新型無刷馬達驅動器於電動重型機車之應用

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摘 要

本論文中主要著眼於以數位訊號處理器(DSP)為主體之無刷馬達驅動器的研製並將其應用於電動機車上。此無刷馬達驅動器使用日漸受到重視的空間向量調變(SVPWM)技術且有關於在電動機車控制上的應用也將一併被討論。 本論文除了使用傳統的PI控制器外，一種新型可變結構控制(VSC)也將在此馬達控制系統中被使用，此新型控制器僅使用輸出變數，藉由線性矩陣不等式理論應用在非匹配不確定輸出回授可變結構系統，本論文之新型理論能有效保證系統在順滑模式下具有穩定性且有良好性能。另一重點是若滿足某些條件，本方法能夠完全去除非匹配不確定成份之影響。 使用空間向量調變技術和新型可變結構控制理論的驅動器，不論在硬體或軟體方面，皆是以數位訊號處理器為主體，並且我們藉著所有對此系統設計的電路和程式，在馬達控制系統上成功的獲得高效能。另一方面，電動機車也隨著在我們硬體和軟體的應用，建立起優越的效能。

關鍵詞 : 空間向量調變 ; 電動機車 ; 可變結構系統 ; 線性矩陣不等式 ; 數位訊號處理器

目錄

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