9, 2014
12. Bao Yang, Herwin Ahuja, Thanh N. Tran; "Thermoelectric Technology Assessment: Application to Air Conditioning and Refrigeration", Volume 14, Issue 5, February 2011
13. Aklilu Tesfamichael Baheta, Kar Kin Looi, Ahmed Nurye Oumer, Khairul Habib; "Thermoelectric Air-Conditioning System: Building Applications and Enhancement Techniques", Volume 27, No. 2, June 2019.