SPECIFICATION FOR TIME OF USE

The Time of Use application is available as a **Pro function** via the **TESVOLT Energy Manager**. It can be used to implement different energy service strategies at different times.
Time series profiles are used in the decision tree for case-dependent strategy activation in order to select different energy services on a time-dependent basis.
Time series profiles can be used to create one or more times at which the selection is switched on or off.

A time series can cover the following periods:
- A single instance
- Every hour (every 0–60 minutes)
- Every day (12 midnight–11:59 pm)
- Every week (Mon. 12 midnight to Sun. 11:59 pm)
- User defined, every x seconds

Multiple time series profiles can be linked with the logical operators AND, OR e.g. daily from 9:00 am to 12:00 noon AND weekly from Friday 4:00 pm to Sunday 6:00 pm. Time series profiles can be configured in the energy management system and/or uploaded and downloaded as .csv files.

1. TIME-DEPENDENT USE OF STORAGE SYSTEM FUNCTIONS

Various functions of the storage system as well as installations connected to the circuit can be **controlled** and switched on and off by the Time of Use (ToU) application on a **time-dependent basis** in accordance with requirements and demand.
ToU is also part of our **Multi-use** application and can be combined with peak shaving (PS) and self-consumption optimisation (SCO).

Example 1
In a commercial operation that has both production systems and its own photovoltaic installation, Time of Use can be used for peak shaving (PS) during working days (Mon.–Fri.) and for self-consumption optimisation (SCO) on weekends (Sat., Sun.).

MO	TUE	WE	TH	FR	SA	SU

Battery storage system is used for peak shaving (PS)
Battery storage system is used for self-consumption optimisation (SCO)

Example 2
In a school, the state of charge (SoC) that is reserved for back-up power can be set at different levels throughout the week.
On weekends, for example, a larger share of the storage system can be used for self-consumption optimisation while still maintaining a limited buffer for unexpected power outages. On weekdays with heavier consumption, more back-up power can be held in reserve.

Benefit
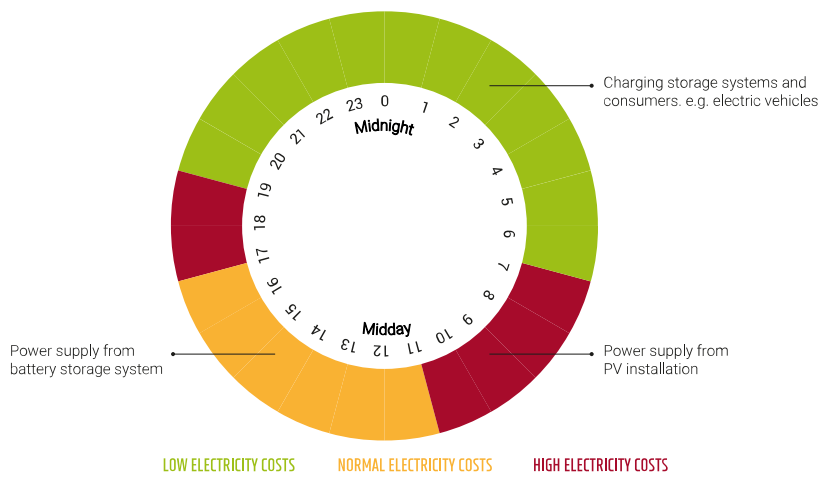Faster amortisation of the investment through combined revenue streams.

Time of Use can be used to set different time periods **in which the storage system is charged or energy is drawn from it.**

Example

In some cases, energy suppliers offer electricity at different rates depending on the time of day. If demand for electricity from the utility grid is high at a particular time, the expensive peak tariff applies, whereas the cheaper off-peak tariff applies at times of lower consumption. Time of Use can be used to manage the battery storage system so that it is charged during off-peak tariff times and used to supply power at peak tariff times.

Charging storage systems and consumers. e.g. electric vehicles

Power supply from PV installation

Power supply from battery storage system

LOW ELECTRICITY COSTS   NORMAL ELECTRICITY COSTS   HIGH ELECTRICITY COSTS

Benefit

Reduce costs with the difference between peak and off-peak tariffs (arbitrage)

Glossary

Energy service strategy

An energy service strategy defines functions to be executed for the actuator or actuator groups.

Case-dependent strategy activation (decision tree)

Time series profiles are used in the decision tree for case-dependent strategy activation, i.e. the selection of different energy service strategies on a time-dependent basis.

Actuator

An actuator refers to the generators and consumers, e.g. battery storage systems, PV installations, machines and so on, that are each individually connected to the circuit.

Actuator group

Several actuators can be combined in an actuator group so that they can be controlled together. Currently, combining is only possible with several TESVOLT batteries to form a logical battery.