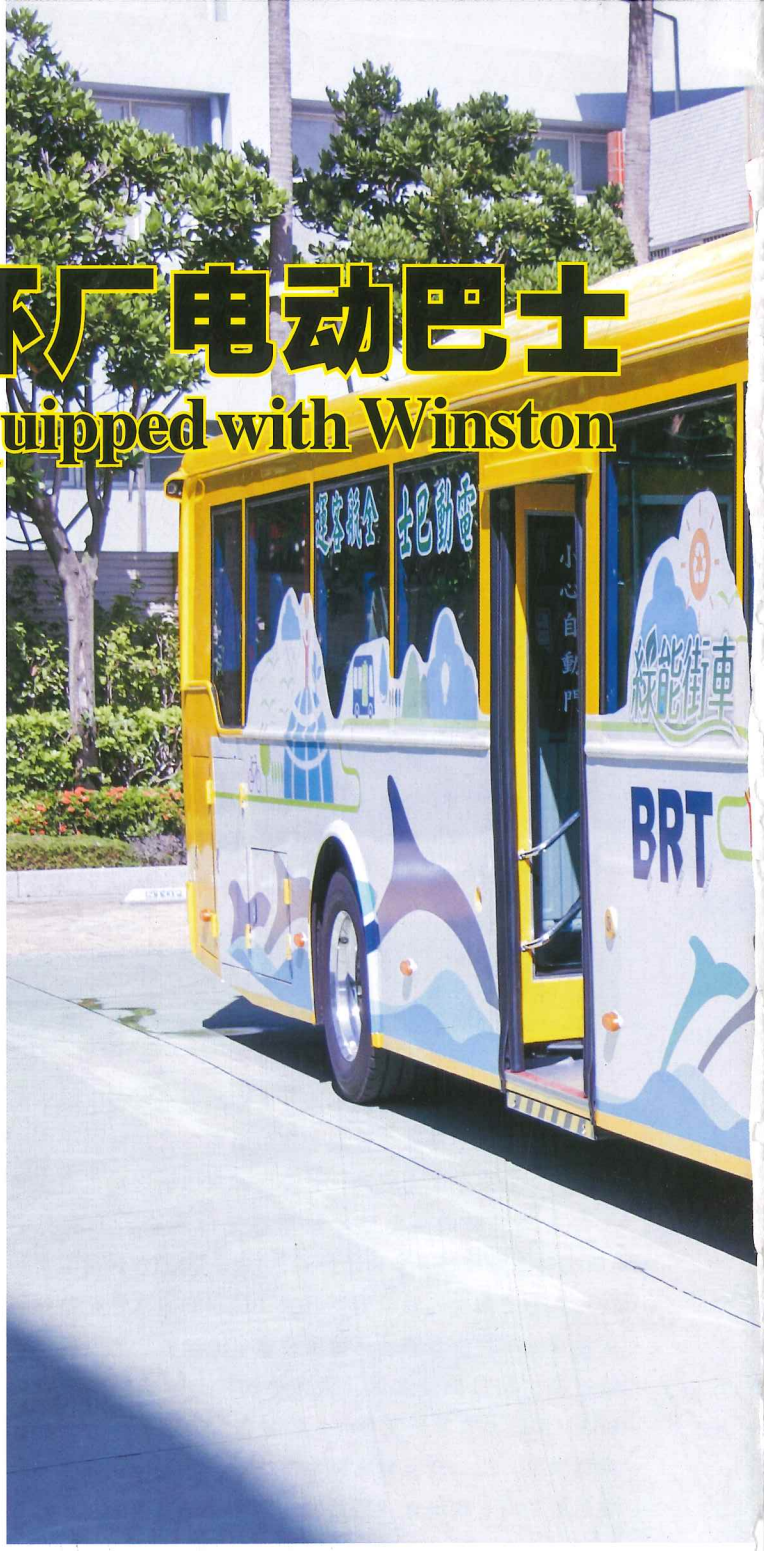
台积电启用环厂电动巴士

TSMC Electric Bus Equipped with Winston



全球第一家，也是全球最大的专业集成电路制造服务（晶圆代工）企业——台湾积体电路制造公司（以下简称“台积电”），将新竹园区的9辆柴油接驳车更换成了电动巴士，为企业环保形象再添分。而据了解，这批电动巴士与台湾大部分电动巴士一样，其电池皆为温斯顿能源集团制造的稀土锂电池。偶然还是必然，两家尖端高科技企业冥冥之中结缘了。

