

中国电动汽车标准现状与动态

The present status and development of EV related standards in China

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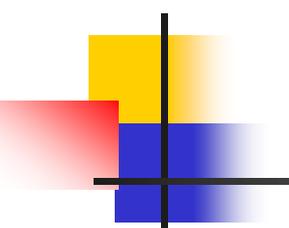
中国汽车技术研究中心

Secretariat of the National Automotive Standardization

Technical Committee(SAC/TC114)

全国汽车标准化技术委员会秘书处

Augu.30th,2010



提纲 outlines

1、中国电动汽车标准化工作和电动汽车的管理

management of EV and EV standardization in China

2、中国电动汽车相关标准总体情况介绍

General situation of EV standards in China

3、中国动力蓄电池标准情况介绍

Standards for Traction batteries in China

中国标准化工作的管理

Management of standardization in China

□ 主要依据—《标准化法》及其实施条例

Essential basis: *Standardization Rules*

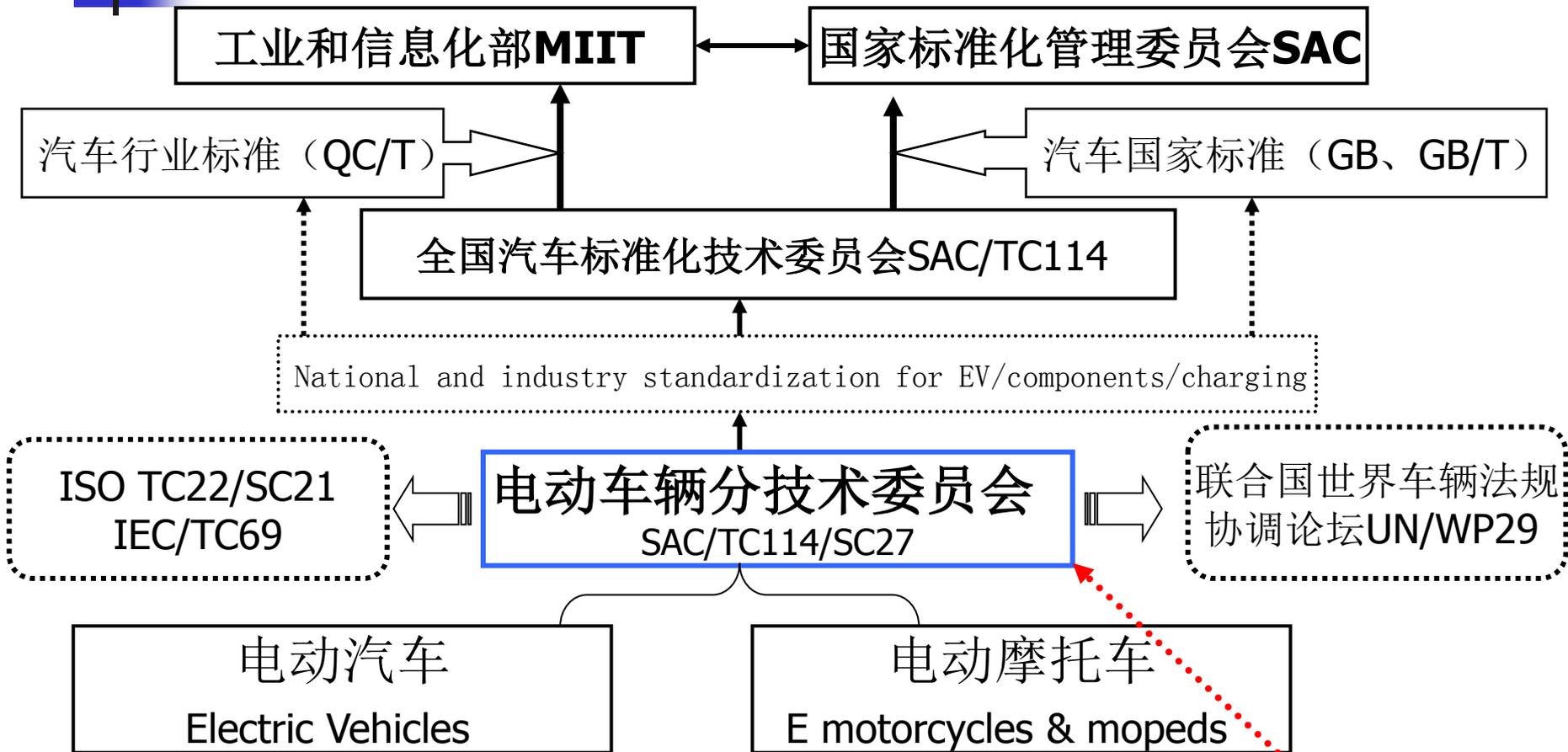
□ 标准分类 types of standards

- | | | | |
|---|------------------------|---|-----------------------------|
| { | ■ 强制性标准 Mandatory | { | ■ 国家标准 National standards |
| | ■ 推荐性标准 Recommendatory | | ■ 行业标准 Industry standards |
| | | | ■ 地方标准 Regional standards |
| | | | ■ 企业标准 Enterprise standards |

□ 标准化管理 management department of standards

- 国标：国家标准化主管部门—国家标准化管理委员会
National standards: Standardization Administration of China
- 行标：国务院有关主管部门
Industry standards: Responsible management department

