複合氣動系統的能量匯流之研究

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摘 要

目前最令科學家關注的問題，是生態污染，溫室效應，原油 資源被限制等之因素。這些對業者來說是個非常巨大的挑戰。因 此也費了許多科學家的時間，知識和努力來做研究，找出新技 術。而這項研究的最大目的是專注在環保，無污染的 “ 綠車 ” 。其 中包括：雜種電動車(HEV)，電動車(EV)，及燃料電池車(FCV)。 如今HEV， EV 及 FCV 雖然已經不斷在開發並發揮用途，不過 還是會存在一些限制。 ?了克服以上這些障礙，科學家已提出一系列的系統，名 為： Hybrid Pneumatic Power System (HPPS) 來進行研究。這系統 的能源能夠取代流程能量的電化學能量和優選能量的管理和運 用。能夠優化管理及使用能量源，並在一個 Internal Combustion Engine (ICE)再生回收內燃機，讓ICE 在極大壓力中能夠穩定運 作。因此此系統被視為是對增加能量與改善廢氣排放是最有效率 的措施。 這項研究的最大目標是包括兩個項目。第一項目是研究實驗 HPPS 的操作水準，壓縮氣的影響度，斷面（CSA）的作用和收縮 在結合點於系統的流程能量結合。其項目是此研究還專注研究於 合併管子的作用，壓縮氣流和 CSA 對廢氣再循環，並確定 CSA 在合併能量通過使用三度空間的 CFD 軟體所模擬計算，能夠擁 有最佳維度及適當的調整。 依各種試驗及模擬在HPPS，此試驗有使用一個結合能量管， 而這個結合能量管的形狀及尺寸已設計到最適當的程度。此外， v CSA 的活動是由壓縮氣及氣流率的變化而有適當的調整。 實驗結果顯示，廢氣再循環能量以及HPPS 的結合能量流程 不僅取決於合併（結合）管的形狀與尺寸狀況，而且還取決於 CSA 對壓縮氣和壓縮氣流量的變化調整。這些研究結果將是有價 值的基礎及有效用。藉此進入研究，設計能量合併管和HPPS 的 控制系統。

關鍵詞 : HPPS ; 廢氣能量 ; 能量合併管 ; 能量流程合併

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