台积电启用9辆环厂电动巴士

台积电（股票号2330）昨日（18日）率先在新竹科学园区启用环厂电动巴士。台积电财务长何丽梅在晶圆12厂第3期主持环厂电动巴士启用典礼，“工业局副局长”吕正华、新竹科学园区管理局长杜启祥及负责营运的“国庆通运”、电动车厂华德动能科技高层均出席。

“经济部”推行智慧电动车先导运行计划逾300亿元电动车商机，也正式浮现，吕正华期许带动整体产业链发酵。

华德动能董事长蔡笃雄表示，台湾电动车能力、技术已打好基础，市场认同度也慢慢发酵，“经济部”5月拍板10年1万辆辅导计划、“交通部”汰旧换新8000辆等政策，电动车销售可望发酵，尤其台积电率先启用环厂电动巴士，对电动车工业及环保均相当有贡献。

吕正华指出，台积电与厂商签约8年，由“经济部”推行智慧电动车先导运行计划补助2年，之后公司自行负担，在台积电带头做起，让电动车相关厂商能有好的试验场地，也盼带动其他厂商跟进，提振电动车产业链。

TSM is the world's largest professional IC manufacturing services provider. It has nine diesel buses which have been replaced by electric buses in Hsinchu Area, so being more environmentally friendly. Like most electric buses in Taiwan, these nine electric buses are equipped with rare earth lithium-ion batteries from Winston Energy Group. So, the two cutting-edge high-tech enterprises cooperate in the new energy revolution.

TSMC started to use nine electric buses in the factory area

TSMC (Stock No. 2330) yesterday (on day 18) took the lead in Hsinchu Science Park to use electric buses. TSMC chief financial officer Lora Ho was the host of the electric bus opening ceremony. Deputy Director of the industry bureau Lv Zhenghua, Hsinchu

装备温斯顿稀土锂电池

Rare Earth Lithium-ion Batteries

文/慕容凰 Text/ Mu Ronghuang

何丽梅强调，台积电14年前即设置环厂车辆，之前采用柴油中型巴士，随着规模扩大，7月决定将9部柴油环厂接驳车改为电动巴士。

环保巴士装备稀土锂电池

据悉，这批环厂电动巴士由电动车厂华德动能科技提供，而巴士所有的电池皆来自温斯顿能源集团有限公司的稀土锂电池。

Science Park management director Du Qixiang, and the executive from Hua De Kinetic Energy Technology attended it.

"Economic Ministry" promotes the smart EV pilot run plan which can create a business chance of more than 30 billion dollars. Lv Zhenghua expects that this can drive the whole industry chain fermentation.

Huade Kinetic Energy Technology chairman Du-xiong Cai says that the EV capacity, technology and so forth have a good foundation. Now, the market promotion is needed. In May, the economic ministry approved the 10000-EV guide plan and the communication ministry launched the 8000EV policy. These are good news for the market. Especially, TSMC taking the lead in using EV in its factory area can contributes to the electric car

台湾唯一生产并商业化电动巴士的厂商华德动能，基本占领了整个台湾电动汽车市场，在台湾新北和新竹等地市有多辆实际营运的电巴。今年以来亦多次获得批量订单。例如，今年5月，桃园县中坜、平镇18台电动巴士，以及此前该县27台巴士，皆由华德动能提供。

实际上，华德动能有宏大的公共汽车电气化战略规划，已经铺开电动大巴、中巴的运营，下一步将对小巴和出租车电动市场进行开发。这除了自身过硬的整车技术，与温斯顿联手，使用温斯顿电池作为动力源是其能够在台湾立足的主要原因之一。无论是在路试还是在实际使用，温斯顿电池都显示出强劲的动力和稳定的性能。

当初高雄客运公司向华德公司订购纯电动大巴时，提出非常苛刻的交车条件，电动大巴从华德公司桃园生产基地直接开到高雄客运公司，路上不能充电，如果能顺利到达就接收，否则华德自己拖回去。为此，华德先期进行了

