电动汽车：技术创新定成败

Electric Cars: Technology Innovation Determines Success or Failure

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随着环境压力不断增大、石油资源的日益匮乏，发展新能源汽车已经成为国家战略发展的重要方向。

产业的发展离不开技术的支持，在现如今经济全球化的时代背景下，如果没有核心技术来支撑自身产业的发展，往往会被时代所淘汰，甚至只能去模仿，去复制。

从特斯拉的崛起到全球各大汽车厂商争先推出自身的新能源产品，无不显示出新能源巨大的潜力。但是，在这被中国汽车人寄予厚望、期待能令中国汽车“弯道超车”的新能源领域，中国却还没能探索出最合适的发展方向。

电池是瓶颈

中国的新能源汽车起步较早，但核心技术依然缺乏，其中电池技术的核心零部件依然与跨国车企存在较大的差距。

虽然多数国内车企拥有了电池、电机、电控三大核心技术，但电动车的优势并不明显，而且部分电池、电机技术是利用外包策略，导致很难形成核心竞争力。

With the increasing environmental pressure and the shortage of oil resources, the
development of new energy vehicles has become the important direction of the national strategic development.

Industry development cannot leave the technical support. Under the background of the era of economic globalization today, if there are not core technologies to support the development of the industry itself, then it tends to be eliminated by times. In fact, it has to imitate or copy.

From tesla's rise to the new energy products launched by the world's largest automakers,
all without exception shows great potential in the new energy field. But, China has not yet found the most suitable development direction in this field which is expected by Chinese to let them catch up the leading level in the world.

The battery is the bottleneck

China's new energy vehicles started earlier, but they still lack of core technology, including battery as a core key part in which Chinese enterprises still have a big gap when compared with the multinational car companies.

Although most of the domestic automakers have battery, motor, electric control as three

而电池技术是制约新能源汽车发展的最大障碍。

目前，市场最火热的特斯拉也只是使用现有的电池技术，对于电池技术的更新并没有取得突破性的进展。

新能源汽车上使用的电池主要有三类：铅酸电池、锂电池和镍氢电池，此外还有不同种类的燃料电池。

眼下，应用最多的是锂电池技术。锂电池支持快速充电，尤其是动力锂电池，但是没有快速电源，用普通的220V充电的话，电流大得惊人。

以比亚迪E6纯电动汽车为例，其电池类型为磷酸铁钴锂电池，配置电池容量200Ah，标称电压316.8V。正常的1C速度，用220V电压时高压侧的电流就是287A，想快速充电比如2C，3C，电流还要翻倍，3C就是861A，什么样的线才可以承受？而即使慢速0.1C充电，也是28.7A的电流。这意味着，把车停在自己车库，插上充电器慢慢地充，10小时才能充满，电流也还有近30A，那么这家的电线就需要改造。如果小区内多几个电动车，就要整体改造了。

如果是在专用充电站，使用高压进行快速充电，比如1Kv，电流就能降低到63A，3C速率是189A。但是，成本极高，而且需要专业人员进行操作——这可不是家用的220V想插就插——高电压大电流，需要经过培训的人员才能接线，高压对汽车本身和充电器都是一种考验。

配套设施跟不上、更换电池成本高等问题困扰着新能源车的发展。北京市目前已有电动汽车充换电站60多座，包含充电桩1000多根，另有零散桩两三百根，但很明显，这些还远不能满足日益增长的新能源车实现便捷充电的需求。

根据《北京市2013-2017年机动车排放污染控制工作方案》，北京今年将会建立2120个充电桩，以方便新能源车随时“加油”。在未来几年内，这类设施也将越来越

core technologies, the advantage of electric vehicles is not obvious. In addition, part of the battery and motor technologies adopt the outsourcing strategy, making it hard to form core competitiveness.

And battery technology is the biggest obstacle restricting the development of new energy vehicles.

At present, Telsa car as the most popular in the market also just uses the existing battery technology. The battery technology has no breakthrough yet.

New energy vehicles mainly use three categories of batteries: lead-acid batteries, lithium batteries and nickel-metal hydride batteries. In addition, there are different types of fuel cells.

For now, the lithium battery technology is the very popular. Lithium battery supports quick charge, especially power lithium-ion battery. But there are no quick-speed power supply. If the charging is by normal 220V, then the current will be very high.

