

Optimizing Heat Dissipation through Baffle Insert Design in Thermal Management

Housalmal Rajabhau Shivaji¹, Dr. Manoj kumar Vithalrao Dalvi², Dr A. B Auti³

Research Scholar, Department of Mechanical Engineering¹

Research Guide, Department of Mechanical Engineering²

Co Guide, Department of Mechanical Engineering³

Sunrise University, Alwar, Rajasthan, India

Abstract: This paper explores the significance of baffle insert design in optimizing heat dissipation within thermal management systems. It discusses the principles, strategies, and advancements in baffle insert technology for enhancing heat sink efficiency and thermal control.

Keywords: Heat Dissipation, Baffle Inserts, Thermal Management.

REFERENCES

- [1]. Oluleye, G.; Smith, R.; Jobson, M. Modelling and screening heat pump options for the exploitation of low grade waste heat in process sites. *Appl. Energy* 2016, 169, 267–286.
- [2]. Twaha, S.; Zhu, J.; Yan, Y.; Li, B. A comprehensive review of thermoelectric technology: Materials, applications, modelling and performance improvement. *Renew. Sustain. Energy Rev.* 2016, 65, 698–726.
- [3]. Wang, Y.; Xu, H.; He, W.; Zhao, Y.; Wang, X. Lattice Boltzmann simulation of the structural degradation of a gas diffusion layer for a proton exchange membrane fuel cell. *J. Power Sources* 2023, 556, 232452.
- [4]. Nonthakarn, P.; Ekpanyapong, M.; Nontakaew, U.; Bohez, E. Design and Optimization of an Integrated Turbo-Generator and Thermoelectric Generator for Vehicle Exhaust Electrical Energy Recovery. *Energies* 2019, 12, 3134.
- [5]. Zhao, Y.; Lu, M.; Li, Y.; Wang, Y.; Ge, M. Numerical investigation of an exhaust thermoelectric generator with a perforated plate. *Energy* 2023, 263, 125776.
- [6]. Chen, W.; Wu, P.; Lin, Y. Performance optimization of thermoelectric generators designed by multi-objective genetic algorithm. *Appl. Energy* 2018, 209, 211–223.
- [7]. Luo, D.; Yan, Y.; Chen, W.-H.; Yang, X.; Chen, H.; Cao, B.; Zhao, Y. A comprehensive hybrid transient CFD-thermal resistance model for automobile thermoelectric generators. *Int. J. Heat Mass Transf.* 2023, 211, 124203.
- [8]. Kempf, N.; Zhang, Y. Design and optimization of automotive thermoelectric generators for maximum fuel efficiency improvement. *Energy Convers. Manag.* 2016, 121, 224–231.
- [9]. Zhao, Y.; Lu, M.; Li, Y.; Ge, M.; Xie, L.; Liu, L. Characteristics analysis of an exhaust thermoelectric generator system with heat transfer fluid circulation. *Appl. Energy* 2021, 304, 117896.
- [10]. Lu, X.; Yu, X.; Qu, Z.; Wang, Q.; Ma, T. Experimental investigation on thermoelectric generator with non-uniform hot-side heat exchanger for waste heat recovery. *Energy Convers. Manag.* 2017, 150, 403–414.