严格的预演试验，电动大巴途经“国道”1号高速公路→“国道”8号高速公路→“国道”3号高速公路→再转“国道”10号高速公路，经过7小时的行驶，成功到达目的地高雄汽车客运公司旗山站。航程320.1公里，共耗电194.647Kw(71%)，换算每公里耗电0.609Kw，尚余残电27.826Kw(10%)，如用残电约可再续行驶45.6Km。

这次试行，华德动能电动大巴以超过同业2倍有余的续航力，震撼业界。

稀土锂电池受世界欢迎

华德动能的电动巴士绿色心脏皆来源于温斯顿提供的大容量稀土锂电池。而稀土锂电池发明人钟馨稼先生被业界称为“电池大王”，从事电池研究已经近30年。其研发的稀土锂电池最大特点就是单体容量大，目前已形成40安时至10000安时系列产品；安全性能高，在各种滥用环境

industry and environmental protection.

Lv Zhenghua pointed out that TSMC signed a contract with the manufacturer for eight years in the field of the smart EV. The economic ministry would provided the aid for two years for the smart EV pilot run plan. Afterwards, the factory would be at its own burden. TSMC was a leader in the use of the EV. Lv Zhenghua hoped that other producers could follow the suite so as to contribute to the development of the EV industry.

Lora Ho stressed that TSMC 14 years ago used vehicles in its factory zone, though they were fuel buses. As the scale expanded, TSMC decided to use 9 electric buses as shuttle ones in July.

Rare earth lithium-ion batteries

It is reported that these electric buses are offered by Huade Kinetic Energy Technology. The all batteries used in them are from Winston Group and are rare earth lithium-ion batteries.

Taiwan only huade kinetic energy production and commercialization of electric bus manufacturers, basic occupied the whole Taiwan's electric car market, new north and hsinchu in Taiwan and other cities have more than the actual operation of electricity. This year also won several orders. In may this year, for example, chungli, flat in taoyuan county town 18 electric buses,

and 27 bus after the county, are provided by huade kinetic energy.

In fact, Huade has its strategic plan in the field of the electric buses. It has began the operation of the electric buses and minibuses. The next step is to do the market development in the field of the taxi and so forth. Huade has strong vehicle technologies, and has cooperated with Winston Group. This is the reason why batteries from Winston Group are widely used Taiwan market. In practical and pilot uses, Winston batteries are showing strong momentum and stable performance.

When Kaohsiung Passenger Transport Company ordered pure electric buses from Huade, the buyer put forward very harsh conditions. Namely, the buyer asked the electric buses to directly drive back this transport company without any charge on the way. If it was successful, then the buy would accept them. Huade made a strict test. Electric buses drove through Nationway 1, Nationway 8, Nationway 3, Nationway 10 to the Qishan Station of this transport company. This driving took 7 hours and the driving distance was 320.1 Km. The total power consumed was 194.647 Kw (71%), power consumed was 0.609 Kw per kilometer. The residual power was 27.826 Kw (10%), wich could let the electric bus run about 45.6 Km additionally.

The pilot run showed that electric buses from Huade Technology had a good mileage which was more than two times that in other models of electric buses, so shocking the industry.

下，甚至枪击都不会爆炸；大电流充电不影响电池使用寿命；工作温度宽，在零下40度至零上85度范围可正常使用；一致性好，钟先生自己设计的自动生产工艺简洁易行，解决了电池一致性的问题；绿色环保无污染，由于使用特殊工艺——水性粘结剂，稀土锂电池完全是无毒无害的绿色电池，且可以实现回收再利用。

凭借强劲的动力和安全稳定的性能，温斯顿电池在世界各地攻城略池，大受欢迎，出口世界100多个国家和地区，在许多重大场合成为“定海神针”，在世界产生广泛的影响。

如迪拜超级巴士采用温斯顿单体大容量稀土锂电池，可输出530制动马力，最高时速达155英里，约合250公里。乘客搭乘这样的“超级巴士”，等于坐在豪华轿车或私人飞机一样。

2009年，美国重型卡车业领航者贝尔肯与温斯顿合作，使用700AH及1000AH单体大容量稀土锂电池装备重卡，快速充电不超过1小时，载重30吨，续行能力达到150英里以上。

