How to manage loads of electrical vehicle within energy availability of the building infrastructure?

Product application sheet - EVLINK LOAD MANAGEMENT SYSTEM

Benefits

Peace of mind
Maximized continuity of service with load balancing setup, for a reliable infrastructure, all while maximizing EV charging and managing user access.

Install & Commission
in a faster way a large number of charging stations.

Ergonomic
with an installation wizard and a user interface easing configuration thanks to features such as automatic network scan.

Scalable & sustainable charging infrastructure via software updates.

Cost effective load management
• No subscription
• No infrastructure upgrade
• Adaptation to time of use electricity tariffs

Easy remote management
via screen, CPO platform, EcoStruxure™ BMS or other BMS (via webservies)

Connected offer
enabling update of all charging stations at the same time

Local supervision
centralising Charge Data Record and badge management.

Benefits of EVlink Load Management System

EVLMS is a solution to manage electric vehicle supply while ensuring building continuity.

Requiring no subscription, it is one ideal solution for fleets, private company parking, condominium, etc.

We help our customers optimize their energy use, and operate more sustainably and cost-effectively.

We empower our customers to both achieve their energy and sustainability goals and compete in today’s electromobility economy.
Energy management: why do it?

- Avoids facility disruption, causing operating losses
- Reduces energy and electrical infrastructure costs
- Makes operations more efficient
- Increases driver satisfaction

And for charging stations, how does it work?

Allow simultaneous charging of the largest number of vehicles as quickly as possible ...

... while maintaining charging priority privileges, if necessary.

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CAPEX
No replacement of existing electrical devices (Transformer, CB, RCD, power cables..)

OPEX
No increase of power subscription fees to Utility
Maximization of EV charge when energy billing rate is lower
How to implement load management?

**Power limit**
The "power subscription" with the energy supplier, or the maximum power supply capacity (depending on cable cross section, circuit breakers rating, etc).

**Measurements**
The total power demand of each load.

**Controller**
The controller performs data acquisition and runs the algorithms to control total demand and power allocation to the vehicles.

**Actuators**
The charging stations that can execute an order and temporarily limit the current supplied to the vehicle.

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2 Possible Modes:

**Dynamic Load management with dynamic setpoint**

To optimize the energy allocation, the remaining energy at the building is allocated to EV infrastructure in real time.

1. **Selecting maximum power**
2. **Metering the facility and charging stations consumptions**
3. **Real-time algorithms to allocate power to electric vehicles**
Selecting maximum power
Metering the facility and charging stations consumptions
Real-time algorithms to allocate power to electric vehicles

EVlink Energy Management

Power monitoring
Dynamic power allocation: EVlink energy management maximum power set point is calculated in real time.

Limiting
Charging station power

Dynamic Load Management with static setpoint
A minimum level of energy is guaranteed to load electric vehicles

Power monitoring
With 'Static power allocation' the maximum power set point value is equal to the subscribed demand or any fixed value. This mode can also be adopted when the charging station is supplied by a facility network. In that case the set point depends on the electrical sizing of the charging station’s power supply circuit, or operational needs.
Load Management System power allocation scenarios

By performing the load management, the controller can reduce the charging station’s power by sending orders to the charging points at any time.

A choice of scenarios is set during commissioning, making it possible to consider the various needs related to the use of the vehicles that will be charged.

Proportional scenario

The output of each charging station is reduced by an identical percentage. Case of charging stations for vehicles and drivers having equal privileges.

2 load shedding scenarios, to define during commissioning

- Energy: Proportional to the energy consumed (kWh)
  • The system suspends the charging of vehicles which have consumed the highest amount of energy since the beginning of the charging process. This option is set by default.

- Duration: Proportional to the charging time
  • The system suspends the charging of vehicles which have charged for the longest duration since the beginning of the charging process.

The goal of the load shedding is to favor those who have received less energy in amount or in time.

In both options, the algorithm updates charging rights every 15 minutes.

VIP badge or VIP charging station privileges

The station charging a vehicle identified by a priority badge does not apply the requested reduction or only partially.

Case of charging stations with RFID badge authentication. Charging of certain vehicles is not penalized for service reasons or to give priority to customers.

References

EVlink Load Management System | Static set point (1) | Dynamic set point (1-2) |
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5 charging stations | HMIBSCEA53D1ESS | HMIBSCEA53D1EDS |
15 charging stations | HMIBSCEA53D1ESM | HMIBSCEA53D1EDM |
50 charging stations | - | HMIBSCEA53D1EDL |
100 charging stations | - | - |

(1) In addition of a switch ethernet
(2) In addition of a power meter
For more than 100 charging stations, please consult us
Architectures

**Hardware architecture**

**DAISY CHAIN**
- Ethernet network
- Power supply

**STAR**
- Ethernet network
- Power supply

**RING**
- Ethernet network
- Power supply

Star connection using basic switch TCSESU083FN0
Non manageable

Ring Connection with manageable switch TCSES083F23F0 or TCSESL043F23F0

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**EVlink charging station compatibility**

- Smart Wallbox
- Parking
- DC Fast Charge

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**Power meter compatibility**

- IEM 3x5x MODBUS RTU/TCP
- PMS320 MODBUS RTU/TCP
- POWERTAG Via gateway (Zigbee to MODBUS TCP)
- COMPACT NSX MODBUS TCP
- MASTERPACT MTZ MODBUS TCP

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**Installation example:**

- Ethernet Switch
- x 20 SmartWallbox 22kw
- Transfo 250kva
- IMax cable 400A
- Main 400A
- x 8 SmartWallbox 22kw
- Switch ConneXi
- Ethernet
- Modem 3G/4G
- Connects to remote OCPP monitoring

**EVlink LMS**
Performs data acquisition and runs the algorithms to control total demand and power allocation to the vehicles.

**Power Meter**
Real-time measurement of total building consumption in order to dynamically communicate the energy available.
MONITORING: AN INTUITIVE USER INTERFACE

The monitoring can be local, with no cloud subscription requested. The EVLink Load Management System centralizes the data from all chargers and allows to:

- Visualize a dashboard showing in real time the status of each charger
- Start/stop a load
- Manage badges (local addition, import, export) and user rights
- Monitoring of transaction history per charging station or concatenated for the infrastructure
- Consult the maintenance data
- Configure connection to remote supervision
- Set parameters: Add/Remove chargers, update them and change their configuration
- Save and restore commissioned configuration

“I can manage the charging station individually thanks to EVLMS use as a portal”

“I can have a holistic view of my charging stations, their status, their transactions and I can launch remote actions on each of them”
“I can easily manage users access rights”

![User Access Rights Management](image1)

“...and I can limit EV charging when electricity prices are high and maximize it when they are low”

![EV Charging Management](image2)