SMART CHARGING
Dynamic Load Management

CONNECT.   VISUALISE.   OPTIMISE.

# Dynamic Load Management with EisBaer Software.

Making simultaneous Electric Vehicle (EV) charging easier, faster and cheaper.

EV drivers want to charge their vehicles faster, especially in public and semi-public spaces, while charging service providers want to reduce their costs. To facilitate these demands EisBaer Scada have developed a software system that will meet the needs of both consumer and provider. It's groundbreaking Dynamic Load Management (DLM) offers smarter charging controls as well as a seamless integration into any new or existing building automation system.

With EisBaer Scada's DLM, more EV's can be charged simultaneously and in less time, whilst still using the available power more efficiently, as well as balancing the load amongst the EV charger. This software also manages the usage of loads, eliminating any unnecessary need for costly installation upgrades. The consumer can monitor their energy consumption, all completely independent of the vehicle manufacturer.

Without Dynamic Load Management.

The intermittent power consumption of electric cars can lead to bottlenecks in the supply capacity and exposes the power grid to strong fluctuations that pose a risk to security of supply.

>70 A

kWh

OVERLOAD

96 A!

24 A
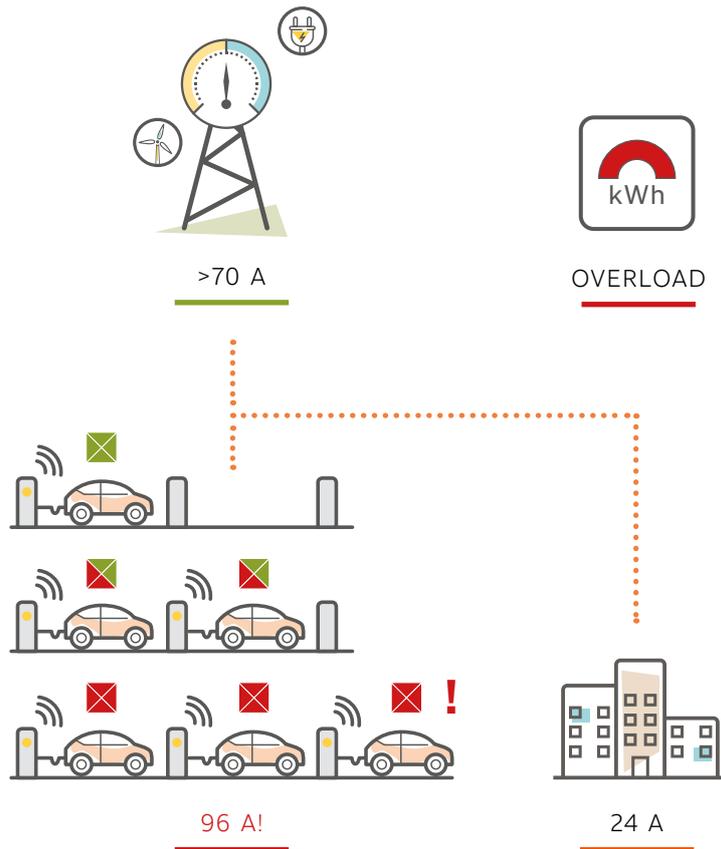
Common problems that are associated with the modern Electric Vehicles include:

- Multiple charging points are usually calling for an upgrade of cable, transformer etc.

- Large-scale deployment of electric vehicles (EVs) is going to happen in next 5-10yrs.

- Upgrade – costing tens of thousands of euros.

- Chargers must be manually monitored and controlled by the user.

Dynamic
Load management (DLM)
Optimised power
requirements.

With EisBaer DLM you can optimise your energy consumption depending on the power requirement without overloading the feed-in. With EisBaer DLM it is possible to operate 4-10 times more charging points, or conversely you can get by with a quarter to a tenth of the nominal connected load.

