
Example

A motorcycle *cylinder* is constructed from 2024-T6 aluminum alloy ($k = 186 \text{ W/m}\cdot\text{K}$) and has a height of $H = 0.15 \text{ m}$ and an outer diameter of $D = 50 \text{ mm}$. The temperature of the outer diameter of the cylinder is 500 K under typical conditions. The surrounding air has a temperature is $T_{air} = 300 \text{ K}$ with $h_{air} = 50 \text{ W/m}^2\cdot\text{K}$. It is suggested that the heat transfer from the motorcycle can be enhanced by adding *annular* fins of length $L = 20 \text{ mm}$ and thickness $t = 6 \text{ mm}$. Calculate the increase of heat transfer due to adding five such fins, all equally spaced.

