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## Short Course T7: Lateral Rotordynamics of Petrochemical Equipment – Review, Examples, and Problems



John A. Kocur, Jr. is a Machinery Engineer in the Equipment Engineering Division at ExxonMobil Research & Engineering in Fairfax, Virginia. He has worked in the turbomachinery field for 25 years. In his current capacity, he provides support to the downstream, upstream and chemical business within ExxonMobil with expertise on vibrations, rotor/thermo dynamics and failure analysis of rotating equipment. Prior to joining EMRE, he held the position of Manager of Product Engineering and Testing at Siemens Demag Delaval Turbomachinery. There Dr. Kocur directed the development, research, engineering and testing of the compressor and steam turbine product lines. He has also held positions with Pratt & Whitney and Amoco Corporation. Dr. Kocur received his BSME (1978), MSME (1982) and Ph.D. (1991) from the University of Virginia and an MBA (1981) from Tulane University. He has authored papers on rotor instability and bearing dynamics, lectured on hydrostatic bearings, has sat as a committee chairman for NASA Lewis, and is a member of ASME. Currently he