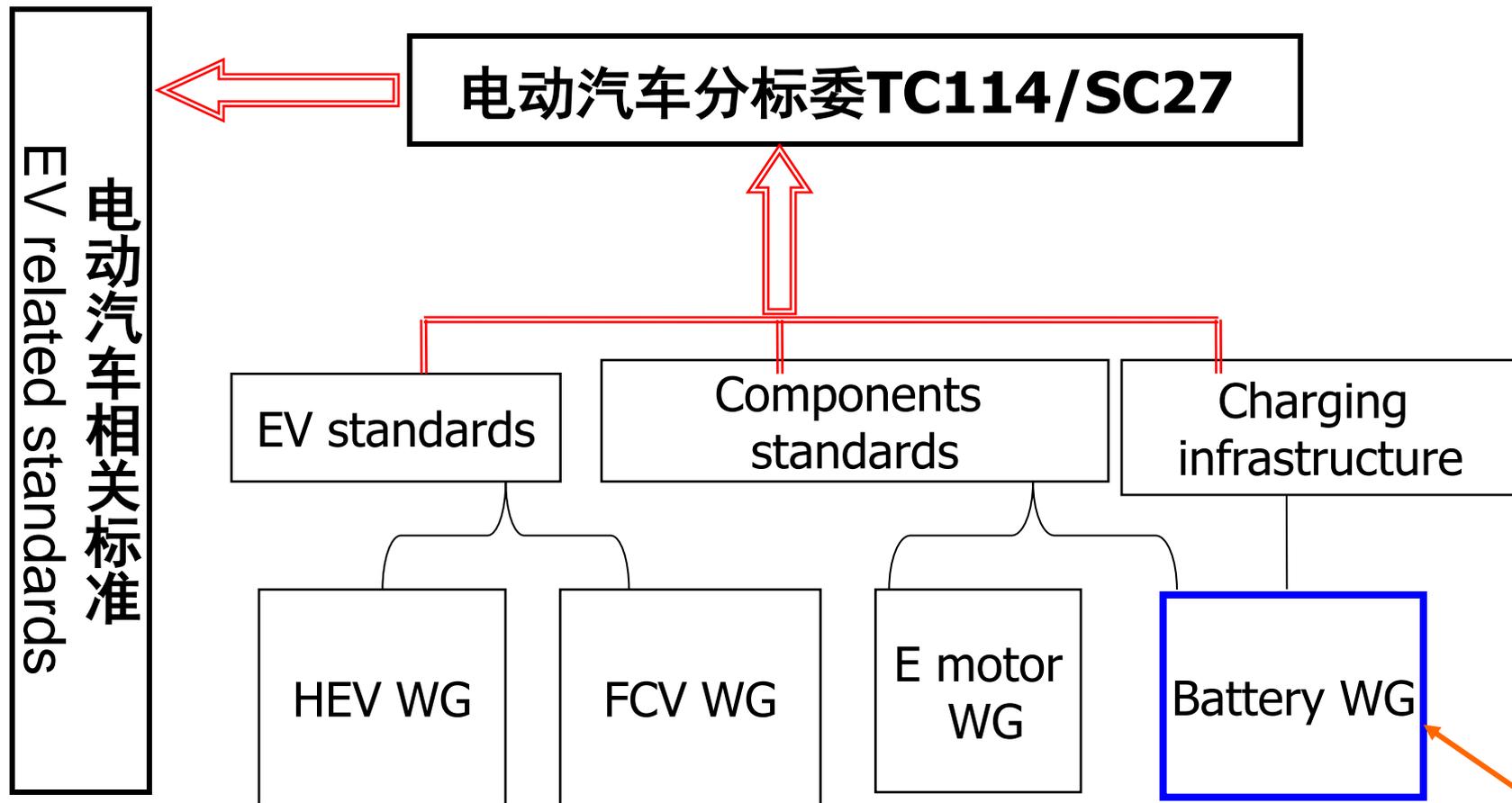
中国电动车辆标准化机构-TC114/SC27



- ★1998年在全国汽标委下组建成立，秘书处设在中国汽车技术研究中心；
- ★负责全国电动车辆领域标准化工作对口，ISO/TC22/SC21和IEC/TC69；
- ★受国标委和工信部管理和指导,科技部给予了大力支持和帮助。