Take BYD E6 all-electric cars as an example. The type is the cobalt, lithium iron phosphate battery with a configuration of battery capacity being 200 Ah and nominal voltage 316.8 V. When 220V is used, then the current at the high voltage is 287A. If the rapid charge is used, such as 2C, 3C, then the current will be doubled. 3C means 861A. , what kind of line can tolerate it? And even if a slow charging is used (0.1C), the current is 28.7A. This means that the car in the garage needs 10 hours to be charged into the full load state, whereas the current is near to 30A. As such, the wire should be changed. If the resident zone has more electric cars, then the change will be greater.

If it is in a special charging station where the rapid charging is made under the high voltage, such as 1 kv, then the current can be reduced to 63A. 3C rate is 189A. However, the cost is very high. It also needs professional personnel to operate -- this is not a home - 220V socket. The wiring should be operated by the trained personnel. High voltage is a test for the car itself and the charger.

The problems including facilities, batteries and so plague the development of new energy vehicles. In Beijing, there are more than 60 stations for charging and battery changing, including more than 1000 charging piles and 200-300 scattered piles. However, it's clear that these cannot satisfy the growing demand for new energy vehicles to achieve convenient charging.

多。仅今年，就将建成加气站86座、充换电站42座、充电桩30980个等。到2017年，城市中心区的充电桩建设标准是5公里范围内可以找到充电桩。

技术创新是唯一出路

在全球金融危机之后，全球各地汽车生产国和巨型汽车公司纷纷紧锣密鼓地开发部署和投资电动汽车。但是，我国的电动汽车产业化进程却在这个阶段放缓了，形成了一个很大的反差。尽管我们国家已经及时把节能和新能源汽车作为一项重大的国家战略，并启动了迄今为止全球规模最大的电动车十城千辆的示范工程，但是我国主流的汽车供应和消费两方对电动汽车仍抱有浓厚的观望态度。燃油汽车经过100多年的锤炼已经形成的技术路线、消费习惯，特别是建立起的利益链条有巨大的惯性和社会影响力。没有足够的激励和倒逼的力量很难冲破既有的格局。面对百年来汽车技术最重要的变革，产业化、市场化之际，供需双方为什么踌躇了？因为面临产业化困境。

在电动车产业化临门一脚的时候，实际上面临两大困难。

一个是目前电动车对燃油车的替代并不是出自燃油车生产和消费自身的原因，因此，生产者和消费者并没有加快替代的紧迫感，缺乏内省的动力。另一方面，在产业化初期，始终存在着技术尚不成熟的问题，市场规模难以扩大；而没有大规模的市场考验，技术也难以成熟。这成了相互掣肘的问题。

何况，用户普及程度低，谁愿意建基础设施？没有基础设施的完善，谁又愿意买车？产业规模上不去，生产成本怎么下降？高昂的车价，何人问津？……如此等等，存在着一系列“先有鸡还是先有蛋”的困惑。

当然，这种情况不是我国所独有的，各个汽车生产国几乎都遇到了。这正是全球各国政府成了电动车第一推手的原因。

从某种意义上讲，目前我国的电动汽车正处于这种产业化困境之中。当前的任务就是要使政府这只看得见的手和市场那只看不见的手巧妙配合，引导企业和消费者闯过困境，开创新的未来。

目前，在全球公认新能源汽车发展潜力最大的中国市

According to 2013-2017 work plan of Beijing with regard to motor vehicle emission pollution control, this year, Beijing will build 2120 charging piles to provide convenience for new energy vehicles. In the next few years, these facilities will also be more and more. Only in this year, Beijing will complete the construction of 86 gas stations, 42 charge and battery-change stations, and 30980 charging piles, etc. By 2017, the criteria is that the charging pile can be found in the range of 5km.

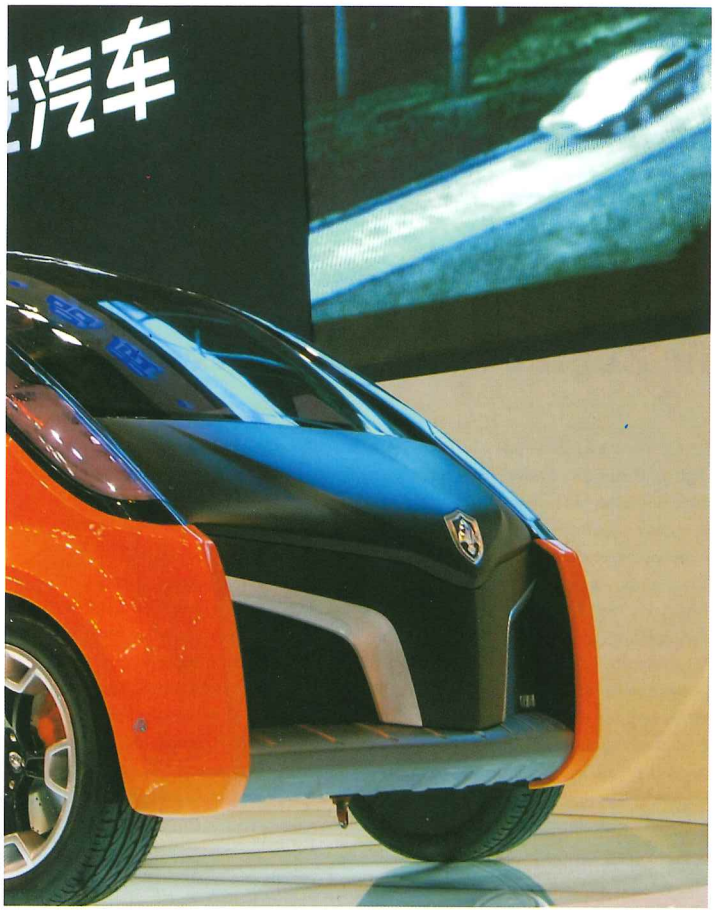
Technological innovation is the only way out

