«Η εφαρμογή του προγράμματος Green eMotion στην Ελλάδα – Μοντέλα Ηλεκτροκίνησης»

Industries:
Alstom(UK), Bosch(D), IBM(D), SAP(D), Siemens (D, Project Coordinator)

Utilities:
Danish Energy Association(DK), EDF(F), Endesa(ES), Enel(I), ESB(IR), Eurelectric(B), Iberdrola(ES), RWE(D), PPC(GR), Verbund(AU)

Electric Vehicle Manufacturers:
BMW(D), Daimler(D), Nissan(H), Renault(F)

Municipalities:
Barcelona(ES), Bornholm(DK), Copenhagen(DK), Cork(IR), Dublin(IR), Malaga(ES), Malmö(S), Rome(I)

Research Institutions and Universities:
Cartif(ES), Cidaut(ES), CTL(I), DLR(D), DTU(DK), ECN(NL), Imperial(UK), IREC(ES), RSE(I), TCD(IR), Tecnalia(ES), TNO(NL)

EV Technology Institutions:
DTI (DK), FKA(D), TÜV Nord(D)

Achievements so far:
The last three years GeM achievements are:

■ Development of a Europe-wide marketplace
■ Improvement in standardization
■ Technical reports and policy recommendations
■ Extensive amount of valuable e-mobility data

Demo region Kozani, Athens – Greece

Project highlights
8 public charging stations in Kozani and 7 charging stations in Athens in total compliance with the concept of GeM

■ RFID cards authentication
■ eCars and charging infrastructure in Kozani
■ CMS and remote control of charging events
■ Subscription to Marketplace
■ Possibility of buying services
■ Roaming testing
■ Smart charging Load Management providing cooperation with installed PVs
Charging station locations. Defining the location criteria. Discussions with the involved parties.

Localization Criteria:

- Points of view and safety
- Existence of available space parking
- Electricity grid availability
- Correlation with EV users

Charging station – Charging card

**Charging pole characteristics**

Three-phase ac power in:

- Rated Nominal Voltage 230/400 V ± 10 %;
- Frequency 50 Hz;
- Two Type 2 Mennekes Three-phase sockets, with connector locking device:
  - Maximum power: 7/22 kW;
  - Maximum current: 32 A;
- Smart Meters: two three-phase Smart Meters; one for each socket;
- Capability of two simultaneous charging processes mono or three-phases in any combination;

**The first installed public charging post installed in the pavement in front of PPC headquarters**

**Charging stations installed in Kozani**

**DSO Model**

- Availability of charging stations network assuring increased customer confidence
- Installation of charging stations network even in areas where e-cars have not big diffusion, making emobility more known and user-friendly
- Lower EV customers charging fees:

charging fee = Energy fee + Service fee + Grid fee + Infrastructure fee

(no direct mark-up over infrastructure investment)

- Accelerating implementation of advanced services like smart charging and renewable resources support
- Providing an open platform, permitting a multi – vendors participation of service providers

**Integrated Market Model**

- Integrated market motivation
New market players, new roles and private investments using a significant number of new employees

No need for DSO investments and increase of regulated asset base (causing increase in general grid fees even quite insignificant)

Charging station fees paid only by EV drivers (more fair for not e-mobility customers, resulting in higher e-mobility services fees)

charging fee = Energy fee + Service fee + Grid fee + Infrastructure fee

Greek reality – Situation in Greece

Proposing a Greek e-mobility model. one should take into account:

- Nowadays, a small number of e-cars owners in Greece.
- Economic crisis, lack of incentives are not supporting a mass EVs market, even if the first signs are quite promising
- Neighborhoods in the same city with quite different social and economic profile meaning geographical differentiation in EVs diffusion
- Most of the Greek cities have traffic congestion issues, providing sometimes unexpected travel delays
- Local authorities unable, due to financial or technical reasons, to invest in charging post networks
- Private investors look for a minimum number of EVs customers to support a sustainable investment
- Chicken-egg issues between EVs diffusion and charging post availability

Greek Proposed e-mobility Model – A combination?

- In order to support e-mobility in Greece, a combination of the two models could be proposed, thus providing the necessary confidence to potential EV owners leading to increase of EVs number, permitting in parallel, private investments in a stable market with open competition.
- A main charging station backbone-network will be upon certain criteria implemented according to the DSO model, (by the DSO or with the DSO participation) as part of the regulated grid asset.
- Private market players should have the possibility (according to predefined rules and licenses) to install public charging stations in the area of their interest, which assure their investment's sustainability.

Greek Proposed e-mobility Model – A combination?

- The backbone-network's owner-operator (DSO or with DSO) will provide an open platform permitting multi-vendors use of the charging stations' network in a not discriminatory way for all e-mobility service providers.
- These could be either companies owning their own network according to the integrated market model or e-mobility service providers holding a contractual relation with an electricity supplier and no ownership of charging stations.