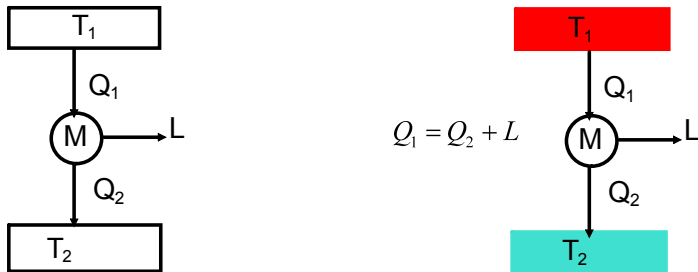


DEFINIZIONE DI MACCHINA TERMICA



$$\eta = \frac{\text{energia sviluppata}}{\text{energia massima sviluppabile}}$$

$$\eta = \frac{\text{energia sviluppata}}{\text{energia massima sviluppabile}} = \frac{L}{Q_1}$$

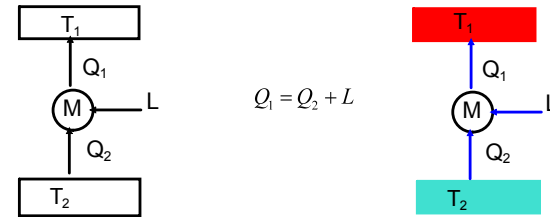
$$L = Q_1 - Q_2$$

$$\eta = \frac{L}{Q_1} = \frac{Q_1 - Q_2}{Q_1} = \frac{Q_1}{Q_1} - \frac{Q_2}{Q_1} = 1 - \frac{Q_2}{Q_1}$$

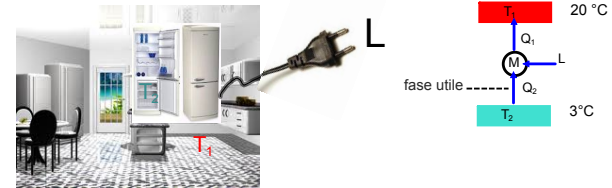
$$\eta = 1 - \frac{Q_2}{Q_1}$$

feb 24-19.17

DEFINIZIONE DI MACCHINA CICLO INVERSO

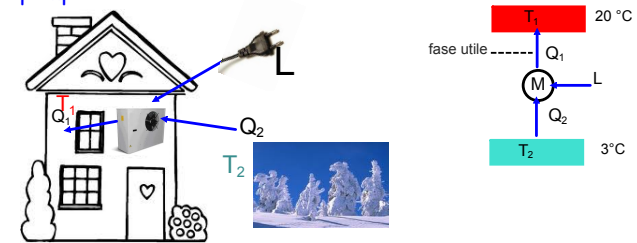


frigorifero



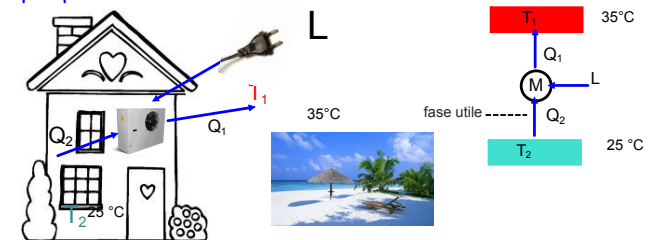
pompa di calore

INVERNO



pompa di calore

ESTATE



feb 24-19.28

$Q_1 = Q_2 + L$

frigorifero Q_2 coefficiente di effetto utile (η_{eff}) $\rightarrow \eta_{eff} = \frac{Q_2}{L}$

...la fase utile rispetto al lavoro assorbito

pompa di calore Q_1 coefficiente di prestazione (COP) $\rightarrow COP = \frac{Q_1}{L}$

$COP = \frac{Q_1}{L} = \frac{Q_2 + L}{L} = \frac{Q_2}{L} + \frac{L}{L} = 1 + \frac{Q_2}{L}$

$COP = 1 + \eta_{eff}$ $COP = 1 + \frac{Q_2}{L}$

