



myStrom AG · Power Actions

v1

What is the difference between a watt and a watt-hour?

Knowing the difference between a watt [W] and a watt-hour [Wh] will help you understand how to use/configure the Power Actions.

The terms watts and watt-hours are related, but do not refer to the same thing.

What is a watt?

A watt [W] is a unit of power, and power is the rate at which energy is generated or consumed. Think of watts as a unit of measurement for the flow of electricity. Does an electrical appliance require a strong current flow or only a small current flow for it to work? For example, a 100-W light bulb uses energy at a higher rate than a 60-W light bulb. So the 100-W bulb requires a stronger current flow to make it work.

And what is a watt-hour?

A watt-hour [Wh] is a unit of energy, a method of measuring the amount of work done or produced. Household appliances and other electrical devices do "work" and require energy in the form of electrical current to do so. Utility companies typically bill for electric power based on kilowatt-hours [kWh] consumed [1 kWh = 1,000 watt-hours].

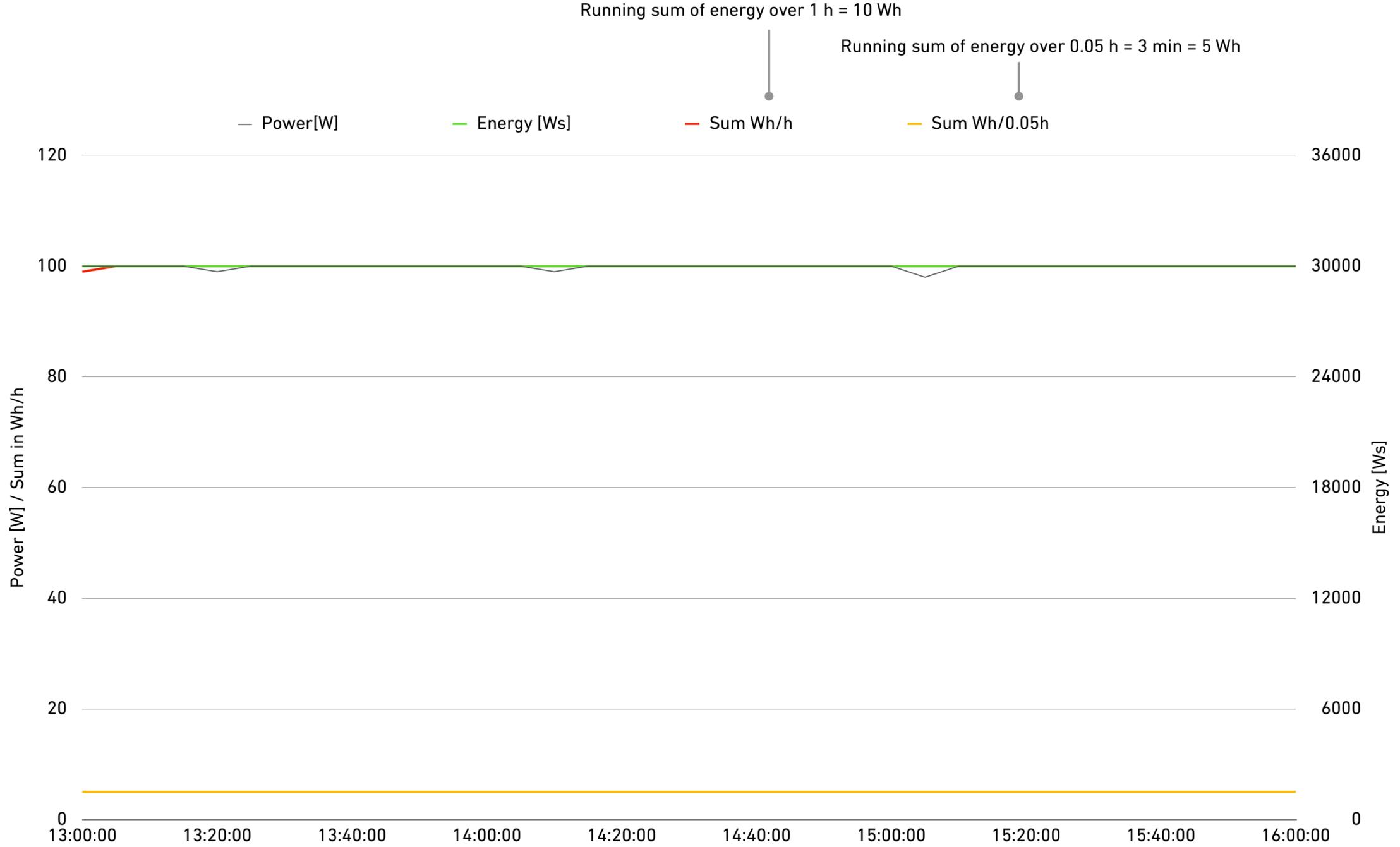
For example, a consumer uses 40 kWh [quantity] in the month of September [period]. One kilowatt hour [kWh] is 1'000 Wh. 40 kWh are therefore 40'000 Wh. One watt-hour [Wh] is equal to 3,600 watt-seconds [Ws].

