

# Energy Harvester from Waste Heat using Thermoelectricity

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## **Abstract**

Currently there are many methods available to harvest energy from renewable sources. However, the method to harvest energy from waste heat sources still not fully explored. This paper focused on using thermoelectricity as a main component to utilized waste heat from household appliance especially from air conditioning system. The objective of this paper is to develop a thermoelectric generator system (TEG) based on heat release from compressor of the air conditioner system. Experimental data input was acquired from the compressor of the air conditioner system includes hot and cold side temperature. Then, Matlab SIMULINK has been used as a tool to analyse the acquired input data and output voltage, while current and power was calculated from the model. As result, maximum voltage obtained from the TEG system are 3.44 V with the temperature difference of 77.6 K at 16 °C, 0.73 A current, while power produced at 1.62 W. In conjunction to the power produced, the waste heat from air-conditioning system could light up the bulb in a room with the energy harvested using thermoelectric principle. The TEG system can also be utilize as an alternative energy sources for distributed energy generation (DEG) application.