Fast Charging Cross Border Infrastructure for Electric Vehicles, Connecting Austria, Slovakia, Slovenia, Germany and Croatia

TEN-T 2013 Annual Call; 2013-EU-92069-S (26040482)
Zagreb Energy Week 2015-05-14
Zero Emission Mobility

EU Flottenziel 2012 als Vergleichswert für Fahrzeuge mit Verbrennungsmotor

Nur bei 100% Strom aus erneuerbarer Energie sinken die Emissionen auf Null

- Benzin/Diesel: 130 g CO₂/km
- Braunkohle: 150 g CO₂/km
- Steinkohle: 121 g CO₂/km
- Erdgas (GuD): 53 g CO₂/km
- Strom: 0 g CO₂/km

-60% Emissionserhöhung durch Braunkohle

-100% Emissionserhöhung durch Erdgas (GuD)
Reaching for the moon

A Wind 2 MW turbine in Austria generates **4,400 MWh** per year.

A modern EV consumes 15 kWh / 100 km, so one wind turbine generates **30 Mio km** (Zagreb-Madrid: 2,200 km; Vienna-Moon: 0,4 Mio. km).

If one EV drives 10,000 km per year, 3,000 EVs can be fuelled.
One small PV system fuels 3 electric cars

- One small PV system with 5 kW in Austria generates **5,000 kWh**
- At a energy consumption of 15 kWh/100 km **3,300 km** can be driven
- At 10,000 km per vehicle per year **3 vehicles** can be fuelled by one PV system
Electric Mobility for Urban Transport
Fast Charging for Electric Vehicles

Fully charged in 20-30 min

Fast Charging
50 kW
20-30 min

Slow charging
during night (8 hours)
3,7 kW

Auftraggeber: Verbund, Quelle: Verbund
Advances in Electric Mobility

Battery Size
Driving Range

14.05.2015

Co-financed by the European Union
Trans-European Transport Network (TEN-T)
A fast charging network grows in Europe with EU funding

- NL/DK/DE 155 AC/DC Multistandard (TEN-T)
- DK: 40 AC/DC Multistandard (TEN-T)
- FR: 200 AC/DC Multistandard (TEN-T)
- 54 AC/DC Multistandard (CEF 2015)
- 115 AC/DC Multistandard (TEN-T)

With partners in AT, DE, SK, SI, HR

Co-financed by the European Union
Trans-European Transport Network (TEN-T)
Central European Green Corridors

- **Project aim:** demonstrate a cross-border network of fast charging in CE
  - Installation of 115 high power recharging points (CCS, CHADEMO, AC) 60 in Austria, 26 in Slovenia, 21 in the Slovak Republic, 5 in Germany, 3 in Croatia
  - Integration of IT systems to provide services for customers
  - Studies on Integration into the Energy System, Integration of Customers, Network and Services Planning

- **Project Coordinator:** VERBUND AG

- **EU Member States:** AT, DE, SI, SK, HR, FR

- **Partner (Beneficiaries & Affiliated Entities):** Bayern Innovativ, BMW, Government of Slovenia, GreenWay, Nissan, OMV, Renault, Schrack, Smatrics, VERBUND, Volkswagen, City of Zagreb, ZSE;

- **Budget:** €7.124.000, thereof €3.562.000 funding by TEN-T

- **Project Duration:** 15th March 2014 – 31st December 2015
Central European Green Corridors
Fast Charging in 5 Member States

60 recharging points in AT, 5 in DE
26 recharging points in Slovenia
3 recharging points in Croatia
Central European Green Corridors
CEGC: Croatia and Slovenia
CEGC: Chargers in Zagreb
Multi-Standard Fast Chargers

43 kW AC („Typ 2“)

50 kW DC („CHAdeMO“)

50 kW DC („CCS“)

Multi-Standard Fast Charger
Grid Connection: 50-70 kW
Integration and Roaming

- All drivers should be able to use the network in all member states
- High quality service should increase confidence and acceptance

- Partners will adopt the Charge Point Operator / E-Mobility Service Provider model
- E-Clearing.net platform will be used as data hub
- All charge point operators will provide static and dynamic information
- All customers of Service Providers will be able to use all charge points
Challenges

- Different approaches of Regulators and Authorities
  - Different types of regulatory regimes (energy market)
  - Different rules regarding parking, marking, signage …

- Costs are different in the member states
  - Average of 40k per high power recharging point is feasible
  - But: Average does not exist in cross-border multi-partner projects
    - Austria: Grid connection fees ~ 250 € / kW (plus costs for actual grid connection), 20.000 - 25.000 per fast charger

- Different level of development in member states
  - No dedicated authorities for CPO-IDs
Lessons Learned

We are living in Europe!
- Multi-Standard
- Multi-Language
- Multi-Speed

We need …
- Standardization on connectors with outlook to higher powers
- Standardization on signage, marking, parking laws
- European authority for administration of CPO-ID and EMP-ID
- Data structures and services for multiple languages
- Flexibility in co-financed projects
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VERBUND AG