70 A

DLM Controller

34 A

86 A

24 A

6 A
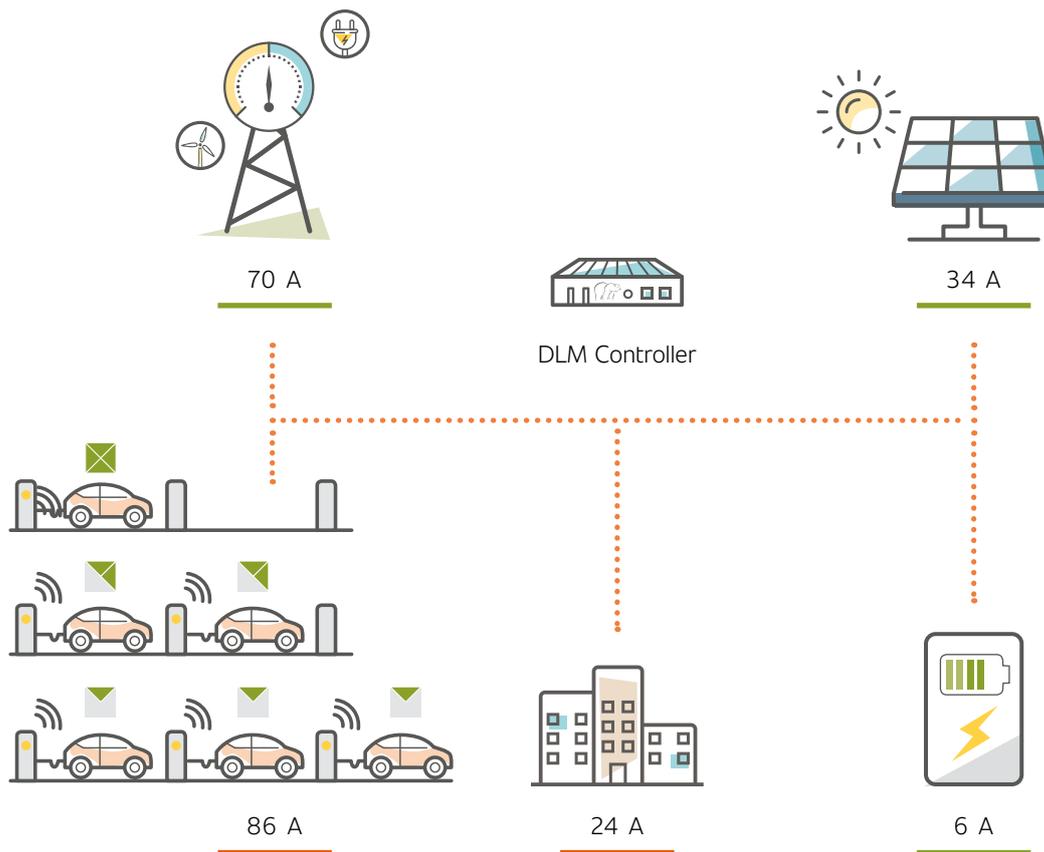
ADVANTAGES

- Restricting the total charging load protects the local grid – eliminate a risk of overloading even when multiple chargers are being used simultaneously.

- Sharing the charging load cuts costs for the required upgrade of electricity infrastructure.

- Total integration in the existing building automation system.

- Integration of solar generator and battery storage systems.

- Chargers can be monitored and controlled by end customer.

Dynamic load management controller
Static Setpoint *(without measurement).*

Power

Main power

Power used
by remaining
consumer

Power
reserved for
chargers

Reserved power is distributed
to the chargers

Time
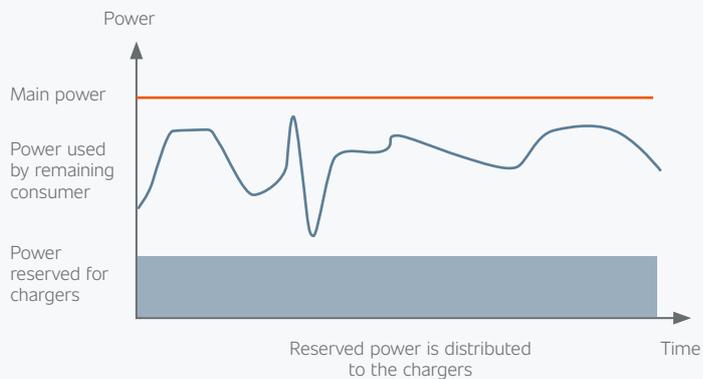
**Dynamic load management
with static setpoint.**
By specifying a static current value
at the feed for the charging park, it
should be ensured that the connection
value in the form of mains protection
is not exceeded even by the other
consumers in the building. To ensure
this, a safe, low power value is selected
for the charging park.