After the global financial crisis, the global car companies or giants are busy in development, deployment and investment in electric

cars. But, our country's electric car industrialization process becomes slow, forming a big contrast. Our country has taken the energy conservation and new energy vehicles as a major national strategy, and has launched the world's largest electric vehicles promotion project. However, our country' s mainstream automotive supply and consumption markets still have strong wait-and-see attitude. Fuel vehicles after more than 100 years of development have formed their technical route, spending habits, interests of the chain, a large inertia and social influence. There is not enough incentive or force to break the existing pattern. Facing the most important changes in the car technologies, why doe bot

场，中国政府发布了《节能与新能源汽车产业发展规划》。与之呼应，中国建立了节能与新能源汽车产业发展规划部际联席会议制度，启动了25个新能源汽车产业技术创新项目。

站在巨人的肩膀上，可以买来技术和产品，但可以肯定的是，这些买来的技术和产品，都不是最新的技术。也就是说，如果靠简单的购买，哪怕完全消化了，也不过是人家淘汰的或者已经在使用的技术。反观大众，为什么能推出一辆成功一辆，很重要的原因是大众拥有自己的独家



技术，在技术上是行业的领导者，这也使其品牌被认可。

车企还需要突破电池技术瓶颈，做到拥有技术储备。虽然目前本土车企未能从新能源汽车上赚到钱，但如果持续不断地研发，突破电池技术，就等于突围而出，因此车企应当注重技术储备，电池技术突破，量产到整车上就可以推出来。也因此，无论是一汽，二汽，像长安，北汽，像江淮、奇瑞、吉利都在做，都在研发各自的电动车，没有一个企业不做的。

the supply and the demand hesitate? The reason is the difficulties face the industrialization.

The industrialization of electric vehicles actually faces two big difficulties.

One is that the replacement of the fuel car by the electric car is not caused by the production and consumption of the fuel car. Therefore, producers and consumers have no sense of urgency for the replacement, and the internal driving force does not exist. On the other hand, in the early stage of industrialization, the technology is not mature, and the size of the market is difficult to expand. There is no test by the large-scale market.

Besides, the popularity among the users is low. Who is willing to build infrastructure? When the infrastructure is not perfect, who wants to buy a car? If the industry scale is not large, how is production cost down? Under the condition of high prices, who is willing to buy? ..... So on.

, of course, this kind of situation is not unique in our country, every car producers almost

met. This is what governments around the world electric cars the first driving force for many reasons.

In a sense, at present our country' s the electric car is in the problem about the industrialization. The current task is to make the government a visible hand and the market a invisible hand to come together, guide enterprises and consumers through difficulties, and start a new future.

At present, it is worldwide recognized that the new energy vehicles development potential is the largest for China market. The Chinese government has issued its energy conservation and new energy vehicles industry development planning. China has established its inter-ministerial joint conference system, and launched the 25 new energy automobile industry technological innovation projects.

Standing on the shoulders of giants, we can buy technology and products, but what is certain is that these technologies and products bought are not the latest ones. That is to say, we should have our innovations and independently developed technologies and products. VW is successful in developing its new products, for it has its own exclusive technology. VW is the industry leader in technology, which makes its brand be recognized.

Car companies need a breakthrough in battery technology and should have their technical reserves. Though the domestic automakers still fail to make money from new energy cars, but if they constantly do the research and development and make the breakthrough in battery technology, then there will be a bright future. Therefore, car companies should pay attention to technical reserves. In fact, FAW, Changan, BAIC, JV, Chery, Geely and so forth are spending their effort on both research and development of electric vehicles.

