

task_f64r8g2jf4pdomfi_with_calculation

Student Group

First Name	Surname	Matrikel Nr.

Table of Contents

Exercise E1 Conversion: Energy, Power and Area 2

conversions, energy, power, area, chapter1 1

Exercise E1 Conversion: Energy, Power and Area

2. How many panels and storage (in kWh) does a car need for a 100 km trip? Result

\$1~\rm m^2\$ in average in December \$0.2~\{\rm kWh\}/\{\rm m^2\}\$. The car is driven \$50~\rm km\$ per day. The size of a distinct Solar module with \$460~\rm Wp\$ (\$W_{\text{peak}}\$) is \$1.9~\rm m \times 1.1~\rm m\$.

$$\begin{aligned} A &= 1.9~\rm m \times 1.1~\rm m = 2.09~\rm m^2 \end{aligned}$$

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

$$A \cdot W_{\text{peak}} \cdot \eta = 2.09~\rm m^2 \cdot 460~\rm W \cdot 0.2 = 192.02~\rm W$$

$$\begin{aligned} \text{Solution} \quad \frac{16~\rm kWh}{100~\rm km} &= 0.16~\rm kWh/km \\ \frac{16~\rm kWh}{100~\rm km} &= 0.16~\rm kWh/km \end{aligned}$$

$$\begin{aligned} \frac{W}{l} &= \frac{16~\rm kWh}{100~\rm km} = 0.16~\rm kWh/km \\ W &= 50~\rm km \cdot 0.16~\rm kWh/km = 8~\rm kWh \end{aligned}$$

From:

<https://first.mexle.te.hs-heilbronn.de/> - MEXLE Wiki

Permanent link:

https://first.mexle.te.hs-heilbronn.de/electrical_engineering_1/task_f64r8g2jf4pdomfi_with_calculation?rev=1680521095

Last update: 2023/04/03 13:24

