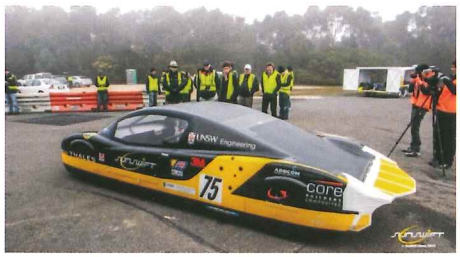
大学生造电动汽车续航能力超特斯拉

University student made battery cruising power life of the new electric vehicle is longer than Tesla

文 / 甘露 The text/Gan Lu

2014年8月5日是电车续航的纪念日。特斯拉遇到了新对手，但这并不是宝马也不是通用汽车，而是来自澳大利亚新南威尔士大学Sunswift团队的学生。一直以来，续航能力是电动车推广普及的难题之一，这一群学生发明的eVe电动车，单次充电后以每小时100公里的时速行驶了500公里，一举打破尘封已久的电动车续航世界纪录。此前，这项记录为单次充电后，以72公里/小时速度跑满500公里。

eVe已是第五代版本。Sunswift团队早前曾以打造太阳能汽车名声大噪，其推出的IVy太阳能动力车，在2011年跑出了时速达88公里/小时，创造了该领域车辆的最快时速记录。



eVe配有驾驶和副驾驶两个座椅，车身重量为317公斤(700磅)，虽然驾驶和乘车体验并不舒服，但这是该团队迄今为止打造的“最有车模样”的电动车。

eVe配备重为59公斤松下电池，使用常规家用插座可在8小时内充满电，接入工业用电插口，可在5小时内充满；也可以采用常规充电桩进行电力补充，还可以通过覆盖车身的太阳能电池板充电。如果eVe停在太阳下8个小时，搭载的800瓦太阳能电池组可以提供2小时行驶里程。同时，太阳能面板还可在车辆行驶过程中收集能量。

澳大利亚汽车研究中心对eVe进行了测试。为避免疲劳驾驶，共有三组驾驶员负责开车。测试过程中，车辆太阳能电池板并未打开，以保证获取最快速度。最终，eVe在长达2.6英里测试道路上跑了120圈。

EVe证明太阳能电动车是传统燃油汽车可行性替代方案。

August 5, 2014 is the trolley Anniversary. Tesla had encountered new rivals, but this is not the BMW nor GM, but the students from Sunswift team at the university of new south wales in Australia . For a long time, cruising power life is one of the problems of electric popularization, the invention of the eVe of electric vehicles was created by a group of students after a single charge travel is running 500 KM at the speed of 100 kilometers per hour , once had broken the world record for the dusty electric vehicle battery cruising power life. Previously, the record for a single charge, run 500 KM at the speed of 72 kilometers per hour

EVe is the fifth generation version. Sunswift team has the reputation earlier by building solar car, its IVy solar car, in 2011, ran out the speed of 88 km/h, created the fastest speed record of the vehicle in this field.

EVe is equipped with driving and deputy driving seats, body weight is 317 kilograms (700 pounds), although driving and riding experience is not comfortable, but it is the “best cars” of electric vehicle was made by the team so far.

EVe is equipped for 59 kg panasonic battery, use a regular household socket can be recharged in 8 hours, industrial power socket, can be full charging in 5 hours; Also can be used conventional charging piles with power supplement, also can charge the battery by solar panels cover body. If eVe parking in the sun for 8 hours, carrying 800 watts of solar battery can run for 2 hours driving mileage. At the same time, solar panels can also be collected energy in driving .

The Australian centre has automotive research tested for in eVe. To avoid fatigue driving, a total of three sets of the drivers are responsible for driving a car. In the testing process, the vehicles solar panels is not open, to ensure access to the fastest speed. In the end, the eVe is running 120 laps in the 2.6 miles testing road.

Eve shows that solar electric vehicle is a traditional feasibility alternative fuel car.

