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 (Smart Wallbox and Parking models).

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

**Cost effective**
Load management - No subscription - No electrical infrastructure upgrade.

**Easy remote management**
Via screen, CPO platform, EcoStruxure BMS or other BMS (via webservices).

**Connected offer**
Enabling update of all charging stations at the same time.

**Local supervision**
Centralising Charge Data Record and badge management.

**Scalable & sustainable**
Charging infrastructure via software updates.

**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

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**Cost**

**Continuity of service**

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And for charging stations, how does it work?

**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

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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.
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.
Selecting maximum power

Metering the facility and charging stations consumptions

Real-time algorithms to allocate power to electric vehicles

### Dynamic Load Management with static setpoint

A minimum level of energy is guaranteed to load electric vehicles

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**Power monitoring**

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

- **Set point**
- **Monitoring**
- **Power allocation**

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

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**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.

- **Maximum set point**
- **Charging station power**
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

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<thead>
<tr>
<th>EVlink load management system</th>
<th>Static set point (1)</th>
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<td>100 charging stations</td>
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<td>HMIBSCEA53D1EDL</td>
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(1) In addition of a switch ethernet
(2) In addition of a power meter
For more than 100 charging stations, please consult us

Your EV charging needs are evolving? Your LMS evolves with them. Get in touch with your Schneider Electric contact to upgrade to an upper version.
Architectures

Hardware architecture

Installation with CPO supervision

DAISY CHAIN

STAR

RING

Star connection using basic switch TCSESU083FN0
Non manageable

Ring Connection with manageable switch TCSESB083F23F0 or TCSESL043F23F0

to introduce IEM /PM SWITCH ETHERNET MODEM

STATIONS COMPATIBILITY

SMARTWALLBOX  PARKING  CITY

Installation example:

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.

Modem 3G/4G
Connects to remote OCPP monitoring.

Switch ConnexiuEthernet
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

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

“I can do a periodical follow-up per user and per charge point thanks to logbook”
“I can easily manage users access rights”

“I can visualise the history of a charging station individually thanks to LMS use as a portal”