

REFRIGERATION AND CRYOGENICS – exercises , year III

List II

Example 1:

Identify a refrigerating cycle for R134a refrigerant and following characteristic temperatures: $0^{\circ}\text{C} / 40^{\circ}\text{C}$. How dose COP change when evaporating temperature decrease to -10°C ?

Example 2:

How do refrigerating effect, compressor work and COP changes if evaporating temperature decrease from $+5$ to -10°C ?. Refrigerating cycle is supplied by R 22, condensation temperature is $+25^{\circ}\text{C}$ and refrigerating capacity is $\dot{Q}_{rc} = 5 \text{ kW}$

Example 3:

Refrigerating cycle is supplied by R12 refrigerant. Plot a graph of variation COP with evaporating temperature changing. Take in to account evaporating temperature from range 0 to -25°C (each 5 K) and condensation temperature $+30^{\circ}\text{C}$ (for each cycles).

Example 4:

Identify a refrigerating cycle for R 600A refrigerant and following characteristic temperatures: $0^{\circ}\text{C} / 30^{\circ}\text{C}$. How dose COP change when condensation temperature increases by 20K?

Example 5:

Compare COPs of refrigerating cycles supplied by R 290 refrigerant for characteristic temperatures: $-10^{\circ}\text{C} / 30^{\circ}\text{C}$ and if:

- evaporating temperature decrease by 10 K
- condensation temperature increase by 10 K
- evaporating temperature increase by 10 K and condensation temperature decrease by 10 K

Example 6:

Refrigerating cycle is supplied by R717 refrigerant. Plot a graph of variation COP with condensation temperature. Take in to account condensation temperature from range 20 to 25°C (each 5 K) and evaporating temperature $+30^{\circ}\text{C}$ (for each cycles).