

電動機車之工程評估

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摘 要

本研究的目的是在發展一套新的評估方法，使設計者能更直接的瞭解消費者的需求。其過程包含了兩個階段。

第一階段中運用相關的統計學說，根據現存各種機車市場意見調查的資料，以求出機車產品的重要評估屬性，並預估其重要性的演變趨勢。而在第二階段則以此重要屬性選擇成果為基礎，再加上電動機車之特殊屬性，作為機車整體評估表的評估條件。而後再針對各個評估條件建立其性能表現與價值的關係，實際估算電動機車與傳統機車之間的差距。從結果可見，電動機車在電池的儲能技術未獲得重大突破之前，仍無法與傳統機車進行自由市場競爭。而交換式電池所帶來的便利性，與合理展延電池壽命，並使之運用於短程使用模式中，將可顯著地加強電動機車之競爭力。

關鍵字：工程評估，電動機車，全壽命週期成本，資料插補法，迴歸分析

Technical Evaluation of Electric Motorcycles

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ABSTRACT

The work described in this thesis is to develop a new evaluation method that helps designers to gain better understanding of consumer demand. It has been carried out by two stages.

Theory of statistics and contemporary information were applied in the first stage of the work in order to establish a proper procedure to provide quantified trend prediction and find the important attributes & prediction of trend for traditional motorcycles .

According to the eight attributes and the special ones from electric motorcycles, a set of evaluation criteria was obtained. From the relation of attributes performance and cost utility, the evaluation of the difference between the motorcycle system variants is implanted. The result indicate that, before the breakout of cell technology, there is little hope for electric motorcycles to survive in the free market competition. The cell switching scheme and extension of cell lifetime will remarkably enhance the competitiveness of electrical motorcycles.

Keywords: engineering evaluation, electric motorcycles, whole lifecycle cost, imputation of missing data, regression analysis