Headline: Motorbike's switch to electric may cost $3,500, or less
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NUS feasibility work may have potential for big business

By **NG SAI YING**

A SIMPLE school project on the feasibility of large-scale conversion of motorcycles from petrol to electric propulsion may end up with huge potential for commercialisation.

Carried out by a team of four NUS University Scholars Programme (USP) students, it was found out that the conversion of a single motorcycle will cost $3,500 and that it will take a team of two mechanics about one working day per motorcycle. Both cost and time could be significantly reduced when carried out on a larger scale.

When converted, an electric motorcycle can cut fuel cost by up to $90 a month.

In addition, it would be an environmentally friendly alternative, using up to 72 per cent less energy than a typical motorcycle and producing 45 per cent less carbon dioxide equivalent of greenhouse gases over a period of eight years.

The trick to this simple and cost-effective conversion process is what the team calls an "Ultra Mount", which is essentially a pre-manufactured mount that houses an electric motor, multiple battery packs and a motor controller.

This "Ultra Mount" eliminates the difficult modification process of the motorcycle frame: The fitting of an electric drive which has different mounting points from the original internal combustion engine requires much time and technical skill.

"When you take out the motor and put in the electric drive, the electric drive has different mounting points from the internal combustion engine. To fit the electric drive into the frame, you actually have to modify it, create new mounting points, new positions, readjust the chain line and all that to fit the model and the battery into the vehicle. The old way of doing it takes a lot of time," explained Brian Teo, one of the team members working on the project.

The idea was to standardise this procedure with the "Ultra Mount", a "universal frame that can be fitted into any motorcycle", thus reducing time and technical effort while offering a way for mass conversion.

"We're trying to aim for a bigger picture where you do mass conversion of multiple motorcycles rather than just having one or two," Mr Teo said.

The project has no plans for commercialisation now as key challenges such as insufficient charging stations and the high cost of batteries remain.

The project is an academic venture, part of NUS's newly launched Design-Centric Programme which offers multi-year projects to engineering students keen on developing innovative solutions to real-world issues.