ELECTRIC MOBILITY ON MOTORWAYS

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Agenda

• Electric mobility : background
• What role for the motorway operators?
• Different ways to charge a vehicle
• Sanef’s actions
• FABRIC project
Electric mobility : background

• Environmental and public health issue
  – Reduction of CO2 emissions :
    • Transport= 25% of mondial CO2 emissions (18% for road transport)
    • Carbon footprint of electric vehicle (<130g/km) is better than traditional vehicle (average 160 g/km)
  – Public health :
    • Air quality : no emission of hydrocarbons, NOx, CO, fine particles
    • Low noise

• But a slow and long-lasting deployment
  – Price of the vehicle
  – Autonomy of vehicle (around 150 km vs 700 km for traditional vehicle)
What role for the motorway operators?

• Electric vehicle / motorway: a difficult association considering the autonomy of the vehicles
• Motorways are designed for fuel engine vehicles: service stations are built in coherence with their long range autonomy
• A key role for the motorway operators: enhance the development of the electric vehicles by supporting the implementation of charging systems
Different ways to charge a vehicle on motorways

Static charge
- Conductive
- Wireless

Operational:
- Slow or fast charge

Test:
- 2 bus in South Korea
  - Promising results: > 95% efficiency
  - R&D European project « Fast in charge »

Dynamic charge
- Conductive
- Wireless

Test:
- Developed by Siemens and Scania in Sweden

R&D:
- in South Korea and Germany
  - European R&D project FABRIC

Obstacle:
- Standard in progress: 3 plugs, 4 modes of charge
- Heavy visual impact
Sanef’s actions

- Static charge: contribution to the expansion of the electric charge points’ network
  The nature of the charge points (normal / fast) is selected according to the nature of the stops
  - Carpool parks: long stop => normal (=long) charge point (8h)
  - Rest areas: short stop => fast charge point (20 min)

- Dynamic charge: involvement in R&D project FABRIC as road infrastructure expert
FABRIC project : outline

- EU project, started since 1/01/2014, for 4 years. 23 partners involved. Budget : 9M€ (with EU support). Coordination : ICCS (Greek Academic Research body)
- Objective : Feasibility analysis and development of on-road charging solution for future electric vehicles
- 2 test sites will be implemented :
  - In France at Versailles-Satory, operated by VeDeCom (French Institute of Excellence on Zero Carbon energy)
  - In Italy at Torino, operated by CRF (Fiat)
FABRIC project : issues for motorway operators

- Impact of inductive systems on the infrastructure (cracking, road surface quality, ...)
- Ability of the system to cope with roadwork conditions (temperature of mixture, pressure of compator...)
- Ability of the system to cope with « normal » traffic conditions (130 km/h, mix of light and heavy vehicles...)
- Organisation of the operation of the system (share of responsibilities between motorway operator, charging infrastructure operator, grid operator, electric vehicle backend operator)
- Economical faisability
- ...