ABSTRACT

Thermoelectric is an alternative cooling device over vapor compression refrigeration system, because it is more environmentally friendly and compact. Thermoelectric has two sides that functions as a hot reservoir and cold reservoir, and utilizes electrical energy to heat pump or vice versa. In this research, testing of the thermoelectric coolant heat of TEC1-12706 at low temperature. Low temperature is meant below the ambient temperature with the intention of obtaining the value of cooling capacity and the performance coefficient at low temperature. There are three parameters measured, there are current, voltage, and temperature. The hot side temperature of TEC1-12706 is kept below the ambient temperature by placing the hot side on the cold plate of the evaporator vapor compression refrigeration system. The best result, it is obtained that the performance coefficient value and cooling capacity are increasing as the input power value increases in TEC1-12706. The value of Cooling Capacity is between 0,24±0,23 to 2,96±0,75 Watt; while the value of COP is between 0,56±0,59 to 1,05±0,26. Compared with the value of COP and Qc on its use at 50^{o}C, TEC1-12706 is still better to use at temperatures above 25^{o}C.

Key words: cooling capacity, COP, low termperature, thermoelectric.