Refrigeration Cycle

\[ \text{COP} = \frac{Q_{\text{cooling}}}{W} = \text{COP}_{\text{cooling}} \]

Note \( \frac{Q_{\text{heating}}}{Q_{\text{cooling}}} = \frac{1}{W} \)

For some device

\[ \text{COP}_{\text{heating}} = \frac{Q_{\text{heating}}}{Q_{\text{cooling}}} = 1 \]

Energy Efficiency Ratio (EER):

\[ \text{EER} = \frac{Q_{\text{cooling}}}{W} \text{ Btu/hr or MBtu/h} \frac{W}{KW} \]

Note \( \text{EER} = \frac{\text{COP} \times 3.412}{\text{COP} + 3.412} \)
\[ TC = \text{total cooling} \]
\[ TC = SC + LC \]

Sensible Cooling - temperature rise of dry air

Latent Cooling - vs. temperature

PTAC - Packaged Terminal Air Conditioner

\[ \text{EGR} = \frac{\text{tons Btu}}{\text{w}} \]
\[ \text{EGR} = \frac{700}{0.62} = 11.45 \]
\[ \text{EGR} = 11.23 \]
\[ \text{EGR} = 10.71 \]