

## ABSTRACT

In modern times like nowadays where the technology is growing rapidly, almost all human works aided by hi-tech machines. Smartphone has become a basic necessity and cannot be separated from humans. One of smartphone disadvantage is wasteful battery usage. It causes limitation of phone usage because there are not many places where there's a power source to recharge the batteries. For example, mountain climbers need a GPS (Global Positioning System) so as not to get lost in the mountain area where power sources are hard to find.

This final project will design a device that can recharge smartphone batteries using a thermoelectric module. The device can recharge batteries using heat source by utilizing the Seebeck effect where the heat can be converted to electrical energy or vice versa. The generated power will be stabilized by the power control circuit. The generated electrical energy is a direct voltage which can be used to recharge the batteries.

The test results show that the system with 2 pieces of thermoelectric modules in series can produce power equal to 0.05 Watt by using heat source such as a portable gas stove and using heatsink as cooler. The voltage output from the thermoelectric boosted by a DC-DC converter step up using IC MAX756 and it generates 4.99V with minimum voltage equal to 1.75V.

*Keywords : thermoelectric generator, seabeck effect, fire charging*