

## ABSTRACT

In the present era, electrical energy is a very important requirement. With the development of a rapidly increasing human population, electricity consumption has also increased. The energy used at this time generally uses energy from fossils that cannot be renewed and will run out if used continuously. So that humans are required to create alternative energy so that the need for electrical energy can be fulfilled. The thermoelectric module or also called the TEC1-12706 module is an alternative energy source that allows it to be used. This module converts heat energy into electrical energy and is better known as the Seebeck theory.

Thermoelectric modules are used to convert heat energy from waste combustion carried out in incinerators. To produce sufficient voltage, the TEC1-12706 module is arranged in series and attached to the heatsink. The heat side of the TEC1-12706 module is attached to the heat sink to prevent the module from overheating. The cold side of the module is also placed in a cold water container so that the temperature ratio obtained by the module is greater and the energy obtained is also large.

The parameter of the success of this analysis is to get a better power value between the series or parallel circuit from the TEC1-12706 module. The results of testing and analysis of the incinerator design using four TEC1-12706 modules which are arranged in series produce better power than if the TEC1-12706 module is arranged in parallel. The series circuit produces a voltage of 7.31 volts while the parallel circuit produces 1 volt at a temperature difference of around 100 degrees Celsius. The power produced for the four TEC1-12706 modules is 3.144 watts at a temperature difference of 110 degrees Celsius.

**Keywords:** *Seebeck Effect, Incinerator, TEC1-12706 Module*