

task_5ztn80yw2uibcsxr_with_calculation

Student Group

First Name	Surname	Matrikel Nr.

Table of Contents

Exercise E6 Conversions: Battery 2

conversions, battery, chapter1 1

Exercise E6 Conversions: Battery

2. How many minutes could a battery with 10 kWh of energy supplied by a 100 W power source provide the given power for the calculated time?

Result

$$\begin{aligned} t &= 200'000 \sim \{\text{min}\} \end{aligned}$$

There are additional losses:

$$\begin{aligned} W &= 10 \sim \{\text{kWh}\} \quad \&= 10'000 \sim \{\text{Wh}\} \\ t &= \frac{W}{P} = \frac{10'000 \sim \{\text{Wh}\}}{100 \sim \{\text{W}\}} = 100 \sim \{\text{h}\} = 6'000 \sim \{\text{min}\} \end{aligned}$$

• The battery has an internal resistance. Depending on the current the battery provides, this leads to internal losses.

- The internal resistance of the battery depends on the state of charge (SoC) of the battery.
- The wires also add additional losses to the system.

From:

<https://wiki.mexle.org/> - MEXLE Wiki

Permanent link:

https://wiki.mexle.org/electrical_engineering_and_electronics/task_5ztn80yw2uibcsxr_with_calculation

Last update: 2024/10/02 17:46

