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Some data:

specific heat of water = 4190 J/kg·K
specific heat of ice = 2100 J/kg·K
latent heat of fusion of water = 3.33×10^5 J/kg

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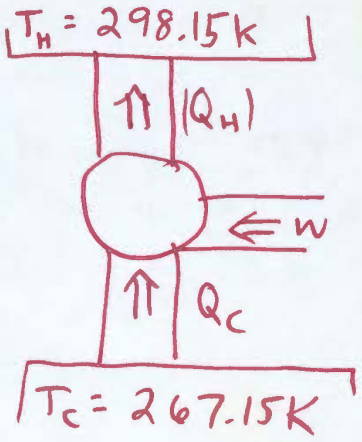

1st: find Q_c = heat required to freeze water at 25°C into ice at -6°C.

$$Q_c = m c_w \Delta T_w - m L_f + m c_i \Delta T_i$$

$$= 0.4\left[4190(0-25) - 3.33\times10^5 + (2100)(-6-0)\right] = \underline{180,140\ J}.$$

$W = ?$ Use $K = \frac{Q_c}{W} \Rightarrow W = \frac{Q_c}{K}$

$$K = K_{carnot} = \frac{T_c}{T_H - T_c} = \frac{267.15}{298.15 - 267.15} = \frac{267.15}{31} = 8.62$$

$$W = \frac{Q_c}{K} = \frac{180,140}{8.62} = 20,900\ J.$$

Power: $P = 100\,W = 100\,\frac{J}{s} = \frac{W}{t}$

$$t = \frac{W}{P} = \boxed{209\,s}$$