

## **ABSTRACT**

*Refrigeration process is a of heat transfer from an object or a room into surrounding environment so that the room or object temperature is lower than the temperature of its surrounding. In our daily lives vapor compression refrigeration system which potentially causes the destruction of ozone layer is widely used. This final proect design and implements a cooling system which is environmentally friendly by using thermoelectric cooler modul (TEC), a device that converts electrical voltage into a temperature differences between the two side of the thermoelectrics. In this final project, the cooling system consists of a cooler box with a size of 5,5 liter, a TEC, a water block, and a heatsink fused with a fan. The cooling process in side the box is generated by the cold side of the TEC while the heat distribution in the hot side of TEC via heat exchanger with conduction and convection process. Then a cooling system tested to temperature 9°C with size cooler box 5,5 liter. The cooling process can be more effective if a better heat distribution to the environment is created. This can be look at from experiment cooling system with heat exchanger can reach temperature 9°C with size cooler box 5,5 liter.*

*Keywords : Refrigertion, termoelectric, cooler box, heat exchanger*