



China Brief: New Energy Vehicles

Special Series, Part 2 of 4

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Update: **List of Chinese EVs for National Promotion**

On its official website, the Ministry of Industry and Information Technology published its first list of recommended electric vehicles for national promotion and demonstration. BYD's F3DM is the only passenger car on the list. Other EVs on the list are commercial vehicles (i.e. minivans, etc.), including Nanjing Iveco's service van, Jianghuai Auto's engineering vehicle, Jiangling Quanshan's service van, and Zotye's commercial van. Being on this list is a critical precondition for auto-makers to receive government subsidies for mass production. BYD reports that consumers can expect a 50,000 RMB subsidy for their first F3DM purchase.

Special: **Chinese Battery Manufacturer Profiles**

Welcome to Part 2 of our special four-part series, CS Shanghai's "China Brief: New Energy Vehicles." In this issue, our focus is to provide our audience a profile of the major battery manufacturers (both NiMH and lithium) in China.

At present, the majority of battery makers in China produce NiMH-type batteries. Although lithium batteries are under development, most companies do not have the capability for mass production; some companies are only at the investment-stage. With strong support for NEVs by the central government, however, progress is rapid. Chinese battery makers are using Japan as their benchmark for battery development and its EV application.

Profiles: **Major NiMH Battery Makers**

Chunlan Group Corp. is one of China's largest conglomerates. The company's NiMH batteries for electronics currently hold 50% of China's market share. However, its capacity to supply NiMH batteries for EVs is limited to only 1,800 per year. The company will be the battery supplier for First Automotive Works (FAW), Dongfeng, and CSR (a railway company).

Jonjee Sunlite Company is focused on developing and producing new techniques for using high-power NiMH batteries. It has a strong overseas presence (over 90% of sales). The company claims to have enough battery production capacity to supply 28,000 HEVs. Jonjee is in cooperation with FAW, Dongfeng, Changan, Xiali, Beijing Automotive, and Chery.

Hunan Shenzhou Science & Technology Co., Ltd. (Shenzhou) produces NiMH batteries for HEVs as well as high-performance NiMH & NiCd (nickel-cadmium) for military and industrial use. The company received government funding to develop NiMH application for hybrid power city transit.

Profiles: (NiMH, cont.'d) *Kan Battery* is affiliated with Zhejiang University in Hangzhou as it relates to technical development. The company is specialized in manufacturing and customizing “super high-quality” NiMH batteries and battery packs.

Hunan Copower EV Battery Co., Ltd. is a joint venture company between a Hunan-based energy company and a Hong Kong-based technology company. They currently possess a key technology and property rights for an automotive battery pack used in EV cars and buses. The Hong Kong partner has over 16 years of experience in R&D/manufacturing of automotive battery packs. Although its Changsha base is still under construction, the first phase is already completed; its annual output is 18,000 sets of NiMH EV battery system. At present, this company is the most influential NiMH supplier of HEV/EV battery packs in China.

Shanghai Wanhong Power & Energy Co., Ltd. is a joint enterprise between the Academy of Chinese Science and Wanhong Investing Group. Its major products are NiMH batteries for power tools, digital electronics, medical instruments and HEVs. CS Shanghai believes there is an outreach opportunity with this company to develop their lithium battery capabilities.

Profile: Major Lithium Battery Makers

BYD Auto manufactures many of its components in-house, including its lithium iron phosphate (LiFePO₄) for the F3DM HEV. Although LiFePO₄ has 30% less energy capacity than conventional lithium-ion batteries (LiCoO₂), the company claims it is more chemically stable. BYD Auto partnered with Virginia for EV battery development in May 2009.

CITIC Guoan Menguli (MGL) is located in Beijing Zhongguan Cun Science Park. After more than 10 years' worth of rapid development, MGL is now large-scale high technology enterprise with R&D and production operations. It is the most advanced in new material and new energy technologies. Its production capacity for lithium-ion (LiCoO₂) is 2,000 tons/year; for LiMn₂O₄ is 500 tons/year. MGL was the only lithium battery supplier authorized by the 2008 Beijing Olympic Committee.

Thunder Sky Battery Limited has a variety of patents and exports its lithium-ion batteries to over 50 countries. Its lithium-ion batteries are the only ones to receive a “safe” designation from the U.S. Department of Transportation by a Chinese company. The company has a battery factory in the U.S. and plans a new factory to be built in Europe. It is currently in cooperation with FAW to start producing 25,000 “e-buses” to be used in China’s metropolitan areas.

Wanxiang Electrical Vehicle Co., Ltd. is a wholly-owned subsidiary of Wanxiang Group (one of the top 500 companies in China). Known for its auto parts worldwide, the EV subsidiary will be the company’s foray into manufacturing whole vehicles. With a reported investment of 1.365 billion RMB for its Hangzhou base, Wanxiang EV expects to produce its first 1,000 EVs by 2010.

Infra-structure: Battery Switching Stations

A California-based company recently unveiled its network of battery switching stations in Finland to support the use of all-electric vehicles. This is a pilot project designed to see whether switching stations will resolve the infrastructure problems related to EV use. This company's investor partners are working closely with Chinese energy companies (esp. solar & wind energy entities) to develop a similar network of battery switching stations in China. According to one of the managing partners, their goal is to "change the whole business model, where the batteries are leased to the consumer, switch it off in under 5 minutes... and the solar & wind companies will have a place to store all their energy."

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