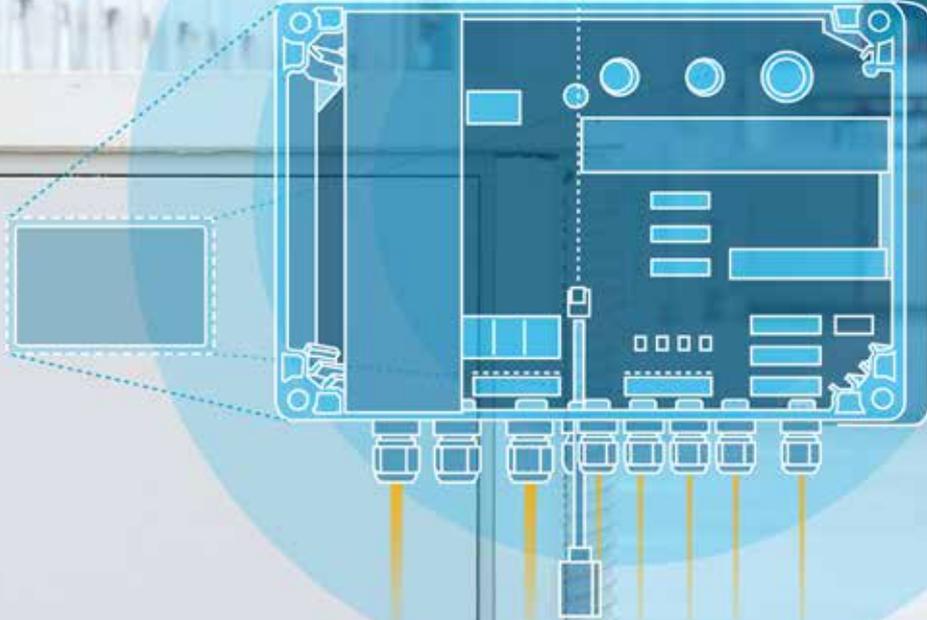


CONNECTING THE GRID TO
THE INTERNET OF THINGS



Alfen Connect™ Grid Automation



ALFEN
POWER TO ADAPT

Alfen Connect

Connecting the grid to the Internet of Things

Alfen started its grid automation offering (Alfen Connect) in 2008 with the connection of its charging equipment for electric vehicles to the internet. Since then Alfen Connect has been expanded to remotely monitor and control substations and energy storage systems. Currently over 35.000 Alfen assets are connected to the Internet of Things.

Smart grids of the future

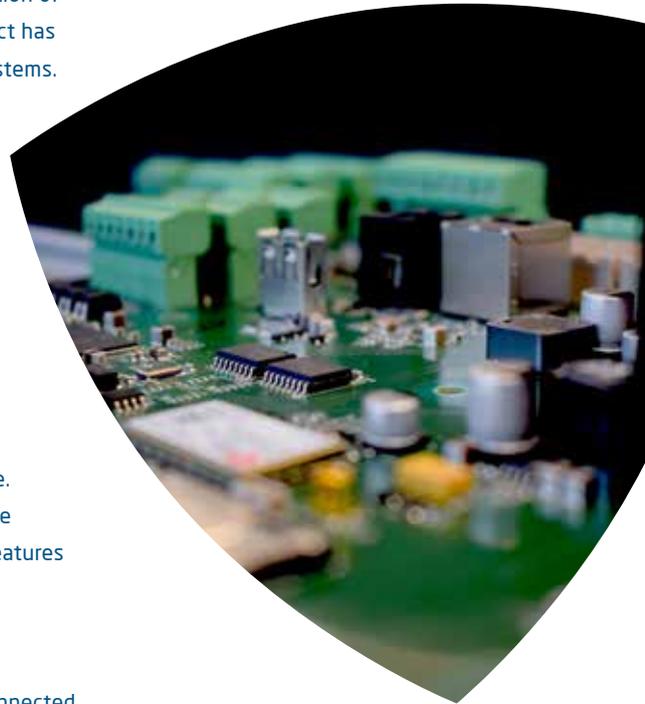
The energy transition means power flows are changing. Being able to gather data about these flows allows grid operators to monitor effects on the grid, anticipate potential bottlenecks, and respond to them in advance. Having instantaneous insights at different nodes within the electricity grid is a precondition for many smart grid developments.

