Realizing High Power Charging Networks for Europe

ASSURED workshop:
From governance to operations: innovating sectors and services for the full deployment of e-trucks in urban logistics
Bilbao, 27th of September 2019, Frank Verhulst, Team lead Transport as a Business

Creating the best charging experience
Program of today

Introduction to Allego

Outline MEGA-E project

Heavy Duty charging profiles

Closing
We are Allego

► A passion and drive for zero emission mobility
Our journey for Zero Emission Mobility started in 2013, our goal to build a reliable, open, interoperable charging network.
We deliver end-to-end Charging Solutions  
EV Cloud Services to Cities, Companies and Consumers

**Financial Services**
Optional financing and exploitation of charge point network (depending on the business case)

**Design & Realisation**
Scoping, design, network planning and dimensioning of grid connection. Realisation and deployment of standardised solution portfolio

**Maintenance & Service**
Continuous full operations and maintenance of the customers’ charging solutions, including 24/7 service desk

**EV Cloud**
Full and future proof IT platform with state-of-the-art functionalities, a.o. operations, billing, analytics, energy management for charging solutions
Our charging solutions offer various power levels to meet any EV driver needs.

- **Normal charging**
  - 1~8 hours
  - AC & DC charging
  - 3.7 ~ 24kW

- **Smart charging**
  - 1~8 hours
  - Integrated AC & DC charging
  - Ideal fleet solution up to 100+ sockets
  - Load balancing
  - Efficient and scalable

- **Fast charging**
  - 30~40 minutes
  - 50kW charger

- **High Power charging**
  - 15~20 minutes
  - 150 kW – 350 kW charger
  - Up to 600kW with pantograph for bus operations
  - Multimodal applications (bus / cars) to reduce TCO for operators

All chargers are connected to the EV Cloud system of Allego
## Largest eBus fleet in Europe

**Public Transport already evolved to the next level of HPC charging**

**Pilots up to 100 busses, Smart & Multi modal charging to optimize TCO**

<table>
<thead>
<tr>
<th>Location</th>
<th>Busoperator</th>
<th>Interface</th>
<th>Buses</th>
<th>Charger infra</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Eindhoven</strong></td>
<td>Hermes (Transdev)</td>
<td>Pantograph</td>
<td>43x VDL 18m.</td>
<td>11x300kW / 22x30kW</td>
</tr>
<tr>
<td><strong>Limburg</strong></td>
<td>ARRIVA (DB)</td>
<td>Pantograph / CCS</td>
<td>16x VDL 12m.</td>
<td>4x300kW /4x50kW/10x30kW</td>
</tr>
<tr>
<td><strong>Wadden-eilanden</strong></td>
<td>ARRIVA (DB)</td>
<td>Pantograph / CCS</td>
<td>14x VDL 12m.</td>
<td>4x300kW/3x50kW/8x30kW</td>
</tr>
<tr>
<td><strong>Amstelland- Meerlanden</strong></td>
<td>Connexxion (Transdev)</td>
<td>Pantograph</td>
<td>100x VDL 18m.</td>
<td>23x450kW / 86x30kW</td>
</tr>
<tr>
<td><strong>Den Bosch</strong></td>
<td>ARRIVA (DB)</td>
<td>Pantograph / CCS</td>
<td>14x VDL 12m.</td>
<td>1x300kW/1x350kW/3x50kW</td>
</tr>
<tr>
<td><strong>Differdange</strong></td>
<td>Sales-Lentz (LUX)</td>
<td>Pantograph (Inv.) / CCS</td>
<td>3x Volvo 12m.</td>
<td>1x350kW / 3x50kW</td>
</tr>
</tbody>
</table>
The MEGA-E project

Metropolitan Greater Area’s Electrified

Creating a European network of ultra fast charging
Sales of electric vehicles explodes due to European policy, demands of cities and shift in car industry

Electric vehicles will account for 35% of all global new vehicle sales.

Data compiled by Bloomberg New Energy Finance, Marklines
Mega-E is a large scale third party funded project creating 1250 high power chargers on 322 locations in 20 countries.

