

task_5ztn80yw2uibcsxr_with_calculation

Student Group

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Exercise E1 Conversions: Battery

2. How many minutes could a battery with 10 kWh store the given power for which?

Result

$t = 200'000 \sim \{\text{min}\}$

There are additional losses:

$W = 10 \sim \{\text{kWh}\} = 10'000 \sim \{\text{Wh}\}$
 $t = \frac{W}{P} = \frac{10'000 \sim \{\text{Wh}\}}{50 \sim \{\text{W}\}} = 200'000 \sim \{\text{min}\} = 133 \sim \{\text{days}\}$

- The battery has an internal resistance. Depending on the current provided by the battery, this leads to internal losses.
- The internal resistance of the battery is depending on the state of charge (SoC) of the battery.
- The wires also add additional losses to the system.

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