

task_bln2sqhr55mlxrj3_with_calculation

Student Group

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Exercise E2 Conversion: Vacuum Cleaner

Your $18\text{~}\{\rm V\}$ vacuum cleaner is equipped with a $4.0\text{~}\{\rm Ah\}$ battery, it runs $15\text{~}\{\rm min\}$.

How much electrical power is consumed by the motor during this time on average?

Solution:
$$288\text{~}\{\rm W\}$$

$$\begin{aligned} W &= 18\text{~}\{\rm V\} \cdot 4.0\text{~}\{\rm Ah\} = 72\text{~}\{\rm Wh\} \\ t &= 15\text{~}\{\rm min\} = 0.25\text{~}\{\rm h\} \\ P &= \frac{W}{t} = \frac{72\text{~}\{\rm Wh\}}{0.25\text{~}\{\rm h\}} = 288\text{~}\{\rm W\} \end{aligned}$$

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