- Pan-European Ultra Fast EV charging network
- HPC project of scale where Slow (AC), Fast (DC) and Ultra-Fast (HPC) are combined at charging hubs
- Target locations at highway, in metropolitan areas and city rings
- Network: based on **open standards, fully interoperable** and connected to renewable energy generation
- Supported by the European Commission

**City partners**
Mega-E High Power Charging European Network

3 type of locations to best cover the needs of a strongly evolving concept of mobility

- **Multimodal locations**, located at the key nodes of transportation crossings within European biggest metropoles
- **Metropolitan locations**, on the outer border of the cities, where long distance and suburban circulation meets
- **Corridor highway locations**, to extend range and make long distance travelling more comfortable

Allego EV cloud supports EV drivers and B2B
Preferred types locations for MEGA-E

**Highway location**
- Serves the need of HPC charging on long trips
- Very close to the highway
- Easy to reach from the highway
- Preferably bidirectional
- Has amenities like toilets/shop/restaurant
- Space and available power often a challenge

**City location**
- Can combine different user groups by serving highway demand but also commuters and destination charging
- Close to a major road leading into the city or highway in or around a city
- Preferable next to a supermarket or other shopping centre
- Has amenities like toilets/shop/restaurant

**Multimodal location**
- Within the city area of the 10 multimodal cities
- Next to transport locations like airports, train or bus stations
- Can combine different user groups by also serving highway demand, commuters and destination charging
Mega-E network throughout Europe

- **Deployment in 2018**
  - **Netherlands**: 4 in Operation and 9 in realisation
  - **Germany**: 12 in Operation and 34 in realisation

- **Deployment in 2019**
  - **Belgium**: 2 in realisation
  - **France**: 22 in realisation

- **Deployment in 2020**
  - **Austria**
  - **Denmark**
  - **Estonia**
  - **Finland**
  - **Ireland**
  - **Italy**
  - **Latvia**
  - **Lithuania**
  - **Luxembourg**
  - **Norway**
  - **Poland**
  - **Portugal**
  - **Spain**
  - **Sweden**
  - **Switzerland**
  - **United Kingdom**

Co-financed by the European Union Connecting Europe Facility
Future Heavy-Duty networks

Enabling ‘business as usual’ for medium and long-haul e-Trucks and e-Coaches
When to join?
Electrification of HD segments starts now

- No Public Chargepoints for Trucks in NL and DE 0%
  - pilot projects to prove electrification of Heavy Duty, **focus on depot charging** 5
- Record number new trucks for **city distribution** in NL (2018), 31% share DAF, 19,2% share Volvo 15.748
  - Long Haul requirement for DC/HPC stations by 2025/2030 (# connectors) 20k 150-500kW 6k >>500kW 110.000
  - Industry estimates huge ramp-up on new BEV sales: 8% HD and 15% MD – BEV’s in operation in EU28 in 2030
- Early adoption starts in 2021 – quick ramp up: sales penetration 15-34% in 2030 (BECV) or 8-27% in late adoption scenario’s

https://www.groenecirkels.nl/nl/groenecirkels
https://www.logistiek.nl/distributie/nieuws/2019/jaar-van-de-waarheid
eTransportation will start from depot charging, extended by destination and on-route charging.

**Scenario Depot (A to A)**
- charging at depot
- regularly returning to depot

**Scenario Depot-to-Destination (A to B)**
- charging at depot (overnight)
- extend trip after charging during docking

**Scenario Depot-Public-Depot (A to C to A)**
- charging at depot (overnight)
- extend trip by public charging OC

**Scenario Depot-Public-Destination (A to Cx to B)**
- charging at depot overnight
- extend trip by (multiple) public charging OC
- charge (overnight) at destination
Corridor E-pilot | Concept

How?

CONCEPT
✓ 12 sites with OC charging facilities for 20+ vehicles
✓ 2000km, charging every 75km

ROUTE
1. A2/61 Amsterdam-Eindhoven-Bonn (300 km)
2. A15/3 Rotterdam-Nijmegen-Dortmund (270 km)
3. A16/E17 Rotterdam-Antwerp-Lille (227 km)
4. A73/E25 Nijmegen-Roermond-Luxembourg (290 km)
5. A67/40 Antwerp-Venlo-Duisburg-Dortmund (243 km)

OPTIONAL
1. E40/42/4 Lille-Charleroi-Cologne-Dortmund (416km)
2. France – main corridor Calais-Dover
3. Poland – main corridor

From ‘Port-to-Port’ to ‘Port-to-Destination’
keep driving forward