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## 双倾斜壁缝式机匣处理对离心压气机性能的影响

### Effect of double inclined slotted casing treatment on centrifugal compressor performance

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英文关键词: [centrifugal compressor](#) [casing treatment](#) [double inclined slotted](#) [leakage flow](#) [numerical simulation](#)

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中文摘要:

采用数值仿真手段研究不同倾斜方向的双倾斜壁缝式机匣处理对离心压气机性能的影响. 研究表明:合适的机匣处理缝倾角组合有助于合理组织导叶和动叶气流角匹配关系. 通过详细分析离心压气机内部流场表明:双倾斜壁缝式机匣处理方案A通过对动叶叶尖泄漏流的抽吸和重新组织,对机匣处理缝后部的低能流体抽吸并吸除,经过背腔在机匣处理缝前部重新注入相邻的叶栅流道,从而在轴向和周向控制了叶尖泄漏流的发展,改善了下游的堵塞情形,大幅度提高了压气机的稳定工作裕度.

英文摘要:

Numerical investigations were conducted to study the effects of double inclined slotted casing treatment on a certain centrifugal compressor's performance. The numerical results show that appropriate inclined angle combination of casing treatment slots helps to organize the flow matching between inlet guide vane and rotor blades. The detailed analysis of the flow-field in compressor with casing treatment indicates that configuration A has the best ability to expand stability margin. With the suction and re-organization of the tip leakage flow, high energy flow is re-injected into the adjacent flow channel which controls the development intent of leakage flow in the axial and circumferential directions and improves the blockage situation downstream of rotor passage. Thus, the compressor stability margin is substantially increased.

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