

高压涡轮叶顶间隙变化的数值分析

岂兴明¹, 朴英¹, 矫津毅²

1.清华大学 航空航天学院,北京 100084; 2.吉林大学 应用技术学院 测量工程系,长春 130022

收稿日期 2007-8-25 修回日期 2007-12-24 网络版发布日期 2009-1-1 接受日期 2007-12-29

摘要

利用有限元分析软件分析了某型高压涡轮叶顶间隙在不同工况下随时间的变化。采用分段加载方法对模型施加温度和压力边界条件。计算结果与实验数据的对比分析表明: 涡轮叶片位移对叶顶间隙变化的贡献不大, 温度和转速是影响轮盘径向尺寸变化的主要因素, 而温度是影响机匣和叶片变形的主要因素。

关键词 [机床](#); [叶顶间隙](#) [有限元法](#) [高压涡轮](#) [分段加载](#)

分类号 [TG590](#)

Numerical analysis of high pressure turbine tip clearance variation

QI Xing-ming¹,PIAO Ying¹,JIAO Jin-yi²

1. School of Aerospace, Tsinghua University, Beijing 100084, China; 2. College of Applied Technology, Jilin University, Changchun 130022, China

Abstract The high pressure turbine tip clearance variation versus time under different operating conditions were analyzed by the finite element method. The boundary conditions about the temperature and pressure were loaded by means of the segmental application method. The calculation results and their comparison with the experimental data show that the displacement of the blade makes a little contribution to the tip clearance variation, the temperature and the rotational speed are the key issues for the radial deformation of the turbine disc, and the temperature is the major factor affecting the deformation of the turbine shroud and blade.

Key words [machine tool](#), [tip clearance](#), [finite element method](#), [high pressure turbine\(HPT\)](#), [segmental application of boundary conditions](#).

DOI:

通讯作者 岂兴明 qixm04@mails.tsinghua.edu.cn

扩展功能

本文信息

▶ [Supporting info](#)

▶ [PDF\(436KB\)](#)

▶ [HTML全文\(0KB\)](#)

▶ [参考文献](#)

服务与反馈

▶ [把本文推荐给朋友](#)

▶ [复制索引](#)

▶ [文章反馈](#)

▶ [浏览反馈信息](#)

相关信息

▶ [本刊中 包含“机床; 叶顶间隙”的相关文章](#)

▶ [本文作者相关文章](#)

· [岂兴明](#)

· [朴英](#)

· [矫津毅](#)