

Significance of Transient Data and Its Applications in Turbine Generators

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Abstract : Transient data reveals much about the machine's condition that steady-state data cannot. New technologies make this information much more available for evaluating the mechanical integrity of a machine train. Recent surveys at various stations indicate that simplicity is preferred over completeness in machine audits throughout the power generation industry. This is most clearly shown by the number of rotating machinery predictive maintenance programs in which only steady-state vibration amplitude is trended while important transient vibration data is not even acquired. Efforts have been made to explain what transient data is, its importance, the types of plots used for its display, and its effective utilization for analysis. In order to demonstrate the value of measuring transient data and its practical application in rotating machinery for resolving complex and persistent issues with turbine generators, the author presents a few case studies that highlight the presence of rotor instabilities due to the shaft moving towards the bearing centre in a 100 MM LMZ unit located in the Northern Capital Region (NCR), heavy misalignment noticed—especially after 2993 rpm—caused by loose coupling bolts, which prevented the machine from being synchronized for more than four months in a 250 MW KWU unit in the Western Region (WR), and heavy preload noticed at Intermediate pressure turbine (IPT) bearing near HP- IP coupling, caused by high points on coupling faces at a 500 MW KWU unit in the Northern region (NR), experienced at Indian power plants.

Keywords : transient data, steady-state-data, intermediate -pressure-turbine, high-points

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