

An Interview with the Chief Technology Officer
of TD HiTech Energy

Mo-Hua Yang on the Global E-bike Trend

Text & Photos: Editorial Dept.

Due to the energy conservation movement and continuous technological breakthroughs, electric bicycles enjoy excellent sales in all global markets. In particular, e-bikes have made great inroads into the European market, and continued to make robust progress last year. Dr. Mo-Hua Yang, a senior researcher who has studied e-bikes for over a decade, has provided the following analysis of e-bikes' prospects in the world's leading markets.



China

Although China is the world's largest e-bike market, and produces more than 20 million e-bikes annually, it embarked on a period of retrenching last year. The chief reasons for this include unclear and disputed e-bike regulations, and a significant change in how consumers perceive e-bikes. Because approximately 40-50% of e-bikes in the

Chinese market do not comply with current laws and regulations (which treat e-bikes as light motorcycles), the market is in a chaotic state, legal enforcement is spotty, and there have been countless disputes. While manufacturers are making strenuous efforts to ensure that e-bikes have a legitimate, appropriate status under the law, relevant laws and regulations remain thoroughly murky, and the industry is resigned to maintaining a wait-and-see

attitude. Due to the government's failure to clarify relevant laws, we expect that the Chinese market will continue to retrench during 2010.

In another development, Chinese consumers are shifting their attention from price to quality. Due to uneven product quality, most Chinese consumers have poor impressions of e-bikes, and are particularly distrustful of low-priced models. Consumers have become noticeably more conscious of quality during the last few years, and are consequently much more receptive to high-priced products. As a result, the average retail price of e-bikes has soared from the original RMB 1,000-1,500 to the current RMB 2,000-2,500. As far as batteries are concerned, while lead-acid batteries still predominate, lithium batteries are clearly the wave of the future. Although lithium batteries currently have a market share of only 5-10%, manufacturers are making continuous headway on technology and prices, and the future of these batteries looks bright.

Europe

Pedelecs are selling best in the European market, and total sales volume soared from 400,000 in 2008 to around 600-700,000 in 2009. Sales may even rise as high as an astonishing million units in 2010. Germany and the Netherlands are driving most of the current growth. Skyrocketing pedelec sales can mainly be attributed to steady breakthroughs in the development of lightweight lithium batteries. Today's compact batteries enable the design of pedelecs with clean, attractive, aerodynamic styling, which has dramatically increased their appeal. The most successful recent pedelec in Europe has been the Sparta. Pedelecs are chiefly marketed to the elderly, who often got in the habit of riding a bike in their youth. Because they now find their physical strength insufficient for cycling, but still want to get out on a bike, pedelecs are an optimal choice for these individuals. These riders are very face-conscious, however, and wouldn't be caught dead on a clumsy, clunky bike that is obvi-



▲ Dr. Mo-Hua Yang has spent 11 years researching electric bicycles and the e-bike market, and is considered a leading expert in the field. In view of the bright prospects of the e-bike market, Dr. Yang invested in the establishment of TD HiTech Energy in 2008.

ously a pedelec. But thanks to the aerodynamic styling of today's models, which no longer have "pedelec" written all over them, elderly riders have embraced them wholeheartedly, and are using them to achieve both health and a smarter image.

In addition, Europe's young consumers are strongly devoted to environmental protection and energy conservation. As a result, many individuals who once drove to work have decided to ride a bicycle instead. Because of their labor-saving attribute, pedelecs provide a good transportation option for these environmentally-conscious people. Furthermore, the popularity of electronic gadgetry among young people has encouraged them to upgrade their bicycles from mechanical to electric, and they have eagerly taken to fun, fashionable pedelecs with electronic functions. All across Europe, pedelecs have gradually morphed from a rather unexciting means of transportation to the trendiest new type of two-wheeled vehicles. The great-

est challenge at present is how to increase product competitiveness and acceptance by achieving a comfortable balance between electric power and human pedaling. Three different types of battery units dominate the European market: (1) Total solution: provides a complete system, including battery module, charger, control system, and motor; examples include Bionx, Panasonic, Sanyo, and J.D. (2) Battery modules only: including TD Hi Tech Energy. (3) Batteries and modules produced in-house: including Phylion Battery, Amita Technologies.

Japan

The Japanese pedelec market has enjoyed steady growth for many years, and annual demand is around 300,000 units. Thanks to the easing of relevant regulations last year, sales volume hit 400,000 units in 2009. The new regulations announced in January 2009 relax the requirement for a 1:1 ratio of electric to human power to a 2:1 ratio. As a result, pedelecs are free to become more powerful and easier to ride, which has expanded demand and increased popularity among consumers, explaining the sales surge to 400,000 units last year. Since Japanese pedelecs do not require much power, over 90% now employ lithium batteries; the three companies Yamaha, Panasonic, and Sanyo together account for 80% of the battery market. Pedelecs have an average retail price of approximately ¥100,000-120,000. But because a 2:1 power ratio is still insufficient to satisfy young consumers' demand for powerful pedelecs, the market is not expected to grow strongly in the near future.

USA

Due to the United States' vast land area and long distances, bicycles are mostly used for sports and recreation, and the use of an e-bike does not offer much benefit. There is consequently no major niche for e-bikes to fill, and the e-bike market is not expected to grow significantly. Annual demand

is currently around 200,000 units, but the market is very dispersed.

About TD HiTech Energy

TD HiTech Energy Inc. is a professional battery energy management system and solution provider, and the capability and core technology of TD HiTech is to provide the most advancing Battery Management System (BMS) for LEVs, E-Scooters, energy storage devices and future E-vehicles. Safety of product is not a slogan but essential of all. Intelligence, high efficiency and reliability of battery energy solutions and modules are also the keys in designing and manufacturing of TD HiTech Energy Inc.

Starting from a primary battery exclusive trading agent in 1977 when the company was firstly founded and then rechargeable battery assembly line established in 1995 to nowadays a well known battery energy system and module solution provider. This achievement does not happen in coincidence because TD HiTech has profoundly accumulated extraordinary experience in designing, developing and mass production numerous of battery energy system and solutions from the past 15 years. Now, their products have been widely used all around the world in Light Electric Vehicles (LEV), Electric scooters and many consumer applications like Notebook computers, smart/PDA/cellular phones, PND, UMPC, MID and so on. ⚙️



▲ TD HiTech's Energy advance battery system.