The European Standardization System in support of e-mobility

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CEN & CENELEC GEOGRAPHY

CEN & CENELEC
- 33 National Members
  - These are the NSB/NC of 28 EU Members, plus 3 EFTA countries and 2 applicant countries
STANDARDIZATION PRINCIPLES

- Consensus
- Open to all parties concerned
- Transparency
- Market driven
- Coherence: no conflicting standards
- Preference for international standards
EUROPEAN CONTEXT

• Strengthening EU internal market for products and services
• Opening global markets for European business
• Reducing regulatory burden through smarter regulation
• Fostering impactful innovation through scale up and market acceptance
• Addressing societal challenges
CEN & CENELEC AMBITIONS 2020

Global Influence
Regional Relevance
Network of excellence
Wider Recognition
Innovation & Growth
Sustainable System

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Addressing eMobility challenges

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KEY ISSUES

• Interactions between automotive industry and electricity networks (connectors, wiring rules, electromagnetic compatibility aspects, safety issues)
  ➔ interoperability issues

• Different needs for home charging, fast charging, types of vehicle, etc..
  ➔ technical details

• Automotive sector: large market and large producers
  ➔ no need to re-invent the wheel

• Lack of standards may deter roll-out, implementation may be needed to standardize
  ➔ “chicken and egg” situation
CHALLENGES

- Domestic installations adequate for charging?
- Need to reduce options in charger/connector standards
- Smart charging – potential needs to be fulfilled; maturity of work on smart charging and on vehicle-to-grid communication?
- New standards needed - detailed adjustments needed for EMC
POLITICAL CONTEXT

• Standardization request M/468 ‘Charging of electric vehicles’ (2010)

• Objectives: to develop and/or review existing standards in order to
  – Ensure interoperability and connectivity between the electricity supply and on-board chargers of electric vehicles
  – Ensure interoperability and connectivity between ‘off-board’ chargers and the electric vehicle and removable batteries
  – Consider any smart-charging issues
  – Consider safety risks and electromagnetic compatibility of the charger of electric vehicles
WAY FORWARD

• CEN-CENELEC eMobility Coordination Group (2012)

• Participation of automotive industry, battery manufacturers, electric infrastructure suppliers, EC, etc.

• CEN and CENELEC Technical Committees involved
  – CEN/TC 301 ‘Road vehicles’
  – CLC/TC 69X ‘Electric systems for electric road vehicles’
  – CLC/TC 23BX ‘Switches, boxes and enclosures for household and similar purposes, plugs and socket outlets for d.c. and for the charging of electrical vehicles including their connectors’
  – CLC/TC 64 ‘Electrical installations and protection against electric shock’
ACHIEVEMENTS

- Work Programme and set of available standards available
  - Covering the following aspects: charging systems, connection to the grid and electrical safety
  - Few new standards → adjustments to existing ones
  - No single solution for couplers → options

- Report on Smart Charging available online
  - Defining generic role models and reference architecture for different actors in the domains of E-mobility and power system (Smart Grid)

- Standards in this domain are – and have to be – international
• European Commission ‘Clean Power for Transport’ package (January 2013)
  – incl. a directive on the deployment of alternative fuels infrastructure (2014/94/EU)
  – fuels considered: electricity, hydrogen, natural gas

• Standardization request (M/533)
  – **Objective**: to develop standards: wireless recharging of passenger cars, light duty vehicles and electric buses; battery swapping for passenger cars, electric buses connectors and socket outlet, A normal recharging points for L-category vehicles
  – **Coordination**: CEN-CENELEC eMobility Coordination Group
Addressing Smart Grid challenges
KEY ISSUES

- Convergence utilities/ICT
- Better integration of renewables
- European’s power network must be flexible, accessible and reliable
- Solutions must be scalable, increase capacity for power transfers, reduce energy losses, heighten efficiency and security of supply and be backward compatible
- Developments in communications, metering and business systems open up new opportunities to enable technical improvements and energy efficiency
POLITICAL CONTEXT

• Standardization request M/490 ‘Charging of electric vehicles’ (2011)

• Objectives:
  – To develop a technical reference architecture (functional information data flows between the main domains and integrate many systems and subsystems architectures)
  – A set of consistent standards
  – Sustainable standardization processes
WAY FORWARD

- CEN-CENELEC-ETSI Smart Grid Coordination Group (2011)
- Participation of Utilities, IT, Consumers, EC, etc.
- Main CEN and CENELEC Technical Committees involved
  - CLC/TC 8X ‘System aspects of electrical energy supply’
  - CLC/TC 57 ‘Power systems management and associated information exchange’
  - CLC/TC 205 ‘Home and Building Electronic Systems (HBES)’
  - CEN/TC 247 ‘Building Automation, Controls and Building Management’
ACHIEVEMENTS

- The requested methodology and the Smart Grid Reference Architecture developed
- Work Programme and set of available standards supporting smart grid deployment is available
  - Description of ‘available’ and ‘coming’ standards for each specific system
  - 23 Smart Grid systems (e.g. eMobility)
  - 8 Cross-Cutting technologies are identified/investigated
  - + 500 Standards listed
Conclusion

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CRUCIAL ROLE FOR STANDARDS

- Standards provide a basis for the integration of technologies into complex, innovative systems and solutions, and assist in ensuring interoperability
- Codifying and spreading the state of the art
- Giving access to new knowledge
- Standards are essential to help electric vehicles and smart grids to achieve their potential
Many thanks for your attention!

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