Building consumption

Grid feed

DLM Controller

Switch

Charging park
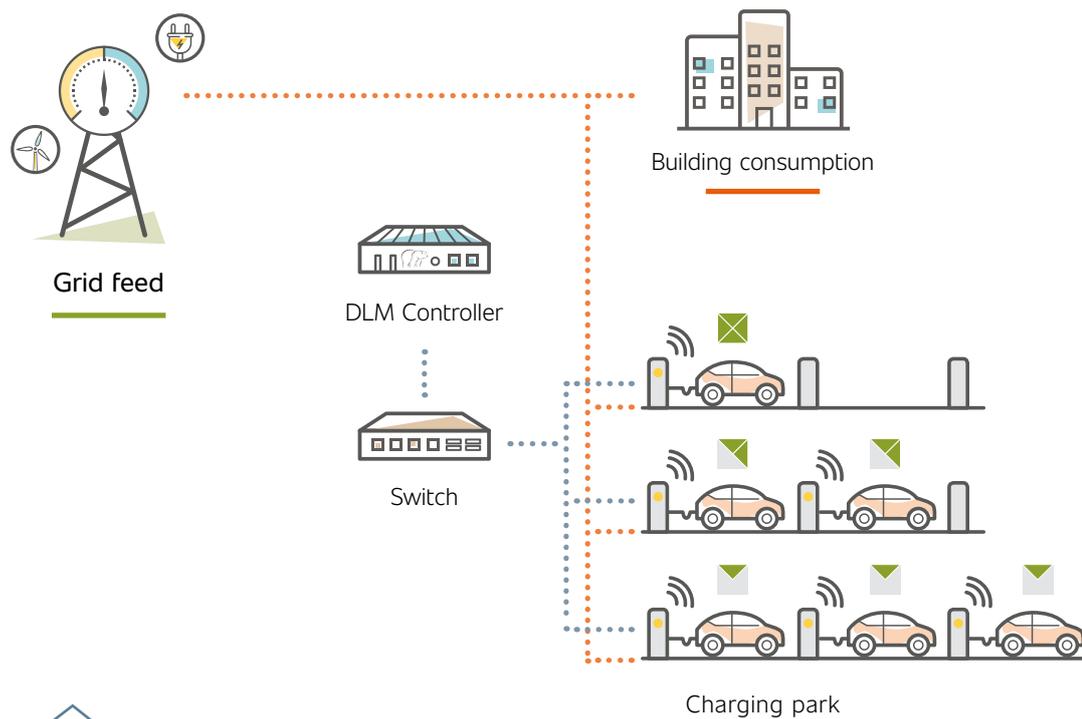
MATERIAL LIST

Static for 6 charging stations

• 1 x DLM Controller 6

• 1 x Network Switch, 10 ports

• 6 x AC Chargers, Typ 2, 11/22 kW

DETAILS

- The dynamic load management controller communicates with the charging stations via OCPP (OpenChargePointProtocol) or optionally via Modbus communication.

- The local OCPP backend of EisBaer handles the authentication via RFID and the logging of all charging processes for each user and for the system operator.

- Speed option: Accelerated charging by constantly redistributing unused charging currents to other charging points with higher energy requirements. The result is significantly faster charging than with classic static systems.

- The integrated calendar function enables timetable-based charging, release and reservation of charging points, including connection to external systems, e.g. HRMS or ERP.

The local EisBaer OCPP backend allows an unlimited number of AC and DC charging points from all manufacturers (regardless of model) to be operated in one system if they support OCPP 1.6j or 2.01.

Dynamic load management controller
Double dynamic control through measurement and dynamic setpoint

