
# Integrated storage and EV charging solutions

ALFEN
POWER TO ADAPT

# Integrated solutions

## Fast EV charging combined with energy storage

Fast charging of EVs is increasingly creating stress on the electricity grid. Addressing this requires a combination of capacity upgrades and (temporary) energy storage solutions. While upgrades are often costly and take years to realise, storage solutions can be mobilised today.


Alfen's fully integrated storage and fast EV charging solution is 'plug and play', allowing it to be rapidly deployed to provide new or additional charging capacity at various locations. Offering maximum flexibility it can be relocated, as desired, to any site with an immediate demand for fast EV charging.

Alfen combines its energy storage system and smart grid experience to equip fast charging stations with peak shaving capability. Business cases can be further improved by using the storage for energy trading when capacity is not being fully utilised for EV charging solutions.

## Regular EV charging combined with energy storage

Increasingly, hubs with a large number of EV chargers grouped together are being deployed in locations such as offices, shopping malls, stadiums, parking garages and exhibition centres. The simultaneous charging of multiple EVs this way puts significant pressure on the local electricity grid connection because it increases peak loads.

Alfen's EV charging equipment can help to mitigate this through load balancing, with chargers connected in a network and real time available power capacity distributed optimally across all EVs charging at any one time. The additional integration of an Alfen energy storage system allows full mitigation of peak loads, allowing maximum output at each charging point, and storage, and optimal consumption of, locally generated renewable energy.


Integrated system combining rooftop solar, EV charging and energy storage at a football stadium

# Highlights

## Any fast charger

Alfen's energy storage is charging technology agnostic, to allow integration of any manufacturer's fast charger.

## Quickly add EV charging capacity

Mobile energy storage solutions for charging applications which allow rapid deployment of additional EV charging capacity wherever (temporary) charging infrastructure is required, regardless of local grid capacity limitations.

## Enabling new revenue streams

Multiple business cases with estimated pay-back times of 4 to 7 years, either with a directly owned or rented storage system.

## Extremely flexible, easy to operate and safe

Turnkey solutions that are easy to deploy, integrate into the local system and operate. The systems are safeguarded by best-in-class safety features based on Alfen's expertise and experience.

## Always accessible and easy integration

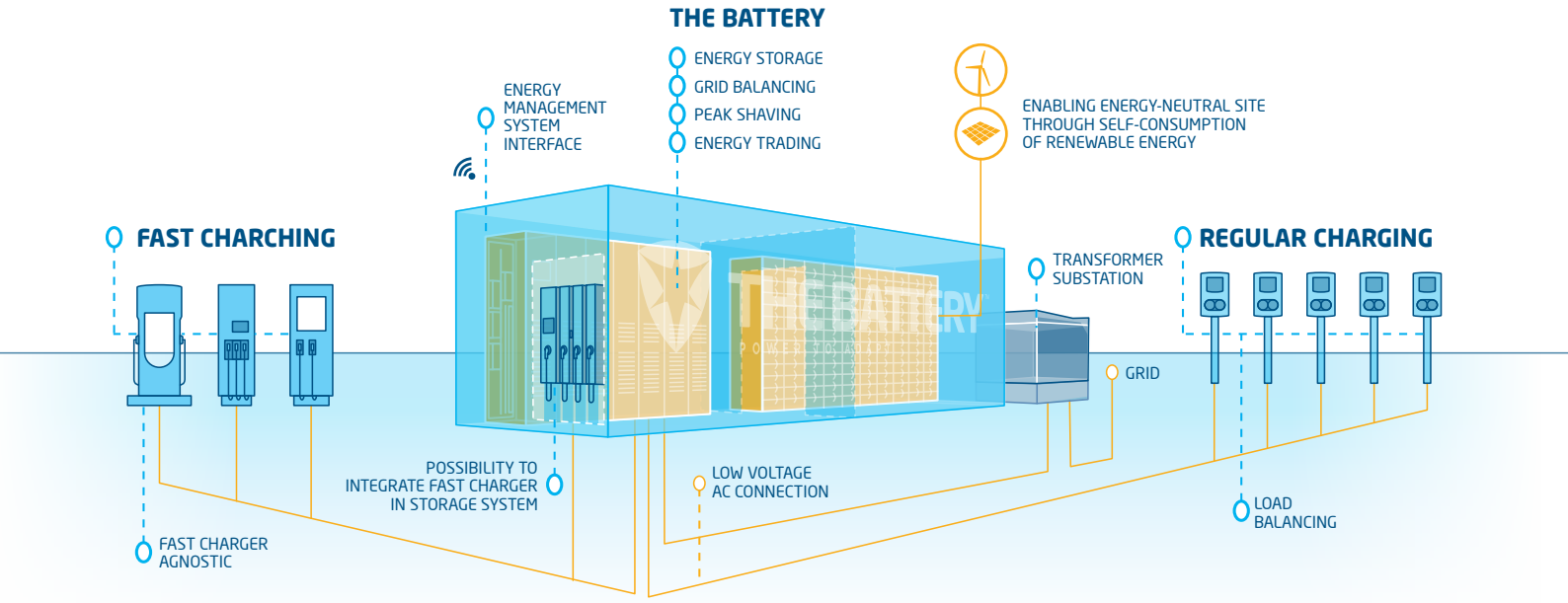
The 'Alfen Connect' module enables remote monitoring and management of the full system and its individual components, with the associated data driving continuous insight. The module can be easily integrated into customer management systems.

