

SoPC為主題之馬達控制器研製-使用新型最佳化輸出回授可變結構控制理論

莊明軒、蔡耀文

E-mail: 9419920@mail.dyu.edu.tw

摘要

可程式系統晶片(SoPC)為基礎之可變結構控制器(VSC)將在本論文中實現，其應用在馬達的控制上有相當良好的性能。除此之外，針對可變結構系統，我們提出一個最佳切換平面的設計方法。不但可以將切換平面做最佳化，而且可以保證系統在順滑模式下為漸進穩定並且有良好的性能。一個改良式的輸出回授可變結構控制器可確保順滑模式的建立，系統的狀態不必全部取得也不需估測系統狀態。我們使用複雜型可程式邏輯元件(CPLD)來建立可程式系統晶片並實現可變結構系統(VSS)控制器。由於CPLD的技術發展的相當成熟且非常容易取得，所以我們將可變結構控制器數位化，並且將它建立在ALTERA CPLD實驗平台上。所有的週邊電路及控制器都整合成為一個新的可程式系統晶片，可縮短電路的製作時間並且可達成快速雛型化的目標。可變結構控制器將由我們所設計的可程式系統晶片來實現，並且應用在馬達的控制上。如此一來控制器將擁有良好的性能及低價的優點還可以減少系統的複雜度。

關鍵詞：可程式系統晶片，可變結構控制，最佳切換平面，可變結構系統，複雜型可程式邏輯元件

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