

## ABSTRACT

Thermal resistance and the flow rate of air is the most important aspect in the exhaust heat from the system to the environment, particularly on the heat sink fan. This research aims to design and test tools to analyze the relationship influence the flow rate of air vertically on the heat sink fan thermal resistance of five different types. To get this kind of heat sink fan which effectively tested by comparing the value of thermal resistance each heat sink fan with a variation of the flow rate is the same, namely 0.6, 0.9, 0.11, 0.13, 0.16 m<sup>3</sup>/s and as the heat source used thermoelectric TEC 12706 with temperature side hot (Th) is maintained at 60°C. From this comparison to the same treatment, obtained heat sink fan of the most effective and efficient with the lowest thermal barriers at 0.06 °C/W at a given flow rate of air 0.16 m<sup>3</sup>/s, higher flow rate of air from 0.06 – 0.16 m<sup>3</sup>/s, then the thermal resistance would be lower. This occurs because of changes in the air flow rate can change a convection coefficient, so that the displacement experienced an increase convection and thermal resistance would be lower.

Keywords: *Thermal resistance, Air flow, Heat sink fan*