

Making batteries last longer in electric vehicles

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A potentially ‘green’ energy storage device which will help to power electric transport is to be officially launched at The University of Nottingham’s Malaysia Campus (UNMC) this week.

The Sahz-UNMC [Pilot Plant](#) produces ‘supercapacitors’ which are electrochemical storage devices with high power density. They are used to improve the lifetime of the batteries in electric vehicles.

The plant has developed the new supercapacitors under the brand name Enerstora. They are cost-saving and more environmentally-friendly when used in the manufacturing of electric cars, trains and other electric transportation. The supercapacitor also has important applications in other areas like solar energy and mobile devices where extremely fast charging is a valuable feature.

The unit was established by the UNMC Faculty of Engineering with industry partner Sahz Holdings to design and manufacture the devices

with the eventual aim of building a high volume manufacturing plant in Malaysia. The fabrication process for this new technology was developed in collaboration with the Chemical Engineering Department at the University Park campus in Nottingham, UK.

The plant is sponsored by the Malaysian government and the country's former Prime Minister, Tun Mahathir, will conduct the official opening on Tuesday 11 January 2011. The event will also see the signing of a memorandum of understanding between Sahz and two future partners, 2M Engineering of the Netherlands and Semyung Ever Energy Co.Ltd of South Korea.

Electric vehicles and 'green' cars will account for up to a third of total global sales by 2020, according to a recent report from Deloitte's global manufacturing industry group. At present most electric vehicle batteries typically need replacing every three to five years. The motivation for establishing the pilot plant was to develop the supercapacitor which will extend and maximise the life of the batteries to help conserve the natural environment and global energy resources.

A low state of [battery](#) charge leads to sulphurication and stratification, both of which shorten the life of the cell. Short battery life is caused by continuous draining and charging which has a detrimental effect on the battery. By using the new supercapacitor-battery hybrid technology for energy storage in [electric vehicles](#) the battery life can be lengthened, the battery size reduced and a higher state of charge can be maintained for a longer period of time.

The pilot plant is now manufacturing Electronic Double Layer Capacitors (EDLCs) in a reproducible and economically viable way. Historically it has been difficult to scale up production to economically viable levels without losing quality and performance of the product because the equipment and processes in a large plant are significantly

different to a pilot plant. The Sahz-UNMC plant is also aiming to design a system capable of predicting the yield and quality of the product when it is eventually manufactured on a large scale.

At the launch and signing ceremony Malaysia's former Prime Minister Tun Mahathir will be given a guided tour of the lab facilities. Leading the pilot plant at UNMC, Professor Dino Isa said:

"The project is one which is leading the market. We are gambling on the demise of hydrocarbon driven vehicles and the eventual emergence of the pure electric vehicle as the dominant means of transport in the next ten years.

"We are also looking to capitalize on the popularity of mobile devices which, as platforms and technologies converge, will require energy storage systems to deliver pulsed voltage and current that drains and eventually kills normal batteries if unaided by a supercapacitor integrated within the system. We thank the Malaysian Ministry of Science, Technology and Innovation (MOSTI) and Sahz for their trust and insight, I personally thank the University for providing me with an environment conducive to inquisitive research, my students for their patience and hard work and not least Prof George Chen for his input during the initial stages of the project."

Provided by University of Nottingham

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