## Service anytime, anywhere

Alfen's high quality service program has wide geographical coverage and includes remote support, training, IT integration of back-office/payment platforms and branding services (display, labeling, wrapping).

## Unique experience in both charging & storage solutions

Extensive engineering experience of EV charging stations and energy storage development based on more than 80 years' of experience and innovation in the electricity grid



# Selected project examples

## BMW mobile fast EV charging & energy storage system

Alfen supplied an integrated energy storage system of 1.1MW which incorporated an ultrafast charger for BMW Group's EV prototypes. The storage system is based on 34 BMW i3 car batteries and ensures maximum available power for the charging EVs, irrespective of the capacity of the local power grid. One of the benefits of BMW i batteries is that these make the system transportable. This addresses the increasingly imminent problem of concentrated fast EV charging in relation to the available grid capacity.


## Integrated solution for the Cars Jeans stadium

Alfen leveraged its broad expertise to provide a combination of charging points, energy storage and smart grid solutions to complement existing solar panels at Cars Jeans stadium in the Netherlands. The solution allows solar power to be stored and traded when not required by the stadium, and for EVs to be optimally charged during a stadium event. The configuration greatly reduces strain on the local grid.

## Sustainable fast charging highway station

An EV fast charging station on a highway was equipped with solar panels and an energy storage system supplied by Alfen. The combination of sustainable elements decreased peak loads and optimised use of locally generated solar energy, with any excess stored until required. The result is a sustainable charging station delivering optimal revenue.

## Temporary solutions

Alfen supplies temporary integrated storage and charging solutions for various locations and events. Examples of these include:

- An EV-charging plaza powered by Aflen's mobile energy storage solution for the international Film Festival in Rotterdam, the Netherlands
- An integrated energy storage solution for knowledge and innovation centre, ElaadNL's, EV charging test site in Arnhem, the Netherlands, providing ElaadNL with full testing capabilities around smart EV charging
- A fully integrated storage and EV charging hub for a BMW event in the Netherlands which connected 20 EV chargers with a mobile energy storage system


# Alfen, at the Center of the Electricity Grid

## Enabling the Energy Transition

Alfen's unique combination of EV Charging, Energy Storage and Smart Grid Solutions make it ideally positioned as an integrated solutions partner. Its thorough understanding of the grid, based on 80 years' experience, means that customers can be confident of receiving solutions that are both optimal for their own needs and the grid, therefore supporting the transition to the energy grid of the future.

An EV pioneer, Alfen's first charging station was developed in 2008, with over 50,000 Alfen charge points now operational worldwide. From 2011 onwards, Alfen's energy storage solutions are tried and tested across a full range of applications. Together, these technologies and Alfen's experience are indispensable for the large-scale integration of electric vehicles into the grid.

### Transformer substations

A market leader in substations for grid operators, industrial corporations and the horticultural industry. Substations connect charging hubs and storage solutions to the grid.

### Energy storage

Storage solutions for load balancing, trading and autonomous electricity grids in combination with renewable energy such as solar and wind.

### EV charge points

A complete range of charge points for domestic, business and public locations, with unique solutions for optimising the grid connection, for example by load balancing in combination with storage.

### Electricity grids

End-to-end solutions in the field of high and medium voltage grids.

### Grid automation

A large range of functionalities for remote monitoring and management.

### Management & Maintenance

Comprehensive service and maintenance support.

# Contact

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