电动车辆分标委的组织结构

Organization structure of TC114/SC27

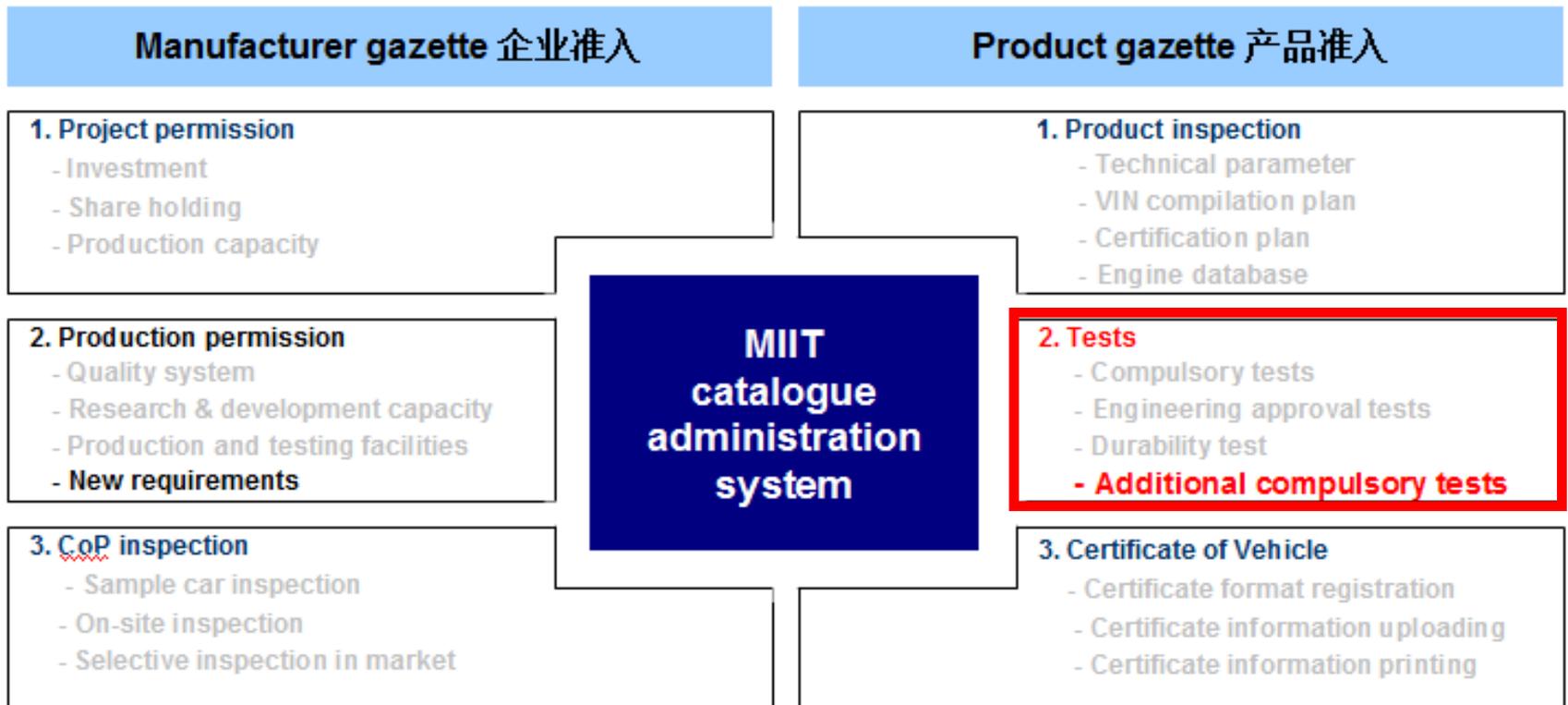


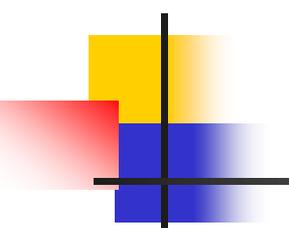
侧重电池外特性、电池组/包/系统层面，不涉及电池原理和材料。Emphasize on out characteristic of traction battery, especially pack/system level.

中国新能源汽车的管理

Management of new energy vehicle in China

2009年工信部发布《新能源汽车生产企业及产品准入管理规则》，规定了新能源汽车产品准入条件，其中要求除必须满足传统车辆的安全、环保、节能、防盗等有关标准外，还必须满足新能源汽车专项标准要求，专项标准共26项，全部来自于上述42项标准中。





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Standards for Traction batteries in China

中国电动汽车标准体系 EV standards system

试验方法 test methods

技术条件 specifications

基础性、安全性、互换性 basic/safety/changeability

整车
EV

电机
系统
E Motor

电池
battery

充电
系统
charging

接口
interface

电动汽车技术标准体系 EV standards system

中国电动汽车标准现状 EV standards issued

类型/type		已发布的标准Number of standards issued		
		全部 all	国标National standards	行标Industry standards
Electric road vehicles	BEV	11	11	0
	HEV	6	6	0
	FCV	4	3	1
	E motorcycles & mopeds	6	4	2
components	Energy storage system	8	4	4
	E motor	3	3	0
