

**Rancang Bangun Kotak Pendingin Portabel Menggunakan Modul
Thermoelectric Cooler TEC1 – 12710** (Design of Portable Cooler Boxes Using
The Thermoelectric Cooler TEC1 – 12710 Module).
Pembimbing (1 orang)

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ABSTRACT

One of the methods used to store food is by cooling it. However, currently, the majority of refrigeration machines use a dangerous chemical, namely freon. Besides that, the design of the refrigerator that requires a large space, and a lot of power is troublesome to apply in a narrow room. Because it requires innovation to make food storage that is portable, minimal space, and environmentally friendly. The purpose of this research is to design a portable cooler box that makes it easier to place in a minimal and environmentally friendly room. The method used is to design an isolated cooler and can adjust the temperature in the cooler. The tools used are thermoelectric type TEC1-12710, styrofoam as the main construction wall, aluminum plate as a compartment, water as thermal insulation, power supply, and DC 10A stepdown. This research was conducted by looking at the effect of the variation in the incoming stress on the resulting temperature and the maximum temperature that can be achieved by thermal isolation using a water medium. The cooler box uses two TEC1-12710 modules with varying voltage values. It was found that the decrease in the voltage value is directly proportional to the performance of the thermoelectric module, at a voltage variation of 12 V without load with the addition of a water wall, it can work better by taking data for 60 minutes reaching room temperature up to 24.5 °C and 24.56 °C with a test load using 690 grams of mineral water.

Keywords : Thermoelectric, Styrofoam, Stepdown DC.