2010年，英国伦敦帝国学院电子工程和机械工程系的一群具有伟大理想的学生，成立“绿色耐力赛车”（RGE）项目，与英国激进跑车公司合作，采用温斯顿稀土锂电池，装备纯电动跑车“SR-Zero”，于当年7月3日，以美国阿拉斯加州的普拉德霍湾为起点，穿越美洲的泛美洲公路，途经14个国家，80多天后抵达阿根廷的乌斯怀亚终点，全程26000多公里。

2011年开始，KRYSTAL生产的纯电动校车，核定载员36人，有两个轮椅位，使用温斯顿312Kwh稀土锂电池组作为动力源，一次充电（快充1小时内，慢充6小时内）满负荷续行175英里以上，被美国指定为可上牌行驶的校车专用车。

2012年，第41届达喀尔拉力赛上，拉脱维亚奥斯卡车队驾驶的增程式电动赛车OSCareO由温斯顿提供电池，在8400公里的赛程上纵横驰骋，顺利抵达终点秘鲁首都利马，震惊世界！这是达喀尔拉力赛历史上第一辆绿色赛车。等等。

这些业绩诉说一句话：“稀土锂电池，驱动全世界！”

Rare earth lithium-ion batteries: popular in the world

Electric buses made in Huade Kinetic Energy Technology use the rare earth lithium-ion batteries from Winston Group. Rare earth lithium-ion batteries were invented by Mr. Winston Chung who is referred to as the battery king in the battery industry. He has engaged in the battery research for nearly 30 years. The most significant characteristic of rare earth lithium-ion batteries he invents is that the monomer battery has a large capacity. At present, the product line includes 40 to 10000 ampere hour amper. They have high safety performance, and do not explode in all kinds of abuse. They can work normally in the range of 40 degrees below zero to 85 degree above freezing. They have good consistency. Mr. Winston Chung has his simple automatic production process which can solve the problem of the battery consistency. His special process is the water-based adhesive which is pollution-free. Due to this special technology, namely, water-based adhesive, rare earth lithium-ion batteries are non-toxic, harmless, and recyclable.

With the safe and stable characteristics, batteries from Winston Group are very popular in the world. They are exported to more than 100 countries and regions of the world. They play an important role in many occasions, so producing a wide range of influence in the world. For example, the super bus in Dubai adopts rare earth lithium-ion batteries from Winston Group. It can output 530 brake horsepower, has a top speed of 155 miles (about 250 kilometers). Passengers aboard the super bus, like the situation where they take luxury cars or planes.

In 2009, Winston Group cooperated with a heavy truck company in the United States. It equipped its truck with 700 Ah and 1000 Ah monomer rare-earth lithium batteries. Therefore, the quick charge took no more than 1 hour, and the mileage was more than 150 miles.

In 2010, Winston Group provided its rare earth lithium batteries for free of charge for the students from departments of mechanical engineering and electronic engineering at Imperial College London. This group of students set up the RGE project and installed these batteries in their all-electric sports car "SR – Zero". This sports on July 3 of the same year started from Alaska Prudhoe Bay and went along the Pan-American highway across 14 countries. More than 80 days later, it arrived in Ushuaia, Argentina as its end point. The whole course was more than 26000 km long.

KRYSTAL in 2011 began the production of pure electric buses. The bus can take 36 people. There are two wheelchairs. It also uses Winston Group' s 312 KWH rare-earth lithium batteries as a power source. After a charge (quick charge mode: an hour, and slow charge:6 hours) it can drive more than 175 miles. It has been designated by the United States as a school bus.

In 2012, in the 41st Dakar rally, Latvia Oscar Team drove OSCareO as a range-extended electric sports car whose batteries were provided by Winston Group. It ran very fast in the race course of 8400 km. Finally, it smoothly arrived in Lima, Peru. This shocked the world! This is the first green car in the history of the Dakar rally. Etc.Etc.

Therefore, we can say, "Rare earth lithium-ion batteries drive the world!"

