BRG MACHINERY CONSULTING

GUOXIN LI

EXPERIENCE

BRG MACHINERY CONSULTING, LLC, Charlottesville, VA
Machinery Specialist, September 2005 – Present

Work with a group of highly qualified machinery specialists in providing a full range of rotating machinery management services. Currently, conducting research in rotordynamics, system identification, magnetic bearings and control. Actively involved in various projects including vibration troubleshooting, new machine auditing, failure analysis, and software development. Recently led the following projects:

- Substructure model identification and health monitoring of compression machinery
- High speed rotor balancing
- Motor bearing redesign and pedestal modification to mitigate large electrical unbalance problem

AFS TRINITY POWER, INC., Charlottesville, VA
Senior System Engineer, October 2003 – August 2005

Responsibilities included design and development of an energy momentum wheel system for NASA. Major responsibilities included the following:

- Rotordynamic analysis
- FEA stress analysis of composite structures
- Modal testing and model identification
- Low loss magnetic bearing design and FEA analysis (<12 watts)
- Magnetic bearing control design and adaptive open loop unbalance control
- Implementation and debug TI 6713 DSP based control system
- NASA deliverable report and presentation

ROTATING MACHINERY & CONTROLS LABORATORIES, University of Virginia
Research Assistant, September 1998 – August 2006

- Flywheel test rig development and testing
- Implementation of robust control for flexible rotors and magnetic bearings
- High speed rotor balancing using convex optimization (compressors, jet engines balancing)
- Advanced FEA vibration analysis of rotating machines (jet engines)
- ISO stability margin testing
- Honda motor electrical valve
- Artificial heart pump magnetic bearing suspension

BEIJING CENTRAL ENGINEERING AND RESEARCH, INC., Beijing, CHINA
Machinery Specialist, August 1991 - August 1998

- R & D in high speed, rolling mill development: rotordynamic analysis, structural FEA analysis, fluid film bearing design, and machine design
- Detailed component and machine assembly design (projects included two key national projects with investment exceeding 100 million USD)
- Manufacturing, installation, commissioning and vibration diagnosis.

EDUCATION

UNIVERSITY OF VIRGINIA, Charlottesville, VA
Doctor of Philosophy, Mechanical and Aerospace Engineering, January 2007
Dissertation: *Robust Stabilization of Rotor-Magnetic Bearing Systems*

HARBIN INSTITUTE OF TECHNOLOGY, Harbin, China
Bachelor of Science, Mechanical Engineering, June 1991

PROFESSIONAL ACTIVITIES

Member, Institute of Electrical and Electronics Engineers

CONFERENCE PAPERS

"Practical Applications of Singular Value Decomposition in Rotordynamics," *IFToMM 6th International Conference on Rotor Dynamics*, Sydney, Australia, September 2002, with CH Cloud, WC Foiles, EH Maslen and LE Barrett.
Recipient, Conference Top-Five Paper Award

"Model Reduction of High Speed Rotor Magnetic Bearing System for Robust Control Design," *IFToMM 6th International Conference on Rotor Dynamics*, Sydney, Australia, September 2002, with Z Lin and PE Allaire.

"A Case Study on Evaluation of Stability Margin," *ISO Conference on Standardization for AMB Rotors*, 2004, with Q Wang and EH Maslen.

"A Note on ISO Stability Margin," *10th International Symposium on Magnetic Bearings*, 2006, with EH Maslen and PE Allaire.

"Uncertainty Analysis of Rotor-AMB Systems," *10th International Symposium on Magnetic Bearings*, 2006, with Z Lin and PE Allaire.

"Comparison of Damping Ratio Estimation Techniques for Flexural Rotor Modes of a Cage Induction Motor," *IFToMM 7th International Conference on Rotor Dynamics*, Vienna, Austria, September 2006, with TP Holopainen, G Li and SA Aatola.

JOURNAL PUBLICATIONS

"Practical Applications of Singular Value Decomposition in Rotordynamics," *Australian Journal of Mechanical Engineering*, Vol. 2, No. 1, 2005, with CH Cloud, WC Foiles, EH Maslen and LE Barrett.

"Modeling of a High Speed Rotor Test Rig with Magnetic Bearings," *ASME Journal of Vibrations and Acoustics*, Vol. 128, No. 3, 2006, with Z Lin and PE Allaire.