條狀壓電複合致動器在翼翅結構振動和顫振控制的應用

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摘 要

本論文的目的是研究條狀壓電複合致動器在翼翅結構振動和顫振控制的應用，利用條動壓電複合致動器的激勵的特性。壓電纖維複合致動器與傳統式壓電陶瓷致動器比較其具有高性能，可撓曲和耐久性的優點。 使用有限元素數值分析決定與它的懸臂平板結構的條狀壓電複合致動器理想的位置。由於聲波激振和結構特性的組合結構體的頻率響應。而在控制實驗中使用速度回饋控制實驗，是一般適應的主動式結構控制的方法。壓電材料受到電場的作用產生應變傳到結構能夠轉換成所需要的控制力，且壓電材料黏貼在基板適當的位置可以被當作致動器使用。利用實驗驗証的方式對照數值分析的結果。 非等向性的壓電陶瓷致動器與傳統式等向性壓電致陶瓷致動器比較具有致動效能的增加。通常等向性致動器通常具有沿著主材料軸應變的優點。而非等向性方向的致動器使用考慮在平板平面結構振動控制的作用是被研究。結合有限元素的方形平板元素公式化發展包含平板結構非等向性壓電致動器來進行分析。

關鍵詞 : 條狀壓電複合材料 ; 致動器 ; 振動抑制

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