

Performance of thermoelectric cooling system: effect of aluminium heat sink and heat dissipation

Abstract

This paper presents theoretical and experimental research works on the effect of aluminium heat sink and heat dissipation in a portable thermoelectric (TE) cooling system. In this study, three units of TE modules were utilized with an inputs of 3 A and 8 V. The aluminium heat sink was used to spread the heat generated by TE modules through its fins and surface area. The cold temperature was spread through by an aluminium cold sink with direct blow to the cooling space. The air flow rate was accelerated by the use of centrifugal blower on both sides of the heat dissipation system. The temperature of the cooling space caused was examined. The performance of TE module with the utilization of hot and cold sinks has shown that a greater heat dissipation rate was achieved.

Keywords — Cooling system, aluminium heat sink, heat transfer, heat dissipation.