论文

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# 用低雷诺数k-ε湍流模型计算涡轮叶片的对流换热

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# THE PREDICTIONS OF CONVECTIVE HEAT TRANSFER ON TURBINE BLADE AIRFOIL BY USING LOW REYNOLDS NUMBER TURBULENCE MODEL

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| 摘要 | 参考文献 | 相关文章 |
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摘要 考虑压力面强顺压梯度及吸力面逆压梯度对 Ｓｃｈｍｉｄｔ　Ｐａｔａｎｋａｒ低雷诺数湍流模型进行改善，使之能用于模拟涡轮叶片上的对流换热情况。计算了６种涡轮叶片的１８个工况。参数范围是：出口雷诺数 Ｒｅ２＝０　５６×１０６～２　７３×１０６；来流湍流度 Ｔｕ∞＝０　８％～８　３％；平均壁温与气流温度比 Ｔｗ／Ｔ０＝０　６７～０　８２。结果表明，在叶片上的传热计算与实验符合得很好

关键词：

Abstract：An improvement on Schmidt Patankar low Reynolds number turbulence model by taking into account the favoralbe pressure gradients on the blade pressure surface and the adverse pressure gradients on the blade suction surface is made to simulate heat transfer on turbine blades. Examination calculation is carried out for 18 conditions of six turbine vanes. The parameters are outlet Reynolds number ranging from 0 56×10 6 to 2 73×10 6 ,upstream turbulence intensity ranging from 0 8% to 8 3%,and ratio of wall temperature to stagnation temperature ranging from 0 67 to 0 82. The results show that the predicted heat transfer on the blades agreed well with the experimental data.

Keywords：

**Service**

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