周鹤良:我为低速电动车叫个好

Zhou Heliang: Low-speed Electric Cars Have Advantages

文/王成 Text/Wang Cheng

原机械工业部电工局局长、现任中国电工技术学会名誉理事长、亚太电动车协会执行委员周鹤良老先生认为：对低速电动车不能一棍子打死，应当由市场来评判这个产业的“白与黑”。

坚持以市场为主体

没有市场，电动汽车卖给谁？发展电动汽车必须走先市场主导，后政府引导的路子。我们发展电动汽车必须要坚持以市场为主体的原则，先充分了解广大老百姓的实际需求，从而进行合理的市场资源配置，然后再发挥政府的作用，政府通过出台相关政策来引导规范，这才是政府正确的管理思路。

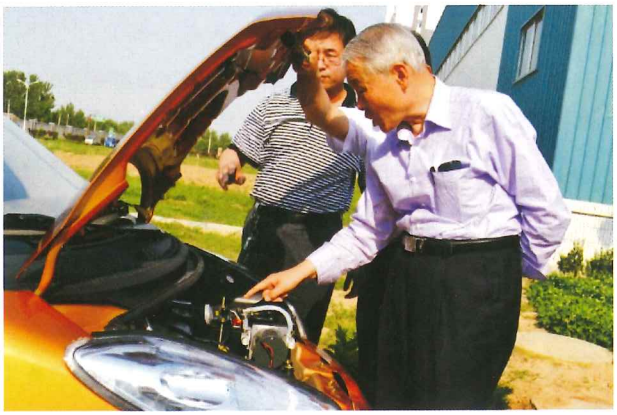
而目前我国在新能源汽车补贴方面采取的并不是市场主导，而是以政府为主导的思路。周鹤良坦言，政府出钱让企业干，企业看到了补贴的甜头，觉得有利可图，就开始了象征性生产，不管造出的电动汽车有没有人买，只是

Zhou Heliang is former director of electric bureau in the ministry of mechanical industry, current honorary president of the electrotechnical society of China, and executive committee of Pacific EV Association. He thinks tha the low-speed electric cars have advantages and should be subject to the market test.

Insist on being market-oriented

If there is no market, then who will buy electric cars? The development of electric vehicles should be market-oriented mainly and government-guided supplementarily. Our development of electric vehicles should stick to the market principle and fully understand the customer demand. In addition, we should do the reasonable configuration of the market resources. The government should play a role of guidance by issuing relevant policies. This is the right management idea for the government.

But at present our country is not market-oriented in new energy cars. For example, their subsidies are managed by the government. Mr. Zhou said that the government spent money letting the company do the relevant business. When the company gets profits, then its symbolic production will begin. Regardless of whether or not electric cars sold, it just shows the products to the authorities, thus forming a false prosperity in the development of new energy cars in China.



拿来摆摆样子给当权者看，这样便形成了当前各大车企貌似在大力发展新能源汽车的虚假繁荣景象。

电动汽车的发展是一个由低到高的渐进过程，有些人看不上低端车，只爱高端车，比如被捧上天的‘特斯拉’。而‘特斯拉’岂是普通老百姓能买得起的？大款富豪可以住别墅，但是大多数老百姓住不起，只能住保障房、廉租房。因此，小到每个城市，大到整个社会，老百姓都有不同需求，市场有责任给予满足。

当前大环境对发展低速电动车很有利。首先，我们国家领导人在前不久就指出，要根据市场需求来发展新能源汽车。而市场需求的不仅仅是中、高档产品，也包括低端产品。就目前来看，在电动汽车领域最符合老百姓需求的就是被归类为低档产品的低速电动车。

其次，中国电动汽车百人会已经把低速电动车发展课题摆在了第一位来研究，中国汽车工程学会理事长付于武也已经开始起草关于低速电动车管理办法课题的草案，三个月内起草完之后向中国电动汽车百人会理事长陈清泰汇报。付于武起草的低速电动车发展课题中，就将标准法规方面的问题作为重点对象来研究。其中还将提出性能方面的要求，除此之外，电池、电机、电控、政策优化匹配问题等等都会有个说法。“但是，‘百人会’起草的低速电动车标准目前还不能立刻成为国家标准，而只是针对行业内制定的行业标准。”

允许地方立法

虽然国家有关部门没有公开说明低速电动车上路是否合法，但仍有大量的低速电动车在上路行驶。而在没有政策

The development of electric vehicles is a gradual process from low to high. Some people disdain for low-end cars but like only high-end cars, including Tesla. Tesla cars cannot be bought by ordinary people? The rich can live in villa, but most people can't afford to live there except for affordable housing and low-rent housing. In a society, the people have different needs which should be met in the market.