Power

Mains

Power available for eMobility

Power used by remaining consumer

Photovolitaic

Available power is distributed to the chargers

Time
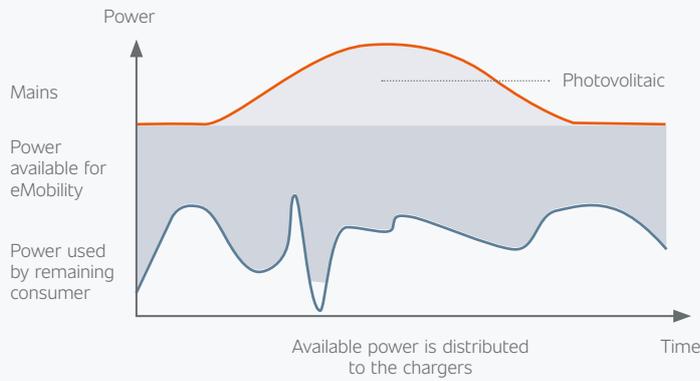
········ Grid feed

········ Communication

689,06

Grid feed

689,06

PV

Storage

689,06

DLM Controller

Switch

Building consumption

Charging park
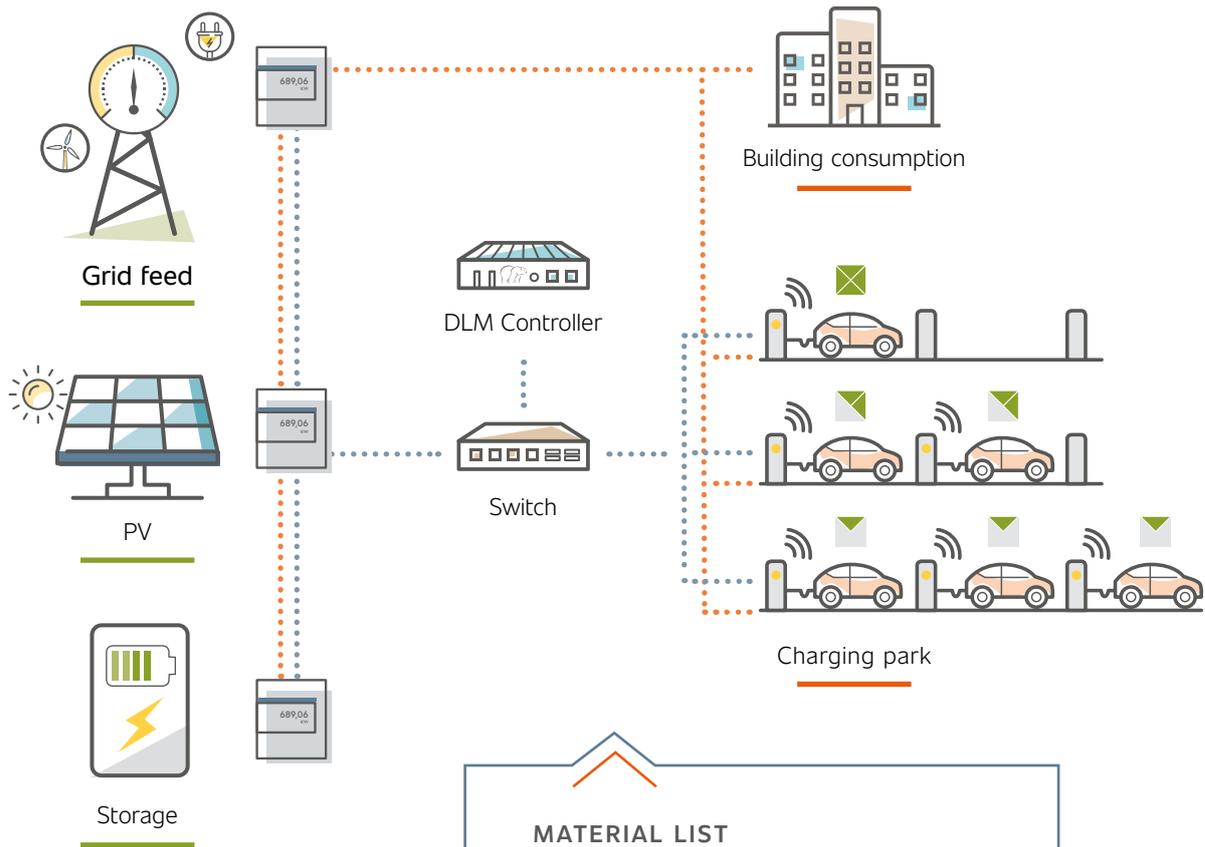
MATERIAL LIST

Dynamic for 6 charging stations

- 1 x DLM Controller 6
- 1 x Network Switch, 10 ports
- 6 x AC Wallbox, Typ 2, 11/22 kW
- 1 x energy meter Modbus TCP

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- The integrated calendar function enables timetable-based charging, release and reservation of charging points, including connection to external systems, e.g. HRMS or ERP.

- Metres are installed in the system to accurately measure the flow of electricity to each unit, this helps the DLM controller calculate the power available for each charging station.

- Metering information can be sent directly from the DLM controller, e.g. via Modbus, M-bus, KNX, Bacnet etc.

- PV systems and storage can be integrated into the charge control. These may be directly connected, depending on the product, e.g. via Modbus TCP. If the selected hardware does not support this, then the installation of a meter would be required.

The local EisBaer OCPP backend allows an unlimited number of AC and DC charging points from all manufacturers (regardless of model) to be operated in one system if they support OCPP 1.6j or 2.01.

Load management.
General structure.
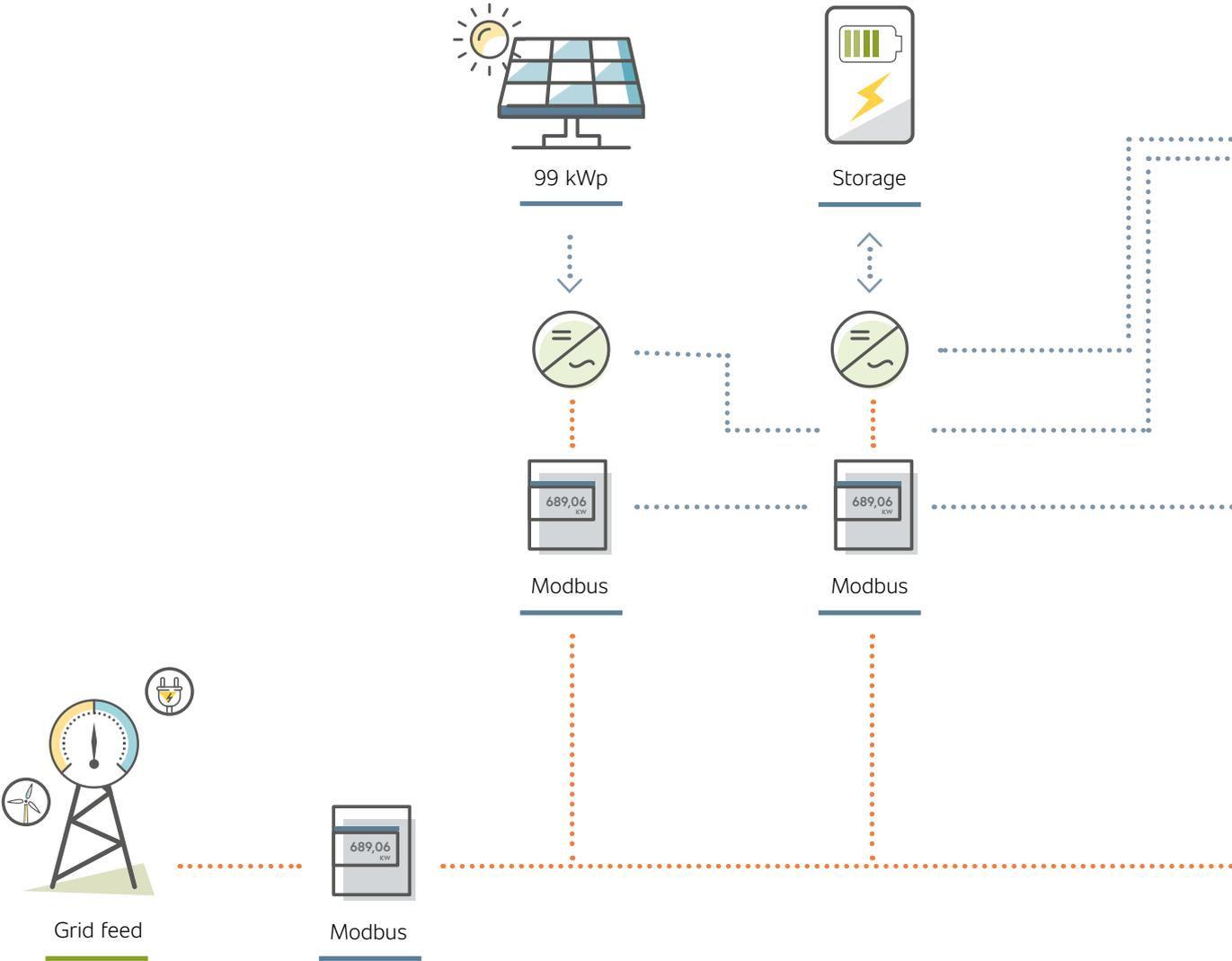
99 kWp

