Space vetor PWM control for 3kW brushless motor driver design and application for novel parallel hybrid electric ...

吳漢宏、蔡耀文

E-mail: 9706896@mail.dyu.edu.tw

摘 要

近年來隨著環保意識抬頭與全球暖化的危機浮現，如何減緩對環境的汙染已成為當前迫切的議題。在大眾運輸方面，傳統內燃機雖然排氣污染較嚴重，但結合內燃機之優點與電動馬達的特性之複合電動車(Hybrid Electric Vehicle，HEV)是目前省能且低污染具環保概念車輛的主流。 基於複合電動車輛的重要，本論文發展一種新型並聯式複合電動型機車驅動器與控制器研製，在電控系統中，使用高性能數位訊號處理器（DSP）作為各元件訊號溝通與處理整個系統的完整運作。本論文的主要重點在於使用空間向量脈波寬度調變(SVPWM)理論操控複合電動車中其永磁同步馬達之運轉，其能有效提供更高效率輸出電壓給電動馬達使用，確保系統穩定且性能良好。基於SVPWM技術操控馬達的種種優點，我們將SVPWM技術實際應用在實驗平台上的電動馬達，並完成了單動力輸出與雙動力輸出的整合。 最後，本論文也實際建構一台原型車，此原型車並也於去年四月的台北國際車用電子展中展示。

關鍵詞 : 複合電動車;數位訊號處理器;空間向量脈波寬度調變;永磁同步馬達

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