Current Status and Future Development of EV Standardization in China

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CATARC

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1. Organization and History Evolution
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3. Future Development
EV Standardization Organization

MIIT

Industry Standards(QC)

National Technical Committee of Auto Standardization
SAC/TC114

SAC

National Standards(GB)

EV Subcommittee
SAC/TC114/SC27

ISO TC22/SC21
IEC TC69

Electric Motorcycle

Electric Vehicle

★ Secretariat Located in CATARC  ★ Under the Guidance of MIIT and SAC  ★ Correspond to ISO TC22/SC21 and IEC TC69
March, 1998
Establishment of 1st EV subcommittee
30 formal committee members
**Chairman:**
Wang Binggang (Then President of CATARC)
**Secretary General:**
Sun Hui (Then Vice Chief Engineer of ASRI in CATARC)

July, 2003
Establishment of 2nd EV subcommittee
35 formal committee members
**Chairman:**
Zhao Hang (President of CATARC)
**Secretary General:**
Wu Zhixin (Then Director of EV Center in CATARC)
Establishment of 3rd EV subcommittee
33 formal committee members
Chairman: Wu Zhixin (Then Director of EV Center in CATARC)
Secretary General: Zhao Jingwei (Then Vice Chief Engineer of ASRI in CATARC)

Establishment of 4th EV subcommittee
51 formal committee members
Chairman: Wu Zhixin (Vice President of CATARC)
Secretary General: Zhou Rong (Chief Engineer of ASRI in CATARC)
History Evolution

SCOPSR 49th Document in 2010
“Notice of Duties Segregation among The offices Administrating Electric Vehicle and Infrastructure”

SAC Take the Lead

MIIT
NTCAS
EV Standardization Subcommitte

NEA of NDRC
EV Infrastructure Standardization Subcommitte in CEC
Structure of EV Subcommittee

EV Subcommittee
SAC/TC114/SC27

5 Work Groups

Whole Vehicle Work Group
- 3 kinds of whole Vehicle standards

FCEV Work Group

Motor Work Group
- key component standards

Battery Work Group
- Infrastructure standards

Electric Motorcycle Work Group
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**Principle and Goal of Standardization**

- **Support Government Administration**
  - Market Entry
  - Market Administration

- **Regulate Industrialization**
  - Improve Quality
  - Lower Cost

- **Facilitate Commercial Promotion**
  - Unified Interface
  - Charging Station Construction

- **Guide Technical Research**
  - New Material, Technology
  - Technical Communication

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**EV Standardization**

- **Type Approval and Testing**

- **Technical Requirement and interchangeability**

- **Protocol**
Structure of EV Standard System

EV Industry

- **General**
  - Pure Electric Vehicle
  - Plug-in HEV
  - FCEV
  - REESS
- **Whole Vehicle**
  - Driving System
  - Control System
  - Charging System
  - High Voltage Wires and Connector
- **Key Component**
  - Electric Accessory
    - Electric Air Conditioner
    - EPS
    - Electric Brake
    - Charging Connector
- **Electric Accessory**
  - Electric Brake
  - Charging Connector
  - Hydrogen Fueling Connector
  - Communication Protocol
  - Charging Infrastructure
- **Connector and Interface**
  - Charging Equipment
  - Discharging Equipment
  - Battery-Changing Equipment
  - Operation and Service Network Equipment
  - Additional Equipment

**Basic and General**
- Power Battery
- Fuel Cell and Hydrogen System
- Supercapacitor
- Flywheel
- Related Accessories

**Key Component and Material**
- Basic and General
- Electric Motor
- Electric Motor Controller
- Coupling Device
- Generator
- Range-extender
- Key Component and Material
Overview of EV Standards

1,750 Existing EV Standards: (Except for Electric Motorcycle)

- Basic General Standards: 6 NS, 2 IS
- BEV Whole Vehicle Standards: 7 NS, 2 IS
- HEV Whole Vehicle Standards: 6 NS, 1 IS
- FCEV Whole Vehicle Standards: 4 NS
- REESS Standards: 4 NS, 7 IS
- Driving System Standards: 3 NS, 2 IS
- Fuel Cell System Standards: 3 NS, 1 IS
- Control System: 1 NS
- Infrastructure Standards: 11 NS, 10 IS
- Connector and Interface Standards: 5 NS

(NS: National Standard; IS: Industrial Standard)
2, 77 Under Development Standards:

- Basic General Standards: 6 NS, 1 IS
- BEV Whole Vehicle Standards: 1 NS, 3 IS
- HEV Whole Vehicle Standards: 4 NS
- FCEV Whole Vehicle Standards: 1 NS
- REESS Standards: 11 NS, 7 IS
- Driving System Standards: 5 NS, 7 IS
- Fuel Cell System Standards: 2 NS
- Control System: 1 NS
- Infrastructure Standards: 19 NS, 9 IS

(NS: National Standard; IS: Industrial Standard)
1. Current International Standard and Regulation
   - WP29: EVS-GTR is under development
   - UN/ECE: 8 ECE Regulation
   - ISO and IEC: 35 Standards (62 planned)

2. Hot Spot:
   - Electric Safety
   - Charging Interface
   - Power Battery
In March 2012, proposed by China, Japan, America and Europe, EVS and EVE work group were established, China act as vice chairman.
1. The EV standard system is reasonable and complete
   • Current standards basically fulfill the demand for EV type approval, market entry, scientific research, industrialization and commercialization

2. EV standardization in China started early and development rapidly.
   • DC charging proposal was accept as formal part of IEC standards;
   • Lead the development of 3 EV battery-changing-plant standards, achieve the zero breakthrough
3. Current EV standards offered important support for government administration, R&D, Industrialization and commercialization

- EV standard were adopted by government, they firmly supported the policies of market entry, subsidy, tax mitigation and etc.

- Formed the foundation of setting up, research and check-accept of national science and technology project.

- Acted as a basic role in research, production, industrialization, commercialization of EV and related infrastructure construction.
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3. Future Development

- Top-level Design, Comprehensive Arrangement, Step by Step Implementation
- Develop China’s EV standardization Roadmap
Expedite Urgent-needed Standards

- Expedite development of EV typical driving cycle, EMC, FCEV safety requirement related standards for research and industrialization

- Expedite development of charging connector and communication protocol standards for construction of charging infrastructure

- Expedite development of power battery standards and plug-in hybrid commercial vehicle specifications standards for market entry
3, Future Development

Enhance International standardization and harmonization

◆ Further participate into WP29, ISO and IEC; Endeavour to lead more standard development project

◆ Make full use of Sino-Euro, Sino-Germany, Sino-US and Sino-Japan bilateral cooperation to improve China’s EV standardization work
3, Future Development

**Sino-Germany Cooperation**
China: SAC and MIIT
Germany: BMWI

- E1 Charging System
- E2 Communication Protocol
- E3 Crash Safety
- E4 Charging Station and Smart Grid

**Sino-Europe Cooperation**
China: MIIT
Europe: Enterprise and Industry Department

- Energy Consumption
  - Power Battery
  - Energy Consumption Evaluation
Sino-US Cooperation

China: MOST
US: DOE

Advance Battery Research
EV Energy Consumption Analysis
EV Demonstration Running
EV Standard and Evaluation Method Research
3, Future Development

Sino-Japan Cooperation

China: CATARC
Japan: JARI

- Power Battery
- Charging
- Electric Motor
- Whole Vehicle
Thanks For Your Attention