Storage

689,06 kW

689,06 kW

Modbus

Modbus

Grid feed

689,06 kW

Modbus

- PV systems and storage can be integrated into the charge control. These may be directly connected, depending on the product, e.g. via Modbus TCP. If the selected hardware does not support this, then the installation of a meter would be required.

- When using charging stations with integrated measuring equipment, no additional meter are required.

- The Load Management Controller communicates with the charging stations via an on-site network infrastructure. There must be one network connection for each charging station plus one extra connection for the controller.

- For remote maintenance or diagnostics an internet connection is required. Optionally, this can be realized via a mobile radio router.

- The configuration of the load management must always be adapted individually to the local conditions. The proposed solution provides the controller hardware and the basic software for this purpose. The management system is specifically designed as instructed by the client with final costs determined by the approved designs.

- The installation and configuration of meters, network and charging stations is carried out by the customer.

Remote Access

Switch

DLM Controller

Chargers

High Power Charger
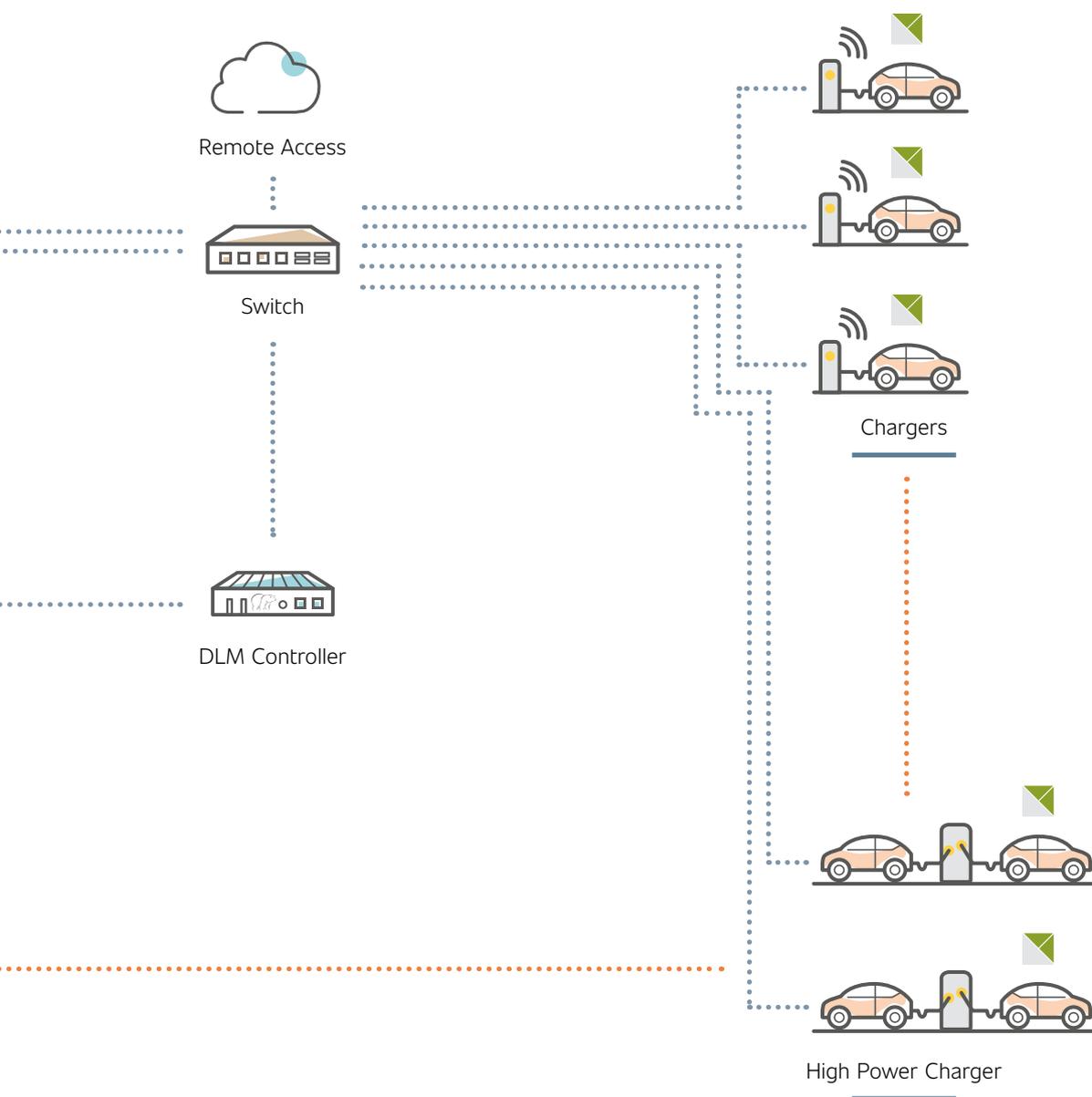
Cascading.
Support for complex structures.