What is the difference?

In short, (kilo)watt-hours or watt-seconds measure the amount of energy for a given period of time, and watts measure the power [speed] at a given time.

The myStrom switches each send an instantaneous value for the power in [W] and the amount of energy of the 30s period in Ws to the myStrom Cloud every 30s.

Example – load with constant power consumption (lamp) - raw data



Example

Alarm - "3 Min On
 Alarm "High Power
 Limit = 5 Wh
 Duration = 0.05 h
 Alarm after 3 min

Calculation

Consumer needs 100 W
 > 100 Ws/s
 > 36'000 Ws/h
 > 100 Wh/h

Alarm after 3 min
 $100 \text{ Wh} / 60 \text{ min} * 3 \text{ min} = 5 \text{ Wh}$
 (or smaller) as threshold value

Example – consumer with constant power consumption (lamp) - App

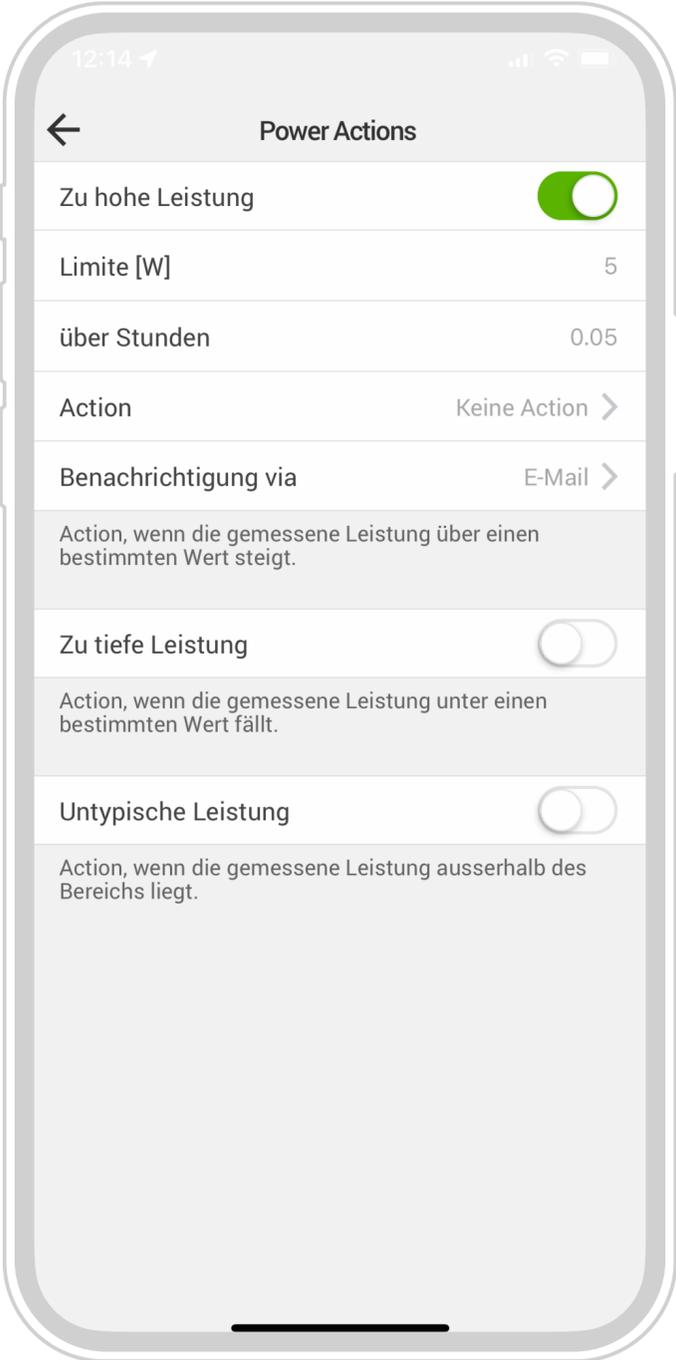
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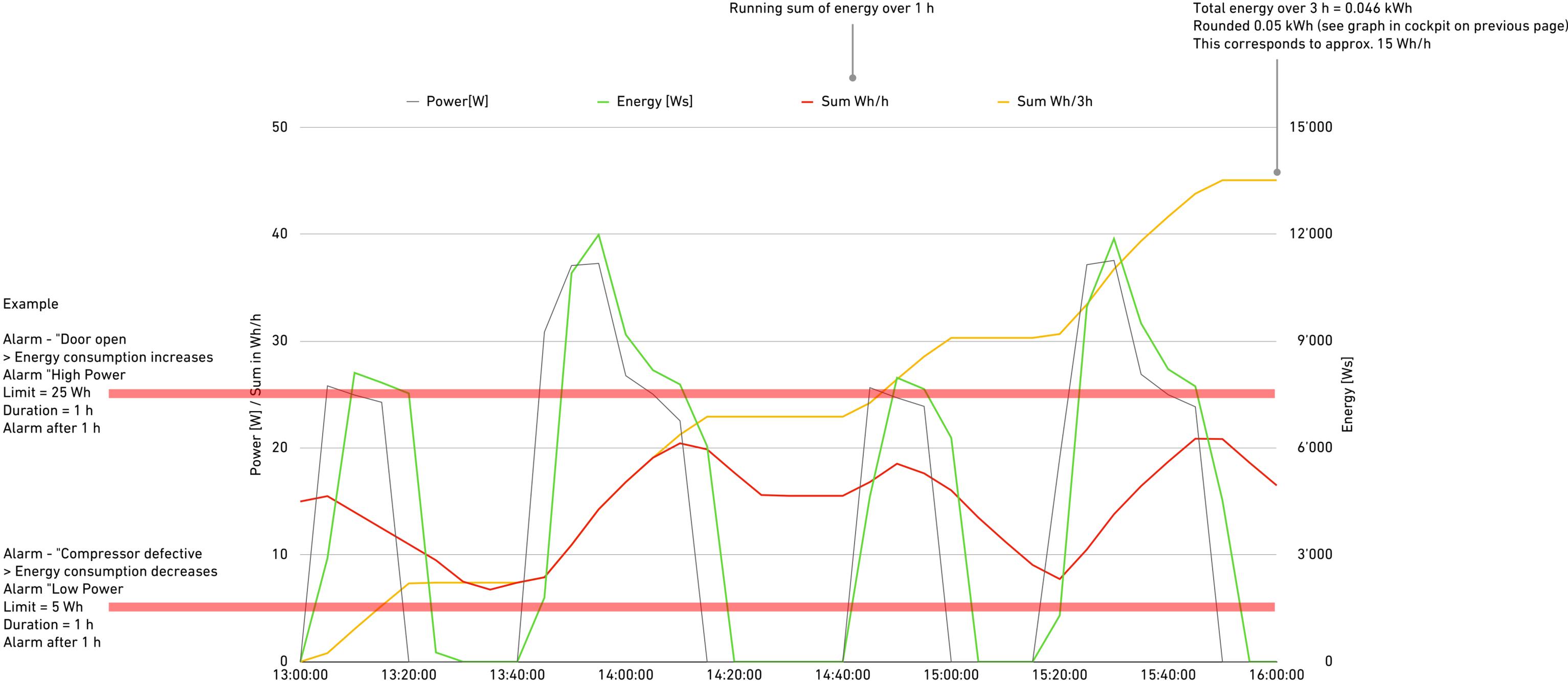


Example – Load with variable power consumption (refrigerator/freezer) – Cockpit view



Sum of energy over 3h = 0.05 kWh = 50 Wh

Example – Load with variable power consumption (refrigerator/freezer) – raw data



Example – Load with variable power consumption (refrigerator/freezer) – App

Example

Alarm - "Door open
> Energy consumption increases
Alarm "High Power
Limit = 25 Wh
Duration = 1 h
Alarm after 1 h

Alarm - "Compressor defective
> Energy consumption decreases
Alarm "Low Power
Limit = 5 Wh
Duration = 1 h
Alarm after 1 h