电动汽车或将成中国未来十年的经济引擎

EV May Become China's Economic Engine in the Next Decade

文/ 李笑波 Text/Li Xiaobo

中国过去十几年是靠房地产驱动的，GDP曾连续以两位数增长，而今房地产热度逐渐冷却，未来十年电动汽车或将成为新的经济引擎，推动中国经济发展和社会进步。

全球掀起需求热潮

电动汽车正在全球掀起一轮需求热潮。一是因为能源危机，世界石油能源的不可再生性，特别是主要能源国运输通道发生变故的可能性。美国发起针对中国的“亚太再平衡”就可能令中国的主要石油运输通道因受干扰而变得不那么通畅，增加了传统能源供应的不确定性。为避免这种尴尬，开辟新经济增长所需要的能源管道就变得特别紧迫。二是环境污染，解决城市雾霾及空气质量质量。三是对经济增长贡献较大的汽车产业面临变革传统能源，采用电力驱动。我国的电力可以采用核电、太阳能、风能、传统水利及利用生物质发电，这是电动汽车应运的前提。

电动汽车是时代发展到一定阶段的历史产物。电动汽车在西方主要发达国家就已经拥有成熟的技术储备，包括充电式和燃料电池式两种方式，具备了市场推广条件。我国电动汽车发展速度紧随世界趋势，且在市场推广方面具有明显优势，庞大的中国市场，必将成为世界电动汽车发展的主要增长市场。

我国发展态势良好

据中国汽车业协会统计，我国电动汽车，2012年共销售12791辆，同比增长了103.9%，2013年销售17642辆，今年上半年，我国分别生产和销售了20692和20477辆，分别同比增

China over the past decade was driven by real estate with continuous double-digit GDP growth. However, now the real estate is declining. In the next decade the electric car is likely to become a new economic engine, promoting China's economic development and social progress.

A global demand

The electric car is setting off a round of global demand, because of energy crisis, the world's oil energy irrefragable, especially major energy transport corridor having the possibility of change. The United States launched the "Asia-pacific rebalancing" which is against China. Under this background, it is likely to make China's major oil transport corridor to be not so unobstructed, increasing the uncertainty of traditional energy supply. In order to avoid this kind of embarrassment, it is very urgent for us to open up the energy channel needed by the new economic growth. need to energy becomes particularly urgent. It is also urgent for us to solve the problems about the environmental pollution, including the urban haze, smog, and air quality and so forth. The car industry faces a revolution of the energy, and it can be electrified. In our country, the nuclear power, solar energy, wind energy, the traditional water conservancy project, biomass conversion into power project and so forth are available, which is the precondition of electric vehicle applications.

The electric car is a historical product of the development. Electric cars in major western developed countries already have mature technical reserves, including charge and fuel type cells and has the market conditions for the promotion. The world trend of development of the electric vehicle is followed by China. There is an obvious advantage in market promotion. The huge Chinese market will certainly promote the world's electric car development.

Good development situation in our country

According to China's auto industry association statistics, electric cars in our country had the total sales of 12791 units in 2012, rose 103.9% year-on-year. In 2013, 17642 units were sold. In the first half of this year, the number of cars produced and sold was 20692 and 20477, increasing 2.3 times and 2.2 times respectively. The industry believe that in China this year the number of electric cars will be more than 50000, respectively, three times as much as last year.

At present, our country has 88 cities included in the promotion program. The

长了2.3倍和2.2倍。业内认为，中国今年可能产销双双超5万辆，是去年的3倍。

目前，我国已经有88个城市列入推广计划，虽然这些数字，特别是市场保有量不到传统汽车保有量的千分之二，但其增长速度却显示出惊人魅力。未来十年，电动汽车或可能步房地产及传统汽车当年的增长速度，甚至有过之而无不及。

中国此轮电动汽车大潮中，比亚迪、宇通客车等表现优异。前不久的青奥委会，比亚迪向南京投放了650辆电动公交车；比亚迪的K9纯电动大巴和e6纯电动出租车已在深圳、长沙、南京、西安、香港等主要城市以及英国、荷兰、哥伦比亚、美国等地实现市场化运营。比亚迪e6上半年累计销售1391台，同比增长90%，接近2013年全年销量。国内大客车市场销量冠军宇通客车，今年前4个月销售电动1400台，占电动客车同期总销量50%。宇通已经推广电动客车8200多辆，覆盖国内40多个大中城市。