Grid feed

MSB

DB 1

DB 1.1

Chargers

DB 1.2

Chargers

Solar generator

DB 2

High Power Ladestationen
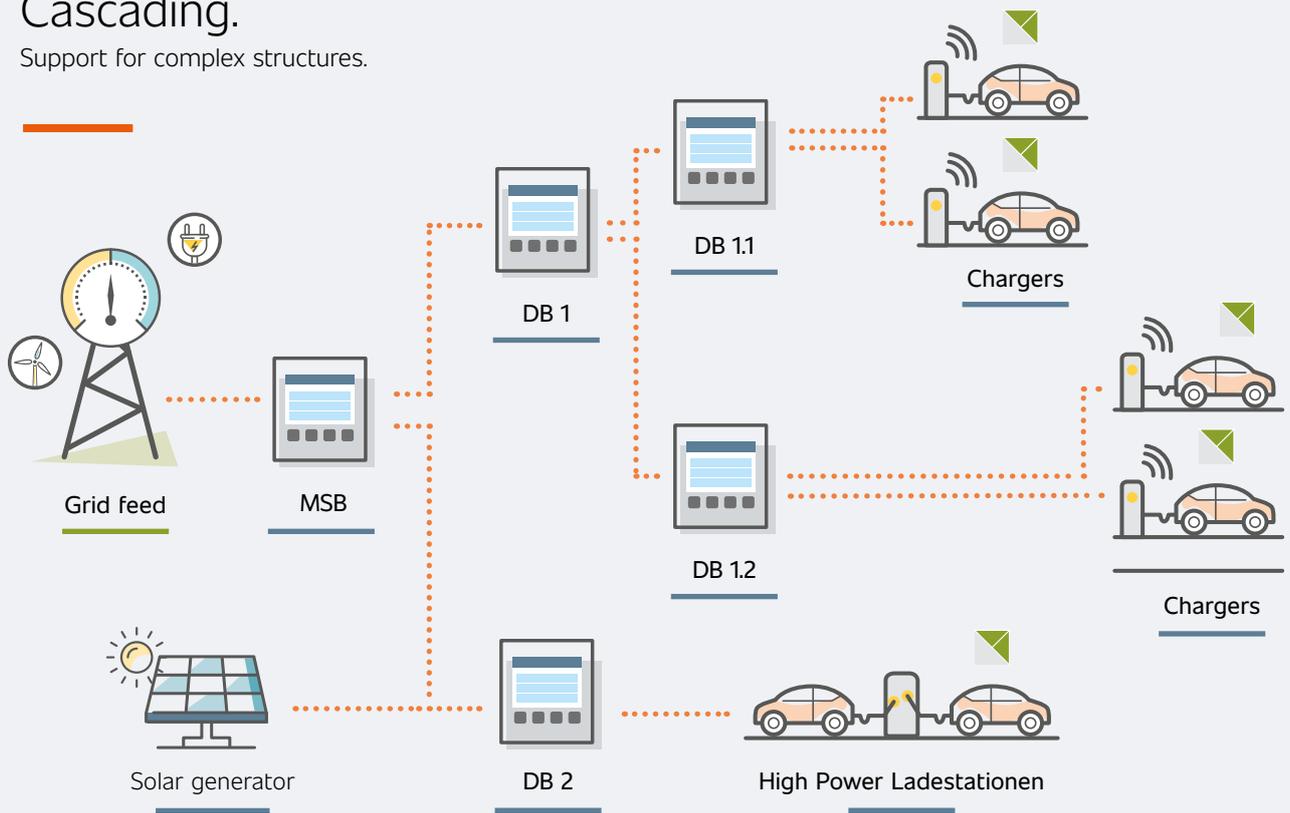
OCPP Proxy.
Connection to billing systems (optional).