Insights for industrials

For industrial customers, the automation of substations also plays an important role. Continuous insights into the performance of transformers allow for improved service levels, and real-time monitoring. For example, temperature and fire-detection are features that insurance companies find increasingly important.

From data to information

Our online web application allows for real-time monitoring and control of all grid-connected infrastructure. This includes secondary substations, energy storage systems and charging equipment for electric vehicles (EVs). Large amounts of data are generated about grid loads, energy storage usage and electric vehicles connected to the grid. This data is being visualized and can be used to manage assets remotely. It enables new applications such as EV charging hubs and vehicle-to-grid applications and the roll-out of improved service models.



Functions of Alfen Connect

Secure data and end-to-end infrastructure management platform

Real-time management and monitoring of critical infrastructure (end-to-end covering e.g. substations, energy storage and EV chargers), including configuration management, asset management, real-time measurements and third party integrations.

Insights in rapidly evolving power grids

Preparing for the future through metering of substation condition, power quality and overall grid quality.

Real-time short circuit indication and earth fault detection

Localize and address issues as soon as possible in the event of unexpected outages.

Manage and control public lighting

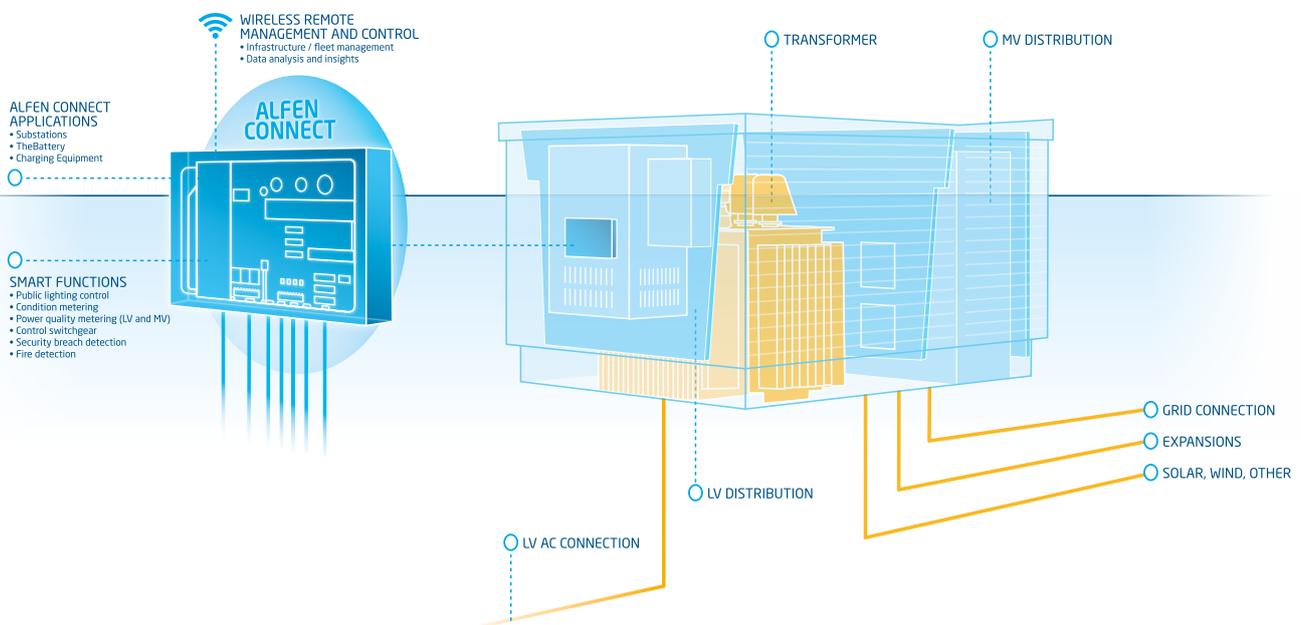
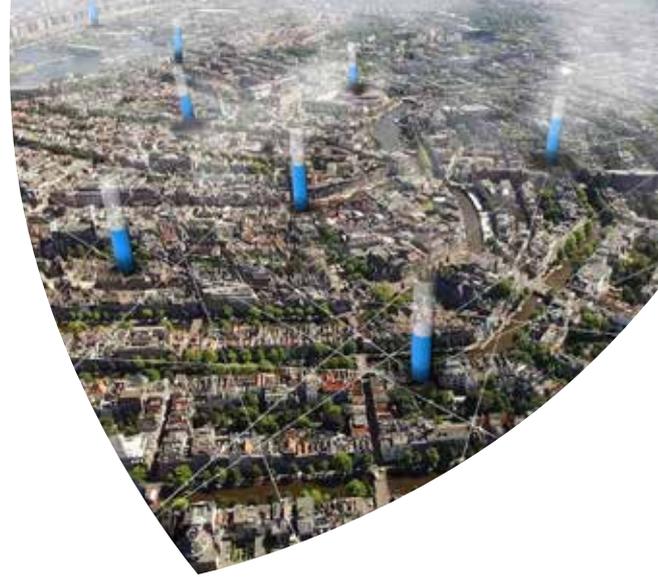
Flexible control of public lighting programs and instantaneous insights in large amounts of data allow for optimal maintenance schedules and fault detection.

