CONDUCTIVE HEAT TRANSFER

Conductive is associated to the transfer of heat through a solid material. It is directly proportional to the surface of the solid, measured in m^2 and the variation of the temperature between both sides of the volume. On the other hand, it is inversely proportional to the thickness of the volume.

EXERCISE

METHOD 1

$$Q = kA\,x\,\frac{\Delta T}{L}$$

$$Q = 0.78\frac{W}{mK}x\,20m^2\,x\,\frac{25K}{0.4\,m}$$

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$$\boldsymbol{Q = 975\ W}$$

METHOD 2

$$Rwall = \frac{L}{kA}$$

$$Rwall = \frac{0.4\,m}{0.78\frac{W}{mK}20m^2}$$

$$Rwall = \frac{0.4\,m}{0.78\frac{W}{mK}20m^2}$$

$$Rwall = 0.0256\frac{K}{W}$$

$$Q = \frac{\Delta T}{Rwall}$$

$$Q = \frac{25K}{0.0256\frac{K}{W}}$$

$$\boldsymbol{Q = 976.56\ W}$$

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