	Charging	4	4	0
总计/ total		42	35	7

电动汽车标准动态 EV standards development

列入计划正在制定28项、修订4项，共32项，其中12项已通过审查。

28 being drafted, 4 under revision, 12 approved.

	标准类型 type	制定 new items	修订 revision	合计 add up
Electric vehicle	BEV	4	0	4
	HEV	3	2	5
	FCEV	6	0	6
compo nents	RESS (battery)	4	0	4
	Motor and controller	3	2	5
	Charger and interface	8	0	8
total		28	4	32

中国电动汽车标准总体情况介绍

general introduction of EV Standards

➤ 纯电动汽车 (BEV)

电动汽车安全要求, 动力性能试验方法, 能量消耗量和续驶里程试验方法, 电磁辐射, 定型试验规程, 风窗玻璃除霜除雾系统等

Safety, Power Performance, Energy Consumption and Range, EMC, Type Approval and Defrost of Wind-shell Requirement and so on.

➤ 混合动力汽车 (HEV)

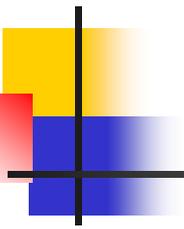
混合动力汽车安全要求, 动力性能、能量消耗量 (正在修订) 、排放测量方法, 定型试验规程等

Safety, Power Performance, Energy Consumption and Emission and Approval Requirements and Test Procedures and so on.

➤ 燃料电池汽车 (FCV)

燃料电池汽车安全要求、燃料电池发动机性能试验方法、加氢车技术条件

Safety of Vehicle, Test Procedure of FC Engine and H₂ Refueling Vehicle Specification and so on.



