Peak load shaving

Reduce your peak load with an electrical battery storage and optimize your electricity tariff

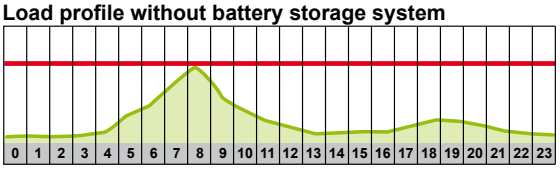
Background

The electricity bill is a cost factor that tends to be underestimated by many companies. However, it also offers an unexpected savings potential. Regardless of the annual power consumption, the maximum demand rate has a major impact on the electricity costs.

Challenges

- ✘ The electricity bill is made up of different components:
  - » fixed connection fee: not controllable
  - » energy rate: price per kWh, proportional to the overall power consumption in the billing period
  - » demand charge: price per kW, proportional to the highest output during the billing period, independent of the duration
- ✘ **Regardless of how energy-efficient your company is, you will be charged for the highest energy use you reach – the peak demand – in the whole billing period.**

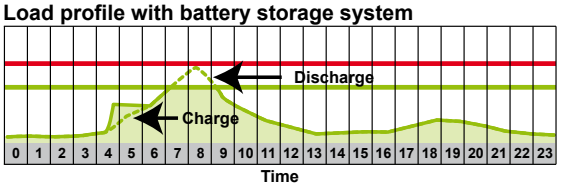
Load profile without battery storage system



Solution

Battery storage systems are already used in many companies to reduce the use of energy from the grid in peak load times – and, thus, to minimize the electricity bill for the whole billing period.

Load profile with battery storage system



All advantages at a glance

- ✓ full cost control
- ✓ no change in consumption behaviour necessary
- ✓ **very short payback period**

Higher savings potentials through atypical grid consumption

Companies with a low power consumption in times of high grid loads (so-called peak demand intervals) are often rewarded with notably lower grid fees by their network operator. The peak demand intervals are mostly in the morning and in the evening hours.

Which types of businesses are suitable?

Only companies which have a minimum annual consumption of 100 MWh or which are approved by their grid operator can benefit from these advantages.

Companies which meet the below factors are suitable for peak load shaving:

- short and/or high peak loads, e.g. due to:
  - » simultaneously connecting several electrical loads
  - » heavy machines (e.g. pumps or elevators)
- routine or sporadic load fluctuations, e.g.
  - » connecting electric vehicles
  - » periodic processes (e.g. milking robots)
- low power consumption during peak demand intervals (e.g. 5 – 8.15 pm)

<u>Typical businesses are:</u>

- manufacturing / craft businesses
- agriculture
- logistics
- industry and production
- companies with EV charging infrastructure

Energy storage systems pay off even faster by combining various uses, e.g. by maximising the share of self-consumption of generated solar energy and/or emergency power supply.

Examples

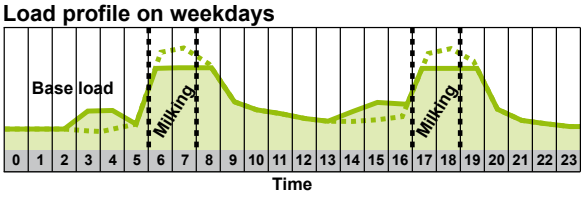
Dairy Farm

In order for companies to save money with peak load shaving, no exceptionally high power demand is required. Dairy farms do not have **a high annual electricity consumption**, but they need high amounts of power twice a day for their milking equipment. They pay the whole year for this power.

Parameters:

- annual electricity consumption: 180,000 kWh
- net energy rate: 0.77 c / kWh
- net demand charge: 13.61 € / kW / month
- annual demand costs: € 13,400

Load profile on weekdays



Profitability:

- total investment costs: € 55,900
- annual demand costs: € 5,300
- annual savings: € 8,100

✓ revenues after 20 years: € 162,000

✓ **payback period: <7 years**

✓ additional use available,
e.g. emergency power supply

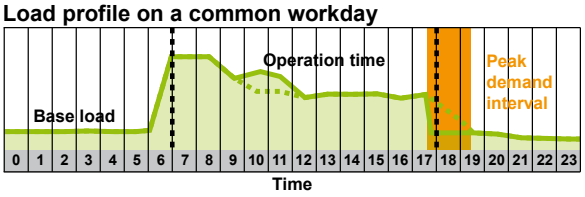
Steel and metal construction companies

Companies with a **high power consumption and high peak loads** (e.g. electric furnace) are best suited for minimizing grid fees through atypical grid consumption. With a battery storage, the load profile can be adjusted to meet the required criteria.

Parameters:

- annual electricity consumption: 380,000 kWh
- net energy rate: 0.15 c / kWh
- net demand charge: 12.38 € / kW / month
- peak load interval (spring): 5.45 – 7.15 pm
- annual demand costs: € 17,800

Load profile on a common workday



Profitability:

- total investment costs: € 55,900
- annual demand costs: € 3,000
- annual savings: € 14,800

✓ revenues after 20 years: € 296,000

✓ **payback period: <4 years**

✓ additional use available,
e.g. in connection with a solar PV system

Your solar and storage partner:

Consult us – free of charge and without obligation. We are your partner for:

» individual profitability calculation
» detailed project planning
» professional installation with quality components.

We are looking forward to your call!

Basis for both calculations: costs for maintenance and insurance: 2 % of the annual investment costs, no change of electricity tariff, no financing or interest effects, case 2: no change of peak demand intervals during the seasons