DSP為主體之新型並聯式複合電動重型機車之能量管理系統研製

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摘 要

一般機車受限於空間狹小且匹配複合動力的價格不斐，若欲採用複合電動系統會較被質疑。結合內燃機與電動馬達的優點，並聯式複合電動車輛系統已經證明它們能夠降低污染、節省能源以及提升續航力。藉由適切的控制策略與複雜的機電系統，一種具有極低污染以及極少能源消耗的高性能與高效率複合式環保電動車輛得以製造完成。 在本論文中，使用能量管理策略，我們已經建立以及改善驅動器與控制器的性能。基於數位訊號處理器(DSP)，我們已經發展完成並聯式複合電動重型機車的能量管理系統，而且鋰電池管理系統也在本論文中發展完成。另一方面，藉由實驗平台測試，我們驗證與改良此能量管理系統。另外，能量管理系統藉由控制電池及控制單元的切換開關百分比以達到有效的管理電控系統以及使內燃機操作在最佳運轉點。另一方面，不管在哪種模式下更可強健的保護鋰電池。 另外，我們也已完成原型車的製作，並在2007台北車輛電子展中展出。

關鍵詞 : 並聯式複合電動重型機車 ; 重型機車 ; 數位信號處理器 ; 能量管理系統 ; 鋰電池管理系統 ; 最佳運轉點

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