

The Effect of Bearing Clearances On Its Dynamic Stiffness

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ABSTRACT

A modified, up rated steam turbine generator, had developed a rotor subsynchronous stability problem, with high vibration amplitudes. The up-rating consisted of a steam path replacement and replacement of all seal strips. Steam operating parameters were unchanged. The original bearings were re-used. Upon the turbine re-start the rotor became unstable from the onset. Since bearings were unchanged and installed with the pre-existing OD and ID clearances, the author concluded that the external disturbing excitation forces had increased. One way to combat subsynchronous instability in bearings is to restore or increase bearing's dynamic stiffness.

Keywords:

STEAM TURBINE, BEARING, DYNAMIC STIFFNESS,
SUBSYNCHRONOUS WHIRLING.