

ABSTRACT

The development of energy harvesting technology has emerged over the past few years. Among the alternatives of thermal energy harvesters is the Thermoelectric Generator (TEG). The process of processing energy from a heat source with TEG depends on the temperature difference between the heat source and the environment (hot and cold side temperature). This causes the energy of the process results from the TEG to be low or not constant, so that to be utilized either in electronic devices or energy harvesting it is necessary to provide a system that plays a role in maximizing the output obtained from the TEG.

Then it is necessary to create a Maximum Power Point Tracking (MPPT) system with a DC-DC converter to be able to maximize energy harvesting output with TEG. The MPPT serves to track the maximum power point of the TEG output. The DC-DC converter acts as a regulator of dc input to dc output so that the output can be set to produce maximum power.

In this final project will be designed a maximum power point tracking control system with the TI Launchpad MSP430 and the DC-DC ASL-2UC Converter. Based on the results of the analysis, the DC-DC converter is able to increase the input voltage given by 4 times the initial voltage. Programming with MSP430 for the MPPT system was also successfully carried out, where the program could detect power at the TEG output, based on the experiment table, it was obtained that the efficiency of the MPPT system reached 90%.

Keywords: Harvesting energy, Thermoelectric Generator (TEG), Maximum Power Point Tracking (MPPT), DC-DC CONVERTER ASL-2UC.