中国电动汽车标准总体情况介绍

general introduction of EV Standards

➤ 动力电池 (Battery)

4项国家标准+4项汽车行业标准，涉及铅酸电池、镍氢电池、锂离子电池、锌空气电池、超级电容等多种储能体系。

4 GB/T and 4 QC/T standards related to Lead acid, NiMH, Li-ion, Zinc-air and super capacitor etc.

➤ 驱动电机系统 (Motor system)

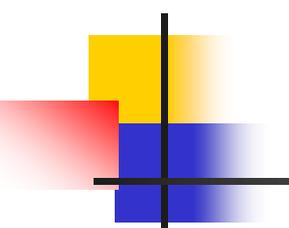
驱动电机系统技术条件、试验方法；

2 GB/T Motor and its Controller specifications and Test Procedures

➤ 充电系统 (Charging system)

传导充电系统3个系列标准, 充电插头插座标准通用要求

3 standards for Conductive Charger and Charging Station, general requirements of charge Plug and Socket.



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Standards for Traction batteries in China

已经发布的动力电池标准制

Traction Battery Standards issued

已发布的标准8项，其中4项行标被工信部《准入规则》引用。

8 standards were issued, 4 QC/T and 1 GB/Z standards were adopted by MIIT catalogue administration system.

1	GB/T18332.1-2001	电动道路车辆用铅酸蓄电池 Lead-acid batteries used for electric road vehicles
2	GB/T18332.2-2001	电动道路车辆用金属氢化物镍电池 Nickel-metal hydride batteries of electric road vehicles
3	GB/Z18333.1-2001	电动道路车辆用锂离子蓄电池 Lithium-ion batteries for electric road vehicles
4	GB/z18333.2-2001	电动道路车辆用锌空气蓄电池 Zinc-air batteries for electric road vehicles
1	QC/T741-2006	电动汽车用超级电容器 Ultra-capacitors for vehicles.
2	QC/T742-2006	电动汽车用铅酸蓄电池 Lead-acid batteries for electric vehicles
3	QC/T743-2006	电动汽车用锂离子蓄电池 Li-ion Storage Battery for Electric Automotives
4	QC/T744-2006	电动汽车用金属氢化物镍蓄电池 Nickle-metal hydride batteries for electric vehicles

正在制修订的动力蓄电池相关标准

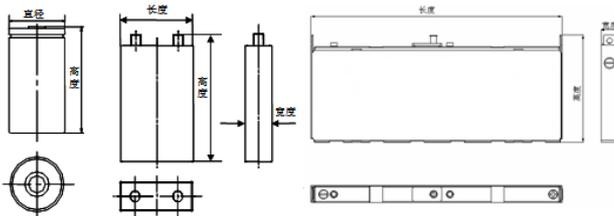
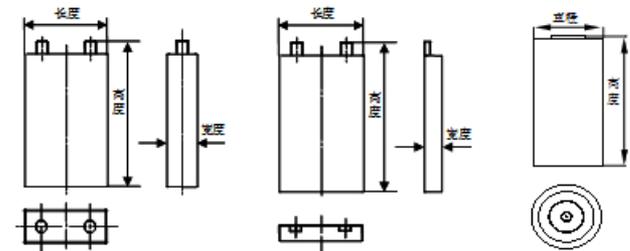
Traction battery related standards under development

1. 电动汽车用动力蓄电池产品规格尺寸（已报批）

Specification and dimension of traction battery for electric vehicle (approved)

Li ion power battery

No.	Nominal Voltage (V)	Nominal Capacity(Ah)	Maximum Dimension (mm)		
			Length(Diameter)	Width	Height
1	3.6	8	66.0	18.0	148.0
2	3.6	100	343.0	18.5	254.0
3	3.2	2	26.0	--	65.0
4	3.2	15	72.0	29.0	120.0
5	3.2	15	136.0	8.0	230.0
6	3.2	20	92.0	34.0	146.0
7	3.2	20	110.0	25.0	120.0
8	3.2	50	100.0	28.0	376.0



