

適應性訊號處理技術應用於滾珠軸承之研究

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摘要

滾珠軸承是機械系統中最重要之元件之一，其廣泛的應用於支撐旋轉軸與承受負荷，軸承的工作狀態不僅深遠地影響機械工作之性能，甚至於系統工作安全。在量測正在運轉中的機械元件振動訊號時，常發生訊號相互干擾的情形，使得量測到的軸承訊號微弱而難以分辨，如此在訊噪比(SNR)極大的狀況下，量測出的結果則無法直接判斷出初期破壞。本文之目的便是期望藉由訊號處理的技術，以多參考輸入(Multi-input)的方式建立適應性訊號處理系統(ANC System, Adaptive Noise Cancellation System)，加以處理訊噪比(SNR)極大的振動訊號，並獲取軸承真確的運轉訊號，更進一步判定軸承在機械系統中運轉之狀況。建立此技術便可在無須機械停止運轉的狀態下探知零件狀況，真正達成即時監控的目的，並配合軸承損傷監測的方式來判定軸承狀況。

關鍵詞：滾珠軸承；適應性訊號處理；破壞監控；軸承診斷；多參考輸入

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