Smart hardware and connectivity

Fire detection, remote control switchgear, access control with user management, alarm and warnings overview, real-time monitoring, gateway to third parties.

Cost effective installation and configuration

Compact size, light-weight and plug & play installation makes the Alfen Connect device easy to implement in many assets.



Applications of Alfen Connect

Substation Connect

Alfen Connect is a Distribution Automation device that provides grid operators with insights in the power grid. Potential bottlenecks can be anticipated, and can be responded to in advance. Constant measuring enables operators to conduct preventative maintenance, and, in the event of unexpected outages, localize and address issues as soon as possible. For industrial customers, the automation of substations also plays an important role. Continuous insights into the performance of the grid allow for improved service levels, and real-time monitoring.



TheBattery Connect

Alfen Connect is used as energy management system for Alfen's energy storage solution (TheBattery). The platform integrates the elements of a local system: solar PV, wind turbines, energy storage, grid connection and more. It allows clients to access TheBattery, both wireless and through their own IT systems, for all storage applications: trading, frequency control, peak shaving and micro-grid usage. Alfen Connect also includes a backend for remote insights in system performance, data logging and communication of software updates to TheBattery.

Charge points Connect

Alfen Connect enables the connection of a large number of charge points for electric vehicles (EVs) to a central platform for asset management and transaction services (either Alfen's proprietary platform or clients' own platforms). In addition, it measures grid capacities to provide insights for load balancing at EV charging plazas and enables vehicle-to-grid developments.



Alfen, at the Center of the Electricity Grid

Enabling the Energy Transition

With smart grid solutions, energy storage systems, charging stations for electric vehicles and a diverse portfolio of other products, systems and services, Alfen has a central and connecting role in the energy grid. We are building the electricity grid of the future: reliable, sustainable and innovative.

Transformer substations

Market leader in substations for grid operators, industrial corporations and the horticultural industry.

Energy storage

Solutions for load balancing, trading and autonomous electricity grids in combination with solar or wind energy.

EV charge points

Complete range of charge points for domestic, business and public locations, and unique solutions for e.g. load balancing in combination with storage.

Electricity grids

Complete solutions in the field of high and medium voltage grids.

Grid automation

Large range of functionalities for remote measuring and management.

Management & Maintenance

Full maintenance and service offering.



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