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文章名称: 半开式叶轮线性减小叶顶间隙气动性能分析-----吴海燕 等

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:: 文章简介 ::

摘要: 采用非结构化网格有限体积法, 数值研究了线性减小叶顶间隙形式对半开式离心叶轮内部流场和气动性能的影响。首先在设计相对间隙下进行了不同流量工况数值分析, 然后在设计流量下, 分别针对

7种从叶轮进口到叶轮出口间隙线性减小的半开式叶轮和7种从叶轮进口到出口等间隙的半开式叶轮进行了数值模拟。与等间隙形式相比, 线性减小叶顶间隙形式对半开式离心叶轮的气动性能、泄漏流量、出口绝对气流角和叶轮出口损失的影响呈现出不同的规律。

关键词: 离心压缩机; 叶顶间隙; 数值模拟

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Analysis on Aerodynamic Performance of Linearly Decreasing Tip Clearance for Impeller with Half-opened Type

Abstract: A finite volume method with unstructured grid and numerical method are applied to analyze the influence of linearly decreasing tip clearance on the internal flow fields and aerodynamic performance of the impeller with half-opened type of centrifugal compressor. First, the numerical analysis is carried out for the different flowrate operations under the design relative tip clearance. Secondly, the numerical simulation is separately carried out for the impeller with half-opened type at seven kinds of linearly decreasing tip clearance from inlet to outlet of impeller and seven kinds of equal tip clearance under design flowrate condition. Compared with equal tip clearance, it is found that there are different regulations between the linearly decreasing tip clearance and aerodynamic performance, leakage flow, absolute outlet flow angle and loss of impeller.

Key words: centrifugal compressor; tip clearance; numerical simulation

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