The current environment is favorable for development of low-speed electric cars. At first, our national leaders recently pointed out that we should be according to market demand to develop new energy vehicles. The market demand includes not only medium and high-grade products, but also low-end products. For now, the products which most can meet the demand of the common people in the field of electric vehicles are low speed electric vehicles.

Second, EV Club takes the low-speed electric vehicle development as its study subject. Fu Yubin chairman of the China automotive engineering society has also begun to draft the measures for the administration for low-speed electric cars. This draft will be reported to Chen Qingtai director of EV Club. IN this draft, the standards and regulations are an important part, and the performance requirements are put forward. In addition, the battery, motor, electric controller, and policy have a saying. However, the standards in this draft currently cannot immediately become national, but industrial.

Local legislation

The relevant state departments have no public explanation of whether or not low-speed electric cars are legal on the road, but there are still a lot of low-speed electric cars on the road. And in the absence of policy support, the problem on the right of the road is not addressed. This also makes a lot of people to question on whether or not the low-speed electric cars on the road will cause the problem of traffic safety.

Zhou Heliang thinks, on the traffic safety problems, electric cars recommended by our country or low-speed electric cars not recognized yet should be safe on the road.

In the aspect of traffic, the local legislation should be allowed. The industrial standard should be legally effective. As a result, management measures can be effective.

支持的情况下，路权问题始终无法解决，这也让很多人都在质疑低速电动车上路行驶是否会造成交通安全的问题。

周鹤良认为，在交通安全问题上，无论是国家主推的电动汽车还是迟迟得不到认可的低速电动车，只要明确不允许上高速公路，其就是安全稳定的产品。

在交通方面应当允许地方立法，给予地方政府一定权限，让行业标准具有法律效力，如此一来，管理措施才能有效。

二、三线城市的交通不能完全按照北京或上海等特大型城市的模式来管理，应当对其因地制宜，也制定不同的标准法规。

在我国汽车领域，地方政府是没有立法权的，关于汽车的一切标准、政策法规全部由国家直接出台。如果国家推广“山东小型电动车标准”的创新模式，地方立法就有可能实现。山东省是第一个吃螃蟹的人，而且目前来看其发展模式已经步入正轨，国家相关部门要认可山东的做法。

值得一提的是，在地方立法方面，我国应向先进国家借鉴经验，比如，美国就允许汽车领域的地方立法，欧盟也是允许的。另外，从技术角度来分析，我国目前制定的电动汽车“双80标准”很不科学。美国、欧洲、日本等一些国家的低速电动车速度大都在50-60公里/小时，而且不允许上高速公路。

顶层设计决定命运

低速电动车不仅要解决地方立法问题，还要重点关注这个产业的顶层设计问题，因为顶层设计可以决定整个产业的发展命脉。有些官员很喜欢发号施令，一个处长或一个局长权力就很大，一句话就能把一个产业给灭掉，这种现象实在很荒谬。山东省省长郭树清在视察时风集团的低速电动车产业时有句话讲得很好，‘产品好不好，是市场说了算，不是政府说了算，更不是某一个官员说了算’。”

我们应当遵循以市场为主体的发展规律，市场具备一定规模后，政府要做好引导和监管。因此，当前政府部门应当转变观念，转变思维方式，要有创新的模式来适应市场经济发展的要求。

那么顶层究竟如何来转变思维？先从政策法规的角度来看，无论是国家还是地方相关部门对于低速电动车行业都要严格制标，提高企业准入门槛及技术标准。技术标准提高不仅不会影响市场，反倒会促进整个行业技术水平的升级。而提高企业准入门槛，首先要从生产条件上来考量，不具备生产条件的就不批，比如，看其是否具备汽车

In the second and third tier cities, the traffic management should meet acutal conditons. In other words, the management pattern can't completely be the same as that in mega cities such as Beijing or Shanghai. In addition, different standards and regulations should be developed.

In the automobile industry of our country, the local government has no legislative power. All standards, policies and regulations about cars are issued directly by the state. If the country promotes the innovation mode of the small electric vehicle in Shandong, then the local legislation can make it possible. Shandong Province is the first to eat the crab, and now its development model has been on the right track. This practice in Shandong should be recognized by relevant state departments.

It is worth mentioning that in terms of local legislation, our country should refer to the experience from developed countries. For example, the United States allows local legislation in the field of automobile, and so is EU. In addition, from a technical perspective, China's current dual-80 standards for EV are unscientific. In The United States, Europe, Japan and other countries, low-speed electric cars have a speed of mostly 50 to 60 km/h, and are not allowed on the highway.