Charger 1

Charger 2

Charger 3

Charger ...

LOKALES
ENERGIE-
MANAGEMENT

Scheduler
Charge planner
Reservations

DLM Controller

AI
Artificial intelligence

OCPP
PROXY

Backend (CPO) 1

Backend (CPO) 2

Backend (CPO) 3

Backend (CPO) ...

3rd party billings systems
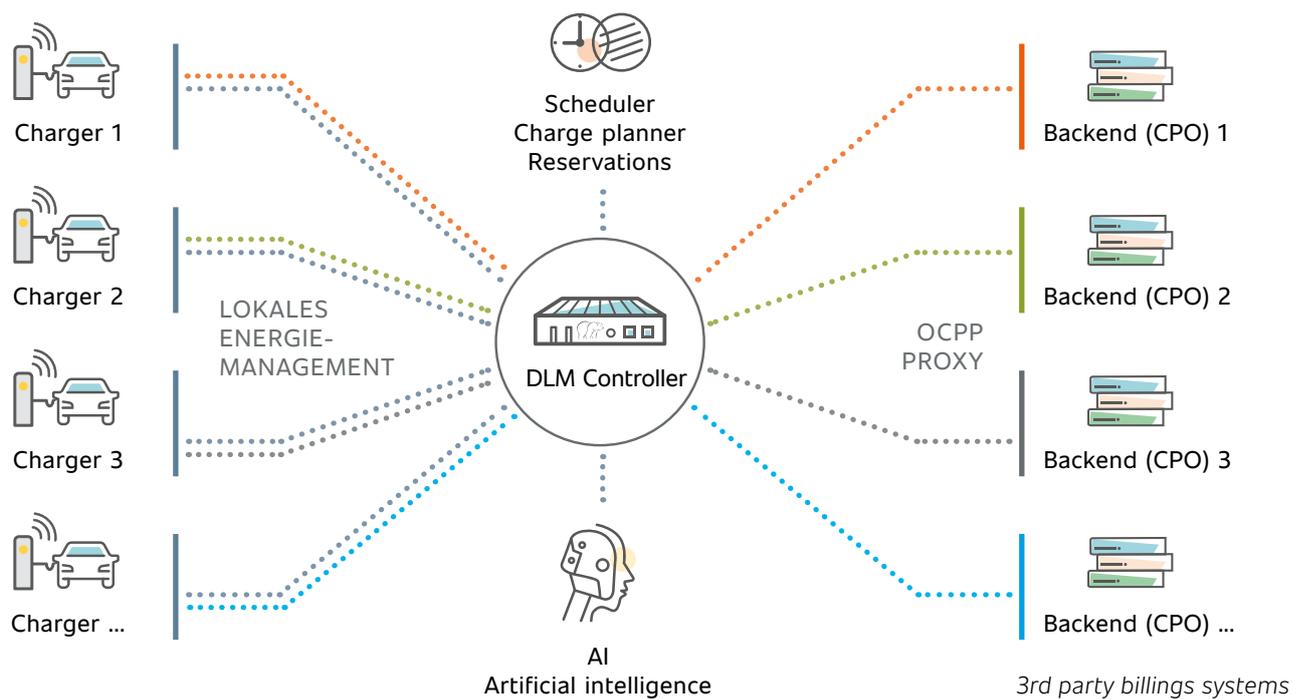
EisBaer
your benefits.

YOUR BENEFITS

- Local OCPP backend (1.6 + 2.01)
- OCPP proxy
- no running costs
- Local logging (per charging point, per RFID card)
- E-Mail notification
- RFID card management
- Prioritisation (charging point or RFID card)
- optional personalised RFID cards with hologram
- Calendar control (release + reservation)
- App operation of the charging point
- make and model independent
- optional turnkey delivery
- „solar charging only" option

EisBaer ORDER EXAMPLES

Double dynamic load management for 12 charging points (up to 60 charging points)

		item no.
1 x	DLM Controller 6 (up to 6 charging points)	0400-60
1 x	DLM Controller software extension for 6 additional charging points	0400-61
12 x	Charging station 11/22kW (optional)	
12 x	Commissioning and programming of each charging point based on OCPP, ready-to-use pre-installation in the office, including charging test (optional)	0400-63
12 x	Personalised RFID charge card	0400-64
1 x	Network analyser with network connection	0400-65

Double dynamic load management for 60 charging points (up to 999 charging points)

		item no.
1 x	EisBaer SCADA 3 project license Enterprise	0311-01-E
1 x	EisServer III – 19" 1U, incl. Windows Server Essentials	0504-03
60 x	Charging station 11/22kW (optional)	
60 x	Commissioning and programming of each charging point based on OCPP, ready-to-use pre-installation in the office, including charging test (optional)	0400-63
60 x	Personalised RFID charge card	0400-64
1 x	Network analyser with network connection	0400-65

EisBaer Software

is designed for different areas of application.

