

专家论坛

电动汽车电池的现状与发展趋势

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摘要:

电动汽车电池既是发展电动汽车的核心, 更是电力工业与汽车行业的关键结合点。结合电动汽车的发展历史概述了车用动力电池的发展情况, 重点介绍了3种主要电动汽车电池: 铅酸电池、镍氢电池和锂离子电池的研究现状及当前的应用情况, 并从电池化学性能和商业化的电动汽车电池组性能2个角度在技术和经济层面进行了详细的比较分析, 最后对当前电动汽车电池的应用前景、未来发展趋势和研发中的新电池技术进行了展望, 指出中国电力行业应关注电动汽车电池技术的发展, 分析电动汽车充电负荷对电网的影响并及时采取应对措施。

关键词: 电池 电动汽车 铅酸电池 镍氢电池 锂离子电池

Present Status and Development Trend of Batteries for Electric Vehicles

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Abstract:

With the advent of more stringent regulations related to emissions, energy resource constraints and financial crisis, the world has sparked a global race to electrify transportation. Battery is not only a key component of electric vehicles, but also plays a prominent role as the joint of power and automotive industry. This paper reviews improvements made in the design and manufacture of batteries as well as development of electric vehicles during the past decades. State of the art for three important battery technologies in EV application, namely lead-acid battery, NiMH battery and lithium-ion battery, as well as their current application are presented; and in the viewpoints of chemical properties of the cell and the performances of commercial pack for EV, detailed comparative analyses in technology and economy are performed. The application outlook of EV battery, its development trend in future and new cell technologies being developed are prospected, and it is pointed out that the power sector of China should pay special attentions to the development of EV battery technology, analyze the influences of EV charging load on power grid and take steps in time.

Keywords: batteries electric vehicle (EV) lead-acid battery NiMH battery lithium-ion battery

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