兩軸線性馬達驅動系統之精密位置與輪廓跟隨控制

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摘 要

本論文提出智慧型交叉耦合控制器應用於兩軸永磁式同步線性馬達(Permanent Magnet Linear Synchronous Motor，PMLSM)的軌跡跟隨，首先以交叉耦合的基本架構，設計出以模糊控制系統為主的交叉耦合控制器，接著推導輪廓軌跡誤差的計算公式，透過所發展的智慧型交叉耦合控制器計算出個別軸所需要補償的誤差值，藉由同時的各軸同動補償而降低整體輪廓軌跡的誤差，最後以各種不同的模擬和實驗實施在兩軸永磁式同步線性馬達來驗證本文所提方法的有效性。硬體方面，以個人電腦為基礎，並結合MRC-6810伺服控制卡、Xenus驅動器和上銀公司的兩軸永磁式同步線性馬達滑台，並應用Microsoft Visual C++軟體撰寫程式，最後透過實驗平台來驗證本論文所提出方法的有效性。

關鍵詞 : 永磁式同步線性馬達、交叉耦合控制、輪廓誤差、模糊控制

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