

task_f64r8g2jf4pdomfi_with_calculation

Student Group

First Name	Surname	Matrikel Nr.

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conversions, energy, power, area, chapter1 1

Exercise E1 Conversion: Energy, Power and Area

2. The number of panels and the length of the roof of a house are 100 and 100 m respectively. The car has an average 100 kWh average per day 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.

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

$$A = 20 \text{ panels} \cdot 460 \text{ Wp/panel} = 9.2 \text{ kW}$$

$$P = \frac{A \cdot W_p}{A_{\text{panel}} \cdot W} = \frac{9.2 \text{ kW}}{2.0 \text{ m}^2 \cdot 460 \text{ W}} = 10 \text{ kWh} \rightarrow 20 \text{ panels}$$

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

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

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