Ni-MH battery

No.	Nominal Voltage (V)	Nominal Capacity (Ah)	Maximum Dimension (mm)		
			Length (Diameter)	Width	Height
1	1.2	6	33.0	--	61.5
2	1.2	6	60.0	20.5	83.5
3	1.2	40	83.0	28.5	158.5
4	1.2	60	100.5	29.0	184
5	7.2	6	276.0	22.0	120.0

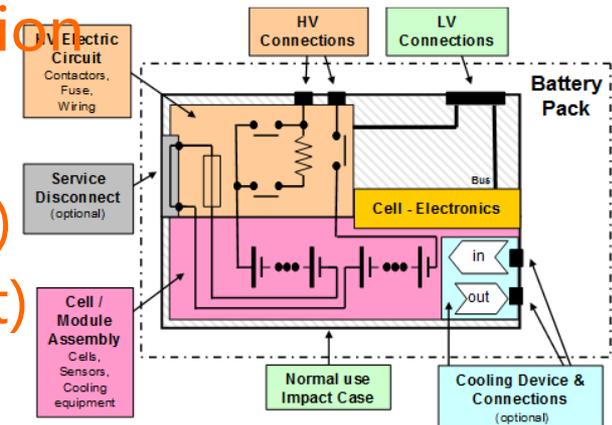
正在制修订的动力蓄电池相关标准

Traction battery related standards under development

2-3. 电动汽车用锂离子动力蓄电池系统测试规程 第1部分 高功率应用 第2部分 高能量应用（征求意见）
Electrically propelled road vehicles — Test specification for lithium-ion traction battery systems

Part 1: High power applications (draft)

Part 2: High energy applications (draft)



General tests	Performance tests	Reliability tests	Abuse tests
Pre cycles	Energy and capacity at RT different temp. and dis. rates	Dewing	Short circuit protection
Standard cycle	Power and internal resistance	Thermal shock cycling	Overcharge protection
Standard discharge	Energy efficiency at fast char.	Vibration	Over-dis. protection
Standard charge	capacity loss / Cycle life	Mechanical shock	

正在制修订的动力蓄电池相关标准

Traction battery related standards under development

4. 电动汽车用动力蓄电池的安全性能要求和试验方法（征求意见稿）

Safety requirements and test methods of traction battery for electric vehicles (draft)

- **electrical tests**

- overcharge
- overdischarge
- short circuit

- **physical tests**

- mechanical tests
 - drop test
 - penetration test

- **thermal tests**

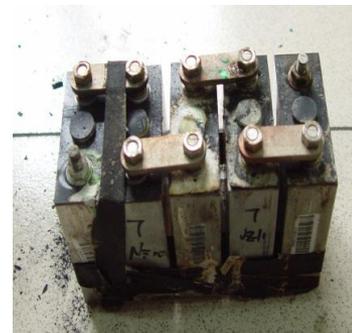
- heating up test



crush



nail penetration



short circuit

正在制修订的动力蓄电池相关标准

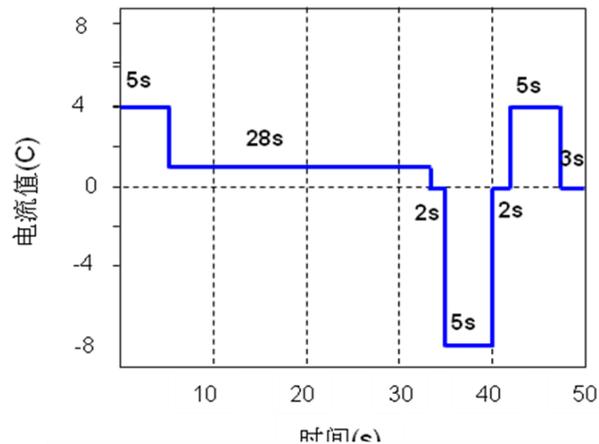
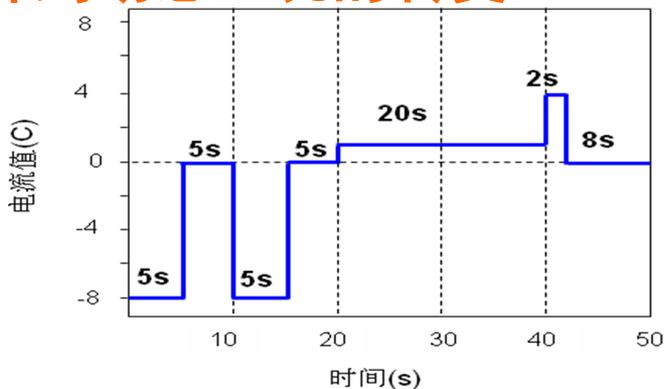
Traction battery related standards under development

