

ABSTRACT

In this final project a tool will be designed to convert temperature difference into electricity for charging a smartphone's battery. This tool uses the principle of the Seebeck effect where the temperature difference on the thermoelectric plate is converted to DC voltage. IC Max756 as a step-up dc-dc voltage converter is used to regulate output voltage constantly at 5V. Six pieces in series of TEG SP1848-27145 as a thermoelectric generator are used to generate electricity from temperature difference. Six pieces of thermoelectric generator in series generate an open-circuit voltage of 11V at an 84.5 °C temperature difference and generate 336.2 mW power at a 75 °C temperature difference with a 50 Ω load. The test results when charging a smartphone show that the charging process starts at a 73 °C temperature difference where the voltage obtained is 4.8V with a 58 mA current.

Keywords: *thermoelectric generator, Seebeck Effect, charging smartphone, Step up dc-dc voltage converter.*