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DIAGNOSTICS OF ROTATING MACHINES IN POWER PLANTS

Proceedings of the CISM/IFTToMM Symposium
October 27-29, 1993
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EDITED BY

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PREFACE

The Symposium on “Diagnostics of Rotating Machines in Power Plants” was held in Udine (Italy) from October 27 to 29, 1993. It was promoted by the International Centre for Mechanical Sciences (CISM), in cooperation with the International Federation for the Theory of Machines and Mechanisms (IFTOMM), the Electric Power Research Institute (EPRI) and the Politecnico di Milano and organized with the financial support of ASEA Brown Boeri, Ansaldo, CISE, ENEL, FIAT Avio.

The main purpose of this meeting was to provide comprehensive survey of the state of the art of the diagnostic techniques for the condition monitoring of turbomachinery. Authors from fifteen different countries in Europe, North America, Asia, Oceania contribute 26 papers at the Symposium. Experts from six electric companies were invited to lecture on the principal diagnostic methodologies used in controlling large turbine-generator vibrations in their respective countries (U.S.A., Japan, Switzerland, France, Sweden and Italy).

The success of the Symposium reflects the great interest in the condition monitoring of turbomachinery, as well as in diagnostics and predictive maintenance.

The papers presented on this occasion examined the most significant aspects of diagnostic strategies, emphasizing the importance of predictive maintenance in reducing production shortages and the costs of plant management.

The contributions of these authors allow a critical comparison of the varied experiences in developing and applying the different diagnostic methodologies employed in several parts of the world. The following problems are discussed:

- characteristics of condition monitoring systems: data acquisition techniques and data processing methodologies;*
- choice of transducers and of measurement point locations;*
- data compression techniques;*
- alarm levels evaluation (acceptance regions);*
- strategies for detecting malfunction conditions;*

- *diagnostic methodologies for the on-line and off-line identification of the cause of faults;*
- *expert systems;*
- *definition of the guidelines for the presentation in control rooms of monitoring data and diagnostic results;*
- *rotordynamic models used, off-line, to confirm faults diagnosed on-line.*

The Proceedings of the Symposium represent an overview of the latest diagnostic methodologies for turbomachinery. We believe this publication will be of interest to specialists in the academic world and to those engaged in chemical and energy sectors which make use of large rotating machines.

G. Diana

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