OFFICE BUILDINGS

- With EisBaer software you can control your charging stations and keep an eye on your energy consumption – completely independent of the vehicle manufacturer and model.

- Complete integration into the existing building automation system.

- With EisBaer's LNOT™ (Local Network of Things), our solution works directly on site. This is how we guarantee maximum stability and secure data exchange.

- All electric vehicles are charged with the maximum available power and use the available total energy optimally through phase-precise distribution.

- Prioritisation of charging station possible through RFID card identification - e.g. office worker (lower priority) and/or salesman (higher priority).

Optionally, we offer the delivery of personalized RFID cards and ready-to-use charging points.

APARTMENTS

- Electric car drivers unlock the charging station with an RFID, charging card or key fob and start the charging process.
- Usage can be allocated to the respective apartment owner/tenant.
- Facility manager has full access and control over charging process.
- EisBaer Scada easily captures all charging data. These records are easy to export.

CARPARKS

- Full integration in the existing lighting control and car park automation system.
- EisBaer DLM enables you to combine the grid power with the PV system of your car park, charge electric cars environmentally friendly and optimise the self-consumption of your car.
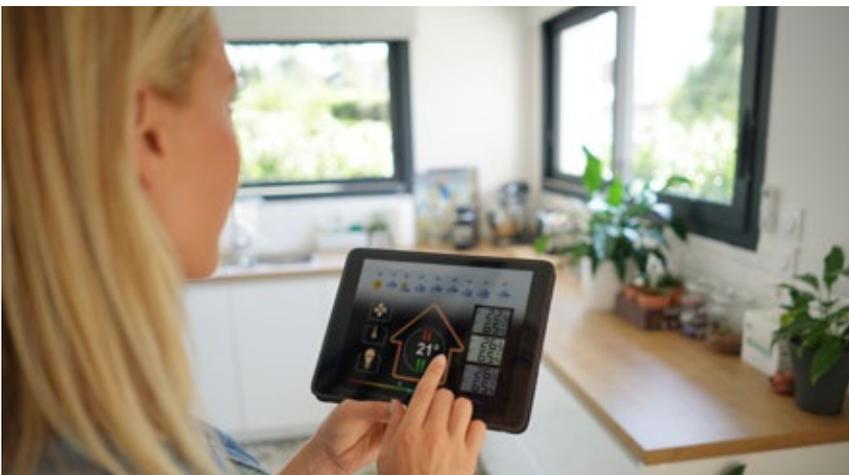

RESIDENTIAL

- Sustainably charge your electric car at home by simply connecting to your solar panel (PV) or its battery storage system.
- Full monitoring and control through integration into any existing or future smart home system.

HOTELS

- Electric car drivers who are looking for a way to charge their vehicle – opens up a new guest segment.
- The EisBaer dynamic load management controls the charging power of the charging stations depending on the total load of the building. This ensures that all charging stations are supplied with the highest possible power and at the same time the total load of the house connection is never exceeded.
- The data from DLM can be directly transferred to a guest's account via the built in EisBaer PMS interface to the hotel room booking system and made available for billing or just for users overview.
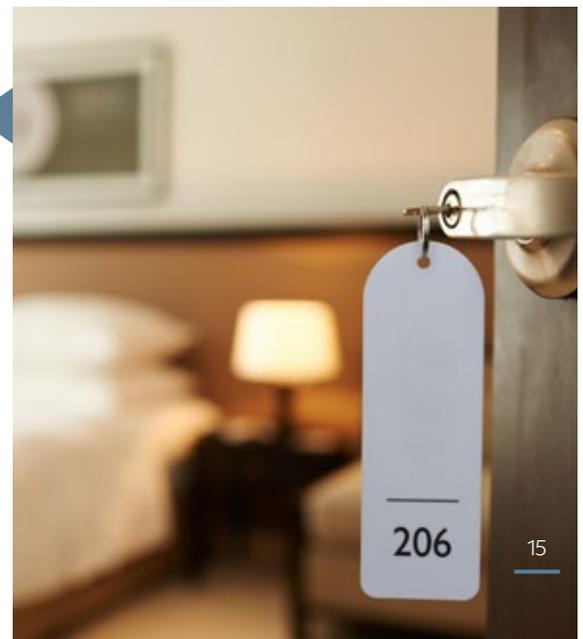
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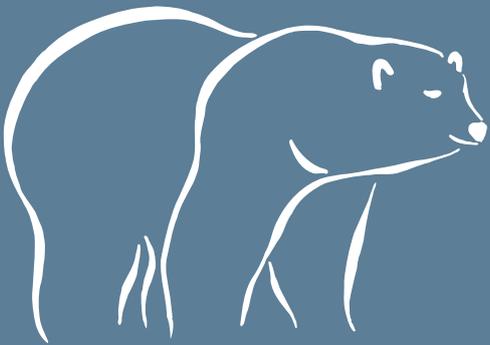
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