

task_f64r8g2jf4pdomfi_with_calculation

Student Group

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Table of Contents

Exercise E21 Conversion: Energy, Power and Area	2
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conversions, energy, power, area, chapter1 1

Exercise E21 Conversion: Energy, Power and Area

2. The number of panels and the length of the roof of a car (100 km) average 100 kWh and an usable battery capacity of 60 kWh. Solar panels produces per \$1 m^2\$ in average in December 0.2 kWh/m^2\$. The car is driven 50 km per day. The size of a distinct solar module with 460 Wp (Watt peak) is 1.9 m times 1.1 m.

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\begin{align*}
A &= 100 \text{ km} \cdot 20 \text{ km} = 2000 \text{ km}^2 \\
\end{align*}

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.. What is the average power consumption of the car per day?

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\begin{align*}
A &= 20 \text{ panels} \cdot 460 \text{ Wp} = 9200 \text{ W} \\
P &= \frac{60 \text{ kWh}}{24 \text{ h}} = 2.5 \text{ kW} \\
\end{align*}

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$$\frac{W}{l} = \frac{16 \text{ kWh}}{100 \text{ km}} = 0.16 \text{ kWh/km}$$

$$W = 50 \text{ km} \cdot 0.16 \text{ kWh/km} = 8 \text{ kWh}$$

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