Refrigeration Performances of Ternary Mixtures for R-502 Alternatives Developing

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Much effort has been made to find the suitable replacement for R-502. Some R-502 alternatives have been studied and developed in industrial applications. Most of them are blends of HFCs (binary or ternary mixture). Unfortunately, HFCs have been included in the basket of green house gases to be regulated by Kyoto Protocol 1997 because their Global Warming Potentials are several thousand times higher than CO2. This problem leads to reduce the use and production of HFCs gradually in the future. In recent years, the utilization of light hydrocarbons as effective refrigerants is believed as an alternative solution because these hydrocarbons are rather cheap, plentiful and environmentally benign chemicals (zero ODPs and near zero GWPs) and have many outstanding properties.

In this work, some ternary mixtures composed of well-known HFCs and hydrocarbon will be be introduced as R-502 alternative candidates. The refrigeration performance testing for R-502 and these mixtures at same condition was carried out by using a refrigerant compressor calorimeter. The results of this investigation are primarily expected to find out some new alternatives for R-502 refrigerant.