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【摘要】

空調系統之用电量為國內夏季尖峰負載之主要因素，其中冰水主機更佔整體空調用電的60%，因此在節約能源、降的趨勢。本文以R-134a為冰水機系統的冷媒，採用兩級壓縮來取代傳統之單級壓縮，期望以節省壓縮功來達到性能機之系統，並發展一套系統性能分析的程式，進行系統模擬來輔助實際系統之分析與設計。本研究在模擬之前預先成系統模型，應用區域分析架構，以 ϵ -NTU法來分析熱交換器各區段之熱傳；使用Microsoft Excel工作表(Worksheet)質隨實際分析狀態而改變來求得冷媒熱物性，以質量與能量守恆定律為理論基礎，模擬輸出冷卻能力、冷凝能力、據。

過去由於滿液式冰水機在技術層面的問題以及製造成本偏高等因素，直膨式機組的選擇在國內仍有其不可撼動的地疑的。本論文亦介紹了滿液式冰水機的開發，克服了技術層面的問題，以及製造成本的合理化，滿液式冰水機將為

【英文摘要】

The electricity consumption of air conditioning systems is the main factor of domestic peak load in summer, among of the whole system. Therefore, under the goals of saving energy and reducing peak load, using the chillers with two-stage compression to replace the traditional single-stage compression to improve the coefficient of performance. This research developed the system of two-stage compression screw chillers using R-134a as the refrigerant and established a mathematical model for system simulation for assisting the design and evaluation of real chillers. This research simulated the flow through mathematical mode and used modularized concept to establish the analysis models, to study the heat transfer of research also utilized the Microsoft Excel as the interface of input and output of various design parameters, and find an analysis condition to meet the actual running situations; By solving conservation laws of mass and energy as the cooling capacity, condensation capacity, electricity consumption, and energy efficiency ratios as the analysis basis, the results were obtained and discussed.

In the past, because technical problems and high manufacturing cost of flooded type chillers, the domestic status was unchangeable; however, it's undoubtedly that the efficiency of flooded type is much better than that of direct expansion type. This paper also introduced the development of flooded type chillers and the rationalization of manufacturing cost.

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