

Lecture:

ROTOR DYNAMICS OF ELECTRIC MACHINES

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ABSTRACT

Rotordynamics deals with the dynamic behavior of rotating machines. The operation should be free of troubles or disturbances. It represents a special branch of mechanical vibration theory, focusing on rotating systems and phenomena. Analysis tools include computational tools, modeling (FEM) and measurements. Electromagnetic interaction (unbalanced magnetic pull, UMP, torque harmonics, etc.) and rotor designs (laminated rotors, permanent magnet rotors, squirrel cages, etc.) are considered as special areas of rotor dynamics of electrical machines. Rolling element bearings also represent an important component for understanding the dynamic behavior of electrical machines, so the basic principles of their modeling are presented in this lecture. The presentation of a case study, "Hermetic Steam Turbine Generator for waste heat recovery - HERGE concludes this lecture.