CAE模擬煞車總泵之鑄造方案設計研究

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摘 要

本研究是針對以CO2 砂模鑄造法製作A356 鋁合金煞車總泵 之製程模擬與實作的研究。採用鑄造用的電腦輔助軟體(CAE)， 探討澆冒口系統之設計對A356 鋁合金煞車總泵鑄件之影響。除 進行電腦模擬分析外，並以實際鑄件作比較及驗證，進而修正澆 冒口系統，以獲得最佳化設計。 由CAE 軟體之內建模組分析選項中，使用Niyama 指標、熱 點分析以及材料密度分析等缺陷預測指標進行對鑄件模擬結果之 分析，可能產生缺陷的地方進行透視觀察，以設計鑄件之缺陷補 充系統。本研究之煞車總泵模數為50mm，根據Chvorinov 氏設計法 則所述，選用模數為其1.2 倍之冒口，即冒口模數為60mm 的設計，再以電腦模擬分析預測其熱點位置，以獲得最適合的冒口設 計。此外，為提高鑄件成品率，使用最佳化模擬將冒口尺寸進行 深入的探討，並由模擬之結果，有效地縮減冒口尺寸大小和達成 最佳成品率之目標。 模擬結果顯示鑄件在不同的進模口位置，應用材料密度 (MDF

關鍵詞 : A356 鋁合金、電腦輔助工程分析、流動、凝固、煞車總 泵、CO2 砂模法、冒口

目錄

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