

**STABILITY OF HIGH PRESSURE TURBINE UNDER PARTIAL ADMISSION
CONDITION**

Hiroshi Kanki*

Akinori Tanitsuji**

Dept. of Mechanical Engineering, Faculty of Engineering, Kobe University

Rokkodai 1-1, Nada-ku, Kobe 657-8501, Japan

Tel.: +81-78-803-6140 Fax: +81-78-803-6155

E-mail: *kanki@mech.kobe-u.ac.jp, ** tanitsuji@mi-3.mech.kobe-u.ac.jp

ABSTRACT

Subsynchronous vibration of high-pressure turbine is one of the difficult problems to be solved for improvement of reliability of power plant. Extensive work has been done and the most of them were practically solved, however, future design improvement requires more clear design method. To realize the improved design, it is required to solve the effect of partial admission.

This paper describes the following result of the model test to solve this problem.

- (1) Subsynchronous vibration was realized in the model test.
- (2) Partial admission gives larger destabilizing force compared to full admission condition for same total flow rate.
- (3) Initial position of shaft center for admitted arc gives some effect to the stability of the system.
- (4) Configuration of tip seal gives significant effect for stability of the system.
- (5) Analysis of destabilizing force gave qualitative description of the measured phenomena.

Keywords: Subsynchronous vibration, Steam turbine, Steam whirl, Partial admission