“开源造车”挑战传统汽车产业

"Open Source for Carmaking" Challenges the Traditional Auto Industry

文 / 万鹏程 Text/Wan Pengcheng

日前，一家名为“地平线”的创业型公司在上海发布开源造车的计划，欲复制特斯拉的造车模式，目前已获得3000万元风投资金。不过，此前，以车联网研发和应用为主业的上海博泰，也宣布将启动制造智能汽车的计划。今年5月，前福特亚太区车载连接产品规划和开发经理夏一平在北京发布了“Opencarlab”(开源汽车实验室)的非盈利汽车项目，也提出开源造车的计划。就在“地平线”在上海发布会现场，至少有5个怀揣造车梦想的团队在场。

Recently, a company called "Horizon" released a plan to build cars using the open source in Shanghai. It hoped to copy the mode of the Tesla for building cars. It has won 30 million Yuan venture capital. Shanghai Botai also announced its plan to make the smart car. May this year, Manager Xia Yiping in Ford in Beijing released the "Opencarlab" non-profit car project, also put forward a plan of open source car-building. At the time of the release conference by Horizon in Shanghai, at least five teams had their dreams to make cars.

Thinking orientation

Open source car-building is positioned at the "Internet thinking". The

“开源造车”思维的定位

“开源造车”的思维定位是“互联网思维”。开源造车预期电动车“准生证”放开，能为这一行业带来更多新鲜血液，并形成“鲶鱼效应”。不过，对于这些潜在的非传统汽车生产企业而言，如何在现有汽车制造管理体系下寻找一条生路，仍是最大考验。

“地平线”公司创始人祝军对自己未来的汽车产品定位十分明确，即为智能汽车及电动汽车的结合体。目前电动车领域颇具影响力的特斯拉，正是率先将这两大概念包装在一起而获得成功的。新能源作为新技术正在革新汽车产业，同时互联网行业飞速发展也给从业者带来了全新的思考，形成所谓的“互联网思维”。

“地平线”团队目前不足50人，其中有东风汽车前任总装工程师、奔驰和大众的售后技术培训专员、汽车零部件工厂的硬件工程师、信息咨询公司的合伙人等。

相较于大型汽车企业集团动辄成百上千人的技术团队，“地平线”的团队阵容相对单薄。祝军认为，新的产业背景下，开源造车不在于“大而全”，而在于是否有一套有效的研发制造模式。

“开源造车”模式的优势

“地平线”推行“开源造车”模式，与传统整车企业相对封闭的造车模式形成鲜明对比。“开源”这一概念最早诞生在IT领域，是“开放源代码”的简称，意味着核心技术开放。

祝军称，“地平线”会对外公开其造车技术，全球各个专业团队都可以参与研发，远比我们自己打造一个团队要强得多。同时，“地平线”也会将此资源回馈给社会，所有的厂商都可以用我们的平台去做自己的车。事实上，特斯拉也在今年6月宣布对外开放其多达300项技术专利。不过，目前似乎尚未赢得太多响应者。

祝军认为，开源造车模式诞生的产品将更符合消费者需求，这有利于抢占市场。反观在IT领域，Android系统在免费对外开放后，也已变成智能手机拥有率最高的操作系统。

目前，传统汽车制造商在多年的发展过程中，已形成相对封闭的供销体系，对于产品的设计研发一般是来自于整车厂的顶层设计，上游供应商揣度着主机厂的意思，主机厂商设想着消费者的需求。由于系统是不开放的，导致信息在传递过程中衰减、遮蔽，因此，最终的产品并不一定最符合消费者的需求。

“开源造车”存在的风险

threshold of EV industry will be lowered, thus bringing more fresh blood for the industry, and forming the "catfish effect". However, for these potential non-traditional automobile production enterprises, the biggest test is how to find a chance to survive under the current automobile manufacturing management system.

"Horizon" founder Zhu Jun has his clear thinking about the future car product which is a combination of smart cars and electric cars. Tesla having an influential in the field of EV is successful by the two concepts. As a new technology, new energy is changing the car industry. The rapid development of the Internet brings new ideas for the practitioners in the industry. Therefore, the so-called "Internet thinking" appears.

"Horizon" team has less than 50 people, including former Dongfeng Automobile engineers, Mercedes-benz and Volkswagen after-sales technical training specialists, auto parts factory hardware engineers, information consultancy partners, and etc.

Compared with large automobile enterprise groups, "Horizon" Team is weak in strength. Zhu Jun argues that, under the background of new industries, open source car-building is not positioned in the complete lines, but in whether or not a set of effective R&D and manufacturing models can be developed.

The advantage of "open source car-building" mode

"Horizon" adopts its pen source car-building model, which is in contrast to that of the traditional automobile enterprise. The concept of "open source" was born in the IT field, meaning that the core technology is shared.