Top-level design

Low-speed electric cars should not only solve the problem of local legislation, but also focus on its top design problem which can decide the development of the industry. Some officials like to issue blind commands. A word from a director can damage an industry. This kind of phenomenon is very ridiculous. Shandong province governor Guo Shuqing during a visit to Shifeng Group which focuses in the low-speed electric car industry said that whether or not a product is good was dependent on the market rather than any official.

We should be market-oriented. When the market reaches a certain scale, the government should guide and regulate it. Therefore, the current government departments should change ideas, change their mode of thinking, and carry out innovation work to adapt to the requirement of market economy development.

How to change ideas? First from the point of view of policies and regulations, national and local relevant departments for low-speed electric car industry should develop strict standards, improve the entry barriers and technical standards. Technical standards improved can not only affect the market, but also promote a upgrading of the technology in

四大生产工艺。

仅从国家或地方政府层面来下功夫，不能完全解决目前低速电动车的发展问题，还应注重企业的顶层设计。对于规模较大的低速电动车生产企业来说，当前阶段先不要追求产量，而是要严抓质量，要求返回率低，服务跟得上，这才是长久的生存之道。另外，在生产理念上还应按照电动汽车整车的优化和零部件的匹配来设计一种新型的、安全的低速电动车。即便是外采零部件搞的拼装车也需要符合整车优化的原则。

当然，转变思维也包括在技术取舍之间的转变。现在有这样一种观点，说低速电动车可以存在，但是要上路必须用锂电池。这种说法有一定的道理，但不全面。低速电动车可以采用多种型号的电池，要根据用户的需求配置不同类型的电池，但有一条，要做好回收，防止污染。

很多反对低速电动车的人都认为铅酸电池是其命穴，只要被“点中”，就会引起致命的伤害。虽然铅酸电池有污染的一面，但它是可以治理好的，做好回收就可以不污染。比如天能集团花了2个亿专门建立了一套回收废铅、废塑料的体系，废铅回收率达到98%以上，基本可以做到无污染。所以，限制低速电动车只能用锂电池而不能用铅酸电池是不科学的，应该放开，使锂电池、铅酸电池、超级电容同时发展，只有这样才能在满足当下用户需求的同时，逐步提高电池技术水平。等锂电池产业逐渐发展起来，技术提高，价格降低，铅酸电池发展的空间也小了，我们再提高锂电池比例，降低铅酸电池的比例。这是一个发展交替的过程，由市场的发展决定产品的发展，靠打压、强令、限制是不行的。

the entire industry. How to improve the barriers for a company to enter the industry? We should consider the production conditions. If a company cannot meet these conditions, then a permission will not be issued. For example, we should consider whether or not the four major production processes meet the requirements.

Only from the level of the state or local government, we can't completely solve the problem about the development of the electric vehicle at low speed. We should also pay attention to the top-level design of the enterprise. For enterprises having a large production scale of low-speed electric vehicles, they should pursue the production volume at the current stage, instead, they should focus on quality to imporve pass rates and offer excellent services. In addition, we should optimize the car design and the part fitting so as to design new and safe low-speed electric cars. Even for the cars whose parts are outsources, they need to conform with the principle of whole vehicle optimization.

A shift in thinking, of course, also means a technical trade-off. Now there is a point of view which says that low-speed electric cars can exist, but should use lithium batteries on the road. This is reasonable but not comprehensive. Low-speed electric cars can use a variety of types of batteries. We should configure the different types of batteries according to the customer needs. On the other hand, we should do a good job in recycling of batteries in order to prevent pollution.

Many people think lead-acid batteries used in low-speed electric cars are a shortcoming, which may cause fatal damage. The lead-acid battery has pollution, but it can be controlled. For example, Tianneng Group has spent 200 million Yuan to set up a system of recycling scrap lead and waste plastics with the lead recovery rate being above 98%, so pollution basically does not exist. So, it is not scientific that the low-speed electric car can only use the lithium batteries instead of lead-acid batteries. We should co-develop lithium, lead-acid, and super-capacitor batteries, in order to meet the customer demand and gradually raise the level of battery technology. Gradually, after the lithium battery industry becomes mature (for example, technology improved and price lowered and the like), lead-acid battery development space will be small. This is a process mainly affected by the market force rather than govermental force.