具非對稱形螺桿螺旋式壓縮機之設計

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摘 要

本論文乃針對螺旋式壓縮機之一些基礎問題作一探討，研究內容包括基礎幾何理論、特性分析及加工刀具外形。基礎幾何理論方面，乃應用座標轉換原理、共軛曲面原理，推導出螺旋式壓縮機螺桿嚙合方程式及共軛齒形，此共軛齒形經由螺旋矩陣運算，求得螺旋式壓縮機轉子的螺旋曲面。特性分析可分為幾何特性及性能分析兩部分，幾何特性方面，探討螺旋式壓縮機之排氣口面積、氣封線長度及回吹孔面積；性能分析方面，本文採用熱力學第一定律分析其進出口壓縮比、溫度分佈及流體質量變化量。另外，應用加工刀具與螺桿之相對運動及創成原理，設計加工螺旋轉子之研磨輪外形。本文所推導出之理論模式，盼望能對壓縮機廠設計新機型或性能改良有所助益。

關鍵詞 : 螺旋式壓縮機 ; 輪廓 ; 非對稱

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