Zhu Jun said, "We will disclose the car-making technology. Each professional team worldwide can participate in research and development. This will bring more powerful strength. We also contribute the society. All manufacturers can use our platform to make their own cars. Tesla also announced in June this year, that as many as 300 patents were disclosed. However, it does not yet produce any strong response."

Zhu Jun believes that the products made by this mode will be more in line with consumer demand, which is beneficial to preempt the market. In contrast, in the IT field, the Android system after freely opening to the outside world, has also become a very popular operating system.

At present, the traditional automobile manufacturers in the process of many years of development have formed a relatively closed system of supply and marketing. The design of the product research and development is generally a top design, which is considered by upstream suppliers and is closely related with the customer demand. Because the

在开源造车模式下，技术支持来自于多个团队，各个团队的技术就很难磨合和鉴定。如何保证产品质量，很难有一个统一的“质量评估体系”。

产品后期的技术维护和第三方服务由谁负责？也很难有一个明确界定。对于汽车这种生命周期长达十年甚至更久的产品来说，如何保障其整个生命周期的质量责任是个不小的考验。

此外，开源模式“集思广益”最关键的是信息安全应如何保障？事实上，在IT领域先行一步推行开源的Android系统也曾出现用户信息被泄露的情况，这正是因为一些开发者在开源过程中，趁机在其中植入恶意代码，盗取了用户信息。类似的安全隐患，在开源模式下必不可免。

“开源造车”面临的难题

倘若电动车生产资质向非汽车生产企业正式放开，未来汽车行业的玩家或许不仅局限于传统生产厂商，将有越来越多的社会资本涌进这一领域，未来新一代的“造车大军”或将出现。

在这些已启动或者即将启动的造车计划背后，仍存在不少难以逾越的关卡。目前，中国对整车生产尚且设定有严格的准入门槛，即使在未来的生产资质上予以放行，一个整车生产项目需要经历环保部、发改委、工信部甚至交通部等多个部委的层层审核，走完这些流程，即便对于一个大型企业而言，也难言轻松。

对于“地平线”类的创业团队，解决资金和人才的问题仍是其生存的基础。目前，“地平线”完成了首期融资3000万元，根据规划，到2016年，地平线的研发投入要增加到5亿元。对于汽车制造而言，远非研发这么简单。“开源造车”面临的难题还很难预料和评估。

不过，“开源造车”的模式必将对现有的传统汽车工业体系带来全新挑战，酿造一场“生存危机”也说不定。

system is not open, resulting in information attenuated and covered during the process of transmission, therefore, the final product is not necessarily the most accord with the demands of consumers.

Risks in "open source car-building" mode

Under the mode of open source and car building, technical support is from multiple teams, while the technologies from each team are difficult for running-in and identification. About how to ensure the quality of the product, it is difficult to have a unified "quality evaluation system".

It is hard to clearly define who is responsible for the after-stage maintenance and third party service. For cars haveing a long product life cycle, how to guarantee quality responsibility during the entire life cycle is a big test.

In addition, in this mode, the key is how to guarantee information security? In fact, in the field of IT, the open-source Android system disclosed the user's information. Some developers in the process of open source implant a malicious code, steal the user information. Similar events may happen in this new car-making mode.

Problems in "open source car-building" mode

If the production qualifications for EV are officially open to the non-auto producers, then not only the future car producers may not only be traditional manufacturers, but also there will be more and more social capital flooding into this field. Therefore, a new generation of car-makers may appear.

There are still many insurmountable hurdles. At present, China still a strict admittance threshold in the field of the vehicle production. If this threshold is lowered, then this approval will be made by a lot of authorities, including development and reform commission, ministry of industry and information technology and other ministries. Even for a large enterprise, this is still a complex process.

For the entrepreneurial tream from "Horizon", solving the problem of capital and talent is still the basis of its survival. At present, "Horizon" has completed the first phase of financing up 30 million yuan. According to the plan, by 2016, the input of the R&D in Horizon will increase to 500 million yuan. For an automobile manufacture, research and development are not so far from simple. In such mode, the difficulties are difficultly predicted and evaluated.

However, this new mode will certainly to the existing system of traditional auto industry brings a new challenge, brewing a "survival crisis".