

$$\begin{aligned}\frac{dQ}{dt} &= -k A t \frac{\Delta T}{\Delta x} = -(120 \text{ W/m-K})(0.5 \text{ m}^2)(3600 \text{ s/h}) \left(\frac{-100 \text{ K}}{15 \times 10^{-3} \text{ m}} \right) \\ &= 1.44 \times 10^9 \text{ J/h} \quad (1.36 \times 10^6 \text{ Btu/h})\end{aligned}$$