

Destabilizing Force of Labyrinth Seal Under Partial Admission Condition

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ABSTRACT

The reliability improvement of turbo machinery is an important engineering point to improve plant reliability. The subsynchronous vibration of turbomachinery is the most difficult problem to solve. The cause of subsynchronous has been studied for long years and the results of studies are applied for actual machines.

As the special problem of high pressure steam turbine, the partial admission in control stage gives the complex effects for subsynchronous vibration. Field experiences give many information, however, few investigation was done for this problem. Authors have been continued the study to solve the problem. ^{[1][2]}

In this paper, the destabilizing force of labyrinth seal under partial admission condition was studied using small model test system and analyzed by simplified theoretical model.

The study gave the higher destabilizing force in partial admission condition compared to full admission condition. The cause of this phenomenon was considered as the circumferential distribution of inlet swirl.

The result gives quantitative agreement to the field experiences.