政策推动发展保障

财政部等部门日前发布通知，对符合条件的电动汽车将免征车辆购置税。7月30日，国家发改委发布通知，对经营性集中式充换电设施用电实行价格优惠，执行大工业电价，并且2020年前免收基本电费。通知明确，居民家庭住宅、住宅社区等充电设施用电，执行居民电价。7月21日，国办《关于加快电动汽车推广应用的指导意见》中规定“地方电动汽车推广目录将废止”，也让车企看到了曙光。业内预测，未来国家可能将推出更多扶持政策。显然，符合新兴产业中环保要求的电动汽车，得到了政策的有力保护和推进。

新政对政府公务车的采购也制定了指令性标准。7月13日，《政府机关及公共机构购买电动汽车实施方案》发布，要求在公共服务领域，“电动汽车推广应用城市新增或更新车辆中的电动汽车比例不低于30%”，同时明确“采购电动汽车扣除补贴后不能超过18万元”。这也意味着将政府采购的范围划定在了自主品牌。在不考虑价差的情况下，按往年1000亿元的公交车采购规模，以30%电动汽车定额计算，每年将有上百亿元的公交车份额划入电动汽车市场。公务车采购这种引领作用，将一如既往地带动私家车市场。

电动汽车制造大国

过去十年，中国引进了国外不少传统汽车品牌，但中国还不能说掌握了关键技术。如今，中国或将抓住机会培育自主品牌电动汽车作为突破口，既会在国内市场加快培育自主品牌，也会抓住机会去抢占国外市场。面对这一千载难逢的机会，中国未来可能会成为世界领先的电动汽车制造大国。

未来十年，按照传统汽车业对整个国民经济的贡献来判断未来电动汽车的发展，电动汽车将成为新的经济引擎,对未来中国经济的引领作用十分明显。从投资角度分析，电动汽车也应成为投资的第一梯队，深度挖掘相关投资概念和题材的上市公司，将成为投资者最重要的课题。

number of electric cars in ownship is still low, but the growth rate shows a striking charm. In the next decade, the electric car may have a rapid growth rate, comparable to that in real estate and the conventional automobile industry, even more so.

In the big tide of the electric car in China, BYD, Yutong Bus and so forth has achieved a good result. Shortly before, World Youth Olympic Committee introduced 650 BYD electric public buses in Nanjing. BYD K9 pure electric buses and e6 electric taxises have been used in Shenzhen, Changsha, Nanjing, Xian, Hong Kong and other major cities as well as in Britain, the Netherlands, Colombia, the United States. The number of e6 cars in the first half of the year totally sold was up to 1391, up 90% year on year, close to the number of 2013. Yutong Bus is the champion in the sales volume of passenger buses in the domestic market. The first four months of this year, it sold 1400 electric buses. Yutong has promoted the use of more than 8200 electric passenger buses, covering more than 40 large and medium-sized cities in China.

The security of the development promoted by the policy

The Ministry of Finance issued a notice that the electric cars meeting relevant conditions would be exempted from the vehicle purchase tax. July 30, the national development and reform commission issued a notice that the favorable price would be adopted for the centralized charging facilities and that by 2020 years, the basic electric fee would be exempted. The residential electric price will be adopted for the charging facilities in the families and presidium zones and etc. July 21st, our country issued the guidance on the acceleration of the promotion for electric cars, and this notice abolished the directory of electric cars locally promoted. This lets the car companies see the dawn. Insiders in the industry predict that, in the future, our country will launch more supporting policies. Obviously, electric cars conforming to the requirements of environmental protection has received the strong support from the policy.

The New Deal also formulates a mandatory standard for the government official car purchase. July 13, the implementation plan about the purchase of EV in the government authorities and public institutions was issued. It specifies the ratio of EV in the car bought should not less than 30% in the pilot cities, and specifies that the price of EV after the subsidy being deducted should not exceed 180000 yuan. The government procurement scope is defined in the independent brand. Under the condition of not considering the price difference, according to the previous purchase scale of 100 billion yuan, there will be more than 10 billion yuan a year that is used to the purchase of electric cars. This will also drive the development of the private car market.

The large electric car manufacturer

China introduced a number of conventional car brands in the past decade, but did not yet mastered the key technology. Now, China will seize the opportunity to cultivate independent brand electric vehicles as a breakthrough point. Namely, it will not only speed up to cultivate independent brands in the domestic market, but also seize the opportunity to go global. In the face of this unique opportunity, China may become the world's leading electric car manufacturer in the future.

In the next decade, according to the traditional auto industry's contribution to the whole national economy, it is predicted that the vehicles will become the new economic engine in the future, and will play a leading role of the Chinese economy. From an investment perspective, the electric car should be the first echelon for investment. For the investors, it is important to excavate the related investment opportunities.