5. 电动道路车辆用动力蓄电池的循环性能要求（征求意见）

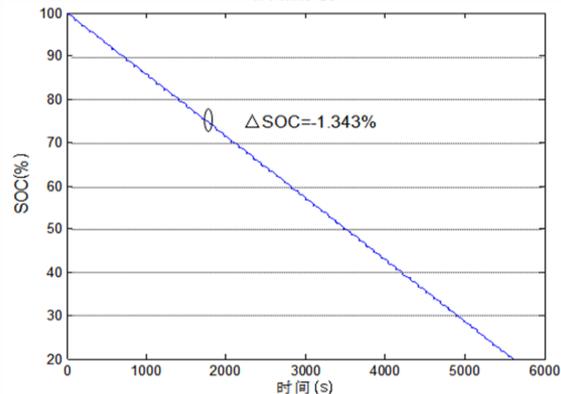
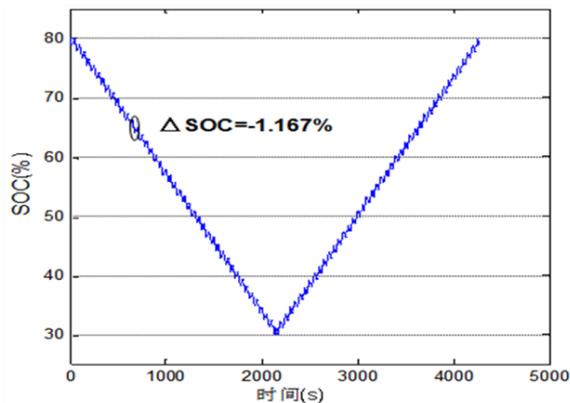
Cycle performance of power batteries for electric vehicles
(draft)

从静态循环到动态工况的转变

运行工况
cycles



SOC波动
SOC swing



正在制修订的动力蓄电池相关标准

Traction battery related standards under development

6. 电动汽车传导式充电接口（已报批）

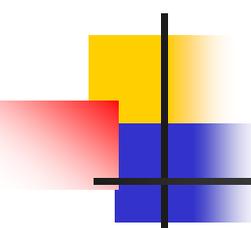
Electric vehicle conductive charge coupler (approved)



交流接口
AC coupler



直流接口
DC coupler



正在制修订的动力蓄电池相关标准

Traction battery related standards under development

7. 电动汽车电池管理系统与非车载充电机之间的通信协议（已报批）

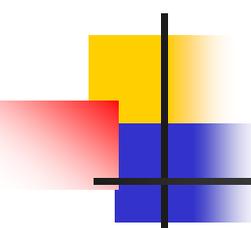
Communication Protocols between Battery Management System and Off-board Charger for Electric Vehicles（approved）

8. 电动汽车用电池管理系统技术条件（草稿）

Technical specification of Battery Management System for Electric vehicles（draft）

9. 电动汽车动力电池箱通用要求（草稿）

General Requirements for Battery Box for EV Power Battery System（draft）



正在制修订的动力蓄电池相关标准

Traction battery related standards under development

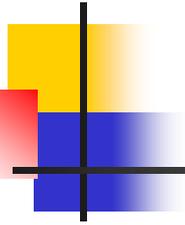
10. 电动汽车动力蓄电池系统通用要求（征求意见）

General Requirements for Battery Box For Electric Vehicles (draft)

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QC/T 741、742、743、744的修订, 车载充电机技术条件等

Revise QC/T 741/742/743/744. Drafting of standards of Charger on board and so on.



**Thank you for your
attention!**

