

Preface

The International Federation for the Promotion of Mechanism and Machine Science (IFTToMM) aims at promoting research and development in the field of machines and mechanisms by theoretical and experimental methods, along with their practical application.

IFTToMM's vision evolved since its foundation in 1969: at the time, it consisted of initiating and facilitating international collaboration between Eastern and Western countries. Today, it has evolved in assisting and enhancing international collaboration and in disseminating modern results on mechanism and machine science. Tomorrow, IFTToMM will provide leadership for cooperation and development in mechanism and machine science.

IFTToMM has 12 technical committees, among which that on rotordynamics is one of the most active. Since 1982, every 4 years, the rotordynamics technical committee has been organizing a world conference, which over the years has become an irreplaceable point of reference for the academic world and industry. The first eight editions were held in Rome, Tokyo, Lyon, Chicago, Darmstadt, Sydney, Vienna, and Seoul.

After 32 years, for the ninth edition, the IFTToMM International Conference on Rotor Dynamics is returning to Italy, the country where it made its debut. Since that first meeting in Rome, much has changed in the rotor dynamics field. Great progress has been made in modeling rotor machines: the results we can achieve today from calculation models are very close to those obtained through experimental practice. Rotordynamics is more and more connected with our day-to-day living, with the new needs and challenges characterizing modern living: from energy production to the transportation sector and industry, to the reliability of the technological devices we use everyday. Due to the importance of the application of rotordynamics in industry, and in order to promote the comparison and discussion of ideas, needs, and experiences coming from industry and the academic world, the conference proceedings introduced in this book will feature the presence of two organizing committees: a scientific committee and an industrial committee.

The papers collected in these proceedings cover a wide range of topics, that is: balancing, blade dynamics, case histories, cracks in rotating shafts, diagnostics,

electromechanical interaction, fault identification, gas foil bearings, geared machines, magnetic bearings, modeling and control, rolling element bearings, rub—rotor to stator contact, seals, stability, supporting structure effects, and thermal effects.

A grand total of 198 papers have been selected after peer reviewing and 187 are included in these proceedings. Actually, this figure represents a record with respect to previous editions of the conference and it is a further confirmation of the up-to-dateness and vivacity of rotordynamics. Moreover, these proceedings represent not only the state of the art but also a foresight on the various topics of rotordynamics, which allows forecasting technical future developments in this technical field.

As the chairman of the conference, I am proud of the results obtained and I would like to share them with the friends and colleagues of Politecnico di Milano, who helped me (Steven Chatterton, Andrea Vania, Nicolò Bachschmid, and Phouc Vinh Dang). Last but not least, I gratefully acknowledge the sponsors of the conference (SKF, Danieli, Eurobearings, IfTA, Boldrocchi, Turboden and Siemens) and those who cooperated with us (IFTToMM, MUSP, GE—Measurement and Control, EDF, National Instruments and Fondazione Politecnico di Milano).

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