

EXPERIENCE**BRG MACHINERY CONSULTING, LLC**, Charlottesville, VA*President*, November 2002 - Present

Lead group of highly qualified machinery specialists in providing a full range of rotating machinery management services. These services include state-of-the-art, yet practical, assistance for failure analysis, design improvements and re-rates, shop and field testing, installation and commissioning, as well as specification and procurement of machinery for the petroleum, chemical and utility industries. BRG is recognized for its vibration and rotordynamic/bearing expertise which complement its role in providing training and helping clients develop effective reliability programs.

ROTATING MACHINERY & CONTROLS (ROMAC) LABORATORIES, University of Virginia*Lab Engineer*, January 2001 – December 2005

Provided technical support to the students, faculty and industrial company members of ROMAC regarding the use of ROMAC engineering programs. Supervised modification and upgrade of existing programs as well as development, verification and testing of new programs. Many ROMAC engineering programs are recognized as industry standards and are used worldwide in the analysis of rotating machinery.

Research Assistant, January 1997 – January 2007

Solely responsible for the design and construction of a new experimental test rig to research the dynamics of turbomachinery, specifically their stability characteristics. The rig incorporated tilting pad fluid film journal bearings as well as magnetic bearings. Actively contributed to ongoing research in the finite element analysis of fluid film journal bearings and the experimental measurement of their static and dynamic characteristics using ROMAC's advanced journal bearing test rig. Performed and supported additional research in annular seal analysis, modal testing of rotors and supports, along with system identification and model reconciliation of machinery using modern control tools.

MOBIL TECHNOLOGY COMPANY, Princeton and Paulsboro, NJ*Turbo Machinery Specialist*, August 1991 - January 1996, January 1997 - August 2002

Provided machinery expertise to Mobil affiliates worldwide. Assisted operating plants in all facets of machinery management, including performance and reliability improvements, as well as troubleshooting and failure analysis. For new plants and facilities, responsible for all machinery, including compressors, pumps, steam turbines, gas turbines, gearboxes, and reciprocating compressors, from design and specification to installation and commissioning. Took active role in the following projects, among others:

- Paulsboro Refinery Cogeneration Plant, New Jersey
- ARAMCHEM Yanbu MTBE Plant, Saudi Arabia (\$750MM)
- EDOP Gas Injection Platform, Nigeria
- Jurong Refinery CCR and Aromatics Plant, Singapore
- EKPE Gas Compression Platform, Nigeria (\$200MM)
- Jurong Refinery Lube Base Oil Plant, Singapore

Recognized as Mobil's authority in rotordynamics. Developed rotordynamic auditing procedures for use by specialists during machinery proposal as well as design/manufacturing phases. Performed analyses on new equipment and provided technical support when rotordynamic problems were encountered. Developed and conducted annual rotordynamics training course for engineers.

Worked as a Machine Reliability Engineer at Paulsboro refinery. Developed and initiated computerized predictive maintenance program for the vibration monitoring of all the refinery's machinery. Responsibilities included coordination of the program, training machinists, and vibration analysis of problem equipment. Also led day-to-day troubleshooting, failure analysis, and repair of various process units' machinery.

MOBIL OIL CORPORATION, Paulsboro Refinery, Paulsboro, NJ

Reliability Programs Manager, January 1996 - January 1997

Led group of engineers and equipment specialists responsible for the reliability improvement of a 150,000 barrel-per-day refinery's instrumentation, rotating and electrical equipment. Assessed failure trends and indices to determine and implement equipment design, procedural, and craft or operational training improvements. Group functioned as refinery's primary expertise in capital project, process enhancement, root cause failure analysis, and troubleshooting efforts. Responsible for developing, instituting, and managing all preventive and predictive maintenance programs to meet federal and state regulations as well as ISO 9002 quality standards.

EDUCATION

UNIVERSITY OF VIRGINIA, Charlottesville, VA

Doctor of Philosophy, Mechanical and Aerospace Engineering, January 2007

Dissertation: *Stability of Rotors Supported by Tilting Pad Journal Bearings*

Bachelor of Science, Mechanical Engineering, May 1991

PROFESSIONAL ACTIVITIES

Member, American Society of Mechanical Engineers

Member, Vibration Institute

Member, API 684 Rotordynamics Task Force

CONFERENCE PAPERS

"Practical Applications of Singular Value Decomposition in Rotordynamics," *IFTToMM 6th International Conference on Rotor Dynamics*, Sydney, Australia, September 2002, with WC Foiles, G Li, EH Maslen and LE Barrett.

Recipient, Conference Top-Five Paper Award

"Fundamentals of Fluid Film Journal Bearing Operation and Modeling," *34th Turbomachinery Symposium*, Texas A&M University, Houston, Texas, December 2005, with M He and JM Byrne.

"Effects of Pivot Locking on the Operating Characteristics of a Tilting Pad Journal Bearing with Ball and Socket Pivots," *Eleventh International Symposium on Transport Phenomena and Dynamics of Rotating Machinery*, Honolulu, Hawaii, February 2006, with RR Brechting, RD Flack, LE Barrett, and M He.

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

"Journal Bearing Vibration and SSV Hash," *37th Turbomachinery Symposium*, Texas A&M University, Houston, Texas, September 2008, with SM Decamillo, M He and JM Byrne.

"Rotordynamic Design Audits of AMB Supported Machinery," *37th Turbomachinery Symposium*, Texas A&M University, Houston, Texas, September 2008, with EE Swanson, EH Maslen and G Li.

JOURNAL PUBLICATIONS

"A Pressure Dam Bearing Analysis with Adiabatic Thermal Effects," *STLE Tribology Transactions*, Vol. 47, 2004, with M He, PE Allaire and JC Nicholas.

"Influence of Journal Speed and Load on the Static Operating Characteristics of a Tilting-Pad Journal Bearing with Ball-and-Socket Pivots," *STLE Tribology Transactions*, Vol. 48, 2005, with RR Brechting, RD Flack, LE Barrett, and M He.

"Damping Ratio Estimation Techniques for Rotordynamic Stability Measurements," *ASME Journal of Engineering for Gas Turbines and Power*, Vol. 131, No. 1, 2009, with EH Maslen and LE Barrett.