Worldwide Nanotechnology Electric Vehicle (EV) Market Shares, Strategies, and Forecasts, 2009 to 2015

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Report Summary

Breakthrough technology in electric vehicles brings advancements that provide customers with personal transportation choices never before available.

Electric vehicles are real. They come in a variety of styles and capabilities. The BMW features driving control and style. The Chinese BYD hybrid backed by Warren Buffet’s company has features that enable plug-in hybrid power train flexibility. It has a full battery-powered electric mode. The series-hybrid mode has an engine which drives a generator to recharge the batteries, acting as a rangeextender. There is a parallel hybrid mode, in which the engine and motor both provide propulsive power.

Electric vehicles represent a quantum shift in transportation. The design trajectories are varied; the opportunities are significant as a quantum shift occurs in what the vehicle basic functions are and how the vehicle works. The car companies that leverage the market opportunity to shift to a new paradyne are likely to succeed. There are others who merely try to migrate existing styles and designs to electric vehicles. Buggy whips come to mind.

The ability to plug a car into a hardened backyard set of batteries charged from a solar panel provides relief from gasoline spending. To have a second car, powered by a battery pack promises to provide growth of a new industry. The banks can loan against the car and the solar panel. Solar panels are evolving modular capability where they can be quickly installed and provide electricity for the car.

Investment in electric vehicle infrastructure is a priority. With countries seeking to invest in infrastructure that will provide economic growth, it is clear that special infrastructure for electric vehicles will stimulate growth from the private sector. Electric vehicle market segment is positioned for growth for vehicles used for local driving.

Worldwide nanotechnology thin film lithium-ion batteries are poised to achieve significant growth as units become more able to achieve deliver of power to electric vehicles efficiently. Less expensive lithium-ion batteries allow leveraging economies of scale and proliferation of devices into a wide range of applications. According to Susan Eustis, lead author of the study, “Economies of scale leverage the lithium-ion battery nanotechnology advances needed to make lithium-ion batteries competitive. Nanotechnology provided by lithium-ion research solves the issues poised by the need to store renewable energy. Lithium-ion batteries switch price reductions are poised to drive market adoption by making units affordable.”

Nanotechnology results obtained in the laboratory are being translated into commercial products. The processes of translating the nanotechnology science into thin film lithium ion batteries are anticipated to be ongoing. The breakthroughs of science in the laboratory have only begun to be translated into life outside the lab, with a long way to go in improving the functioning of the lithium-ion batteries.

Unlike any other battery technology, thin film solid-state batteries show very high cycle life. Using very thin cathodes (0.05ìm) batteries have been cycled in excess of 45,000 cycles with very limited loss in capacity. After 45,000 cycles, 95% of the original capacity remained.

Markets for electric vehicles at 685 units in 2008 are anticipated to reach 32.7 million autos shipped by 2015, growing in response to demand for a renewable energy powered vehicle that lowers the total cost of ownership by a significant amount. Lithium-ion batteries used in cell phones and PCs, and in cordless power tools are proving the technology to power electric vehicles. Early electric vehicles are being used as city cars, proving the feasibility of electric cars. Think in Norway has a viable manufacturing operation and 1,000 cars on the road. The large emerging markets are for hybrid and electric vehicles powered by renewable energy systems.

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