

## Characteristics and cop cascade refrigeration system using hydrocarbon refrigerant (propane, ethane and co<sub>2</sub>) at low temperature circuit (ltc)

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### Abstrak

Global warming is a very pertinent issue these days because the effects of extreme climate change are becoming quite apparent. Therefore, the first problem to address is the formation of strict regulations regarding emissions into the air. The main emissions to tackle are CFC and HCFC refrigerants.

Conventional cascade refrigeration systems until now have been dependent on refrigerants and it is time to find a substitute that is environmentally friendly. This study builds a prototype cascade refrigeration machine using the environmentally friendly hydrocarbon refrigerants (propane, ethane and CO<sub>2</sub>). Resulting from this research, the characteristics of the pressure and temperature of each component and the COP value at low temperature circuit of load variations using an electric heater at 90 W, 120 W and 150 W result in a COP value of 0.35, 0.48 and 0.60 respectively.