

Accepted Manuscript

Heat Transfer and Turbulent Flow Characteristics over Pocket Cavity in the Junction Part of an Outlet Guide Vane in a Gas Turbine

Jian Liu, Safer Hussain, Lei Wang, Gongnan Xie, Bengt Sundén

PII: S1359-4311(16)34203-X
DOI: <http://dx.doi.org/10.1016/j.applthermaleng.2017.06.089>
Reference: ATE 10608

To appear in: *Applied Thermal Engineering*

Received Date: 18 December 2016
Revised Date: 8 June 2017
Accepted Date: 15 June 2017

Please cite this article as: J. Liu, S. Hussain, L. Wang, G. Xie, B. Sundén, Heat Transfer and Turbulent Flow Characteristics over Pocket Cavity in the Junction Part of an Outlet Guide Vane in a Gas Turbine, *Applied Thermal Engineering* (2017), doi: <http://dx.doi.org/10.1016/j.applthermaleng.2017.06.089>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



Heat Transfer and Turbulent Flow Characteristics over Pocket Cavity in the Junction Part of an Outlet Guide Vane in a Gas Turbine

Jian Liu¹, Safer Hussain¹, Lei Wang¹,
Gongnan Xie², Bengt Sundén^{1,*}

¹Division of Heat Transfer, Department of Energy Sciences,
Lund University, P.O. Box 118, SE-22100, Lund, Sweden.

*Corresponding author: Bengt Sundén

Email: bengt.sunden@energy.lth.se

²School of Marine Science and Technology

Northwestern Polytechnical University, Xi'an, 710072, Shaanxi, China.

Abstract:

A pocket cavity is generated when the Low Pressure Turbine (LPT) is connected to the Outlet Guide Vane (OGV) in the rear part of a gas turbine engine due to the different conjugate diameters. This kind of pocket cavities, due to the high Reynolds number and the specific shapes, are hardly investigated in previous researches. The heat transfer distribution and fluid flow over the pocket cavity have significant effects on the incoming flow of the OGV in the downstream distribution. In the present work, the specified triangular pocket cavities are built in a high aspect ratio channel and heat transfer and fluid flow over the pocket surface are investigated experimentally and numerically. These pocket cavities are built with different radii to find out optimized heat transfer distributions and flow patterns. Liquid Crystal Thermography (LCT) is employed to measure heat transfer over the pocket surfaces

Download English Version:

<https://daneshyari.com/en/article/4990667>

Download Persian Version:

<https://daneshyari.com/article/4990667>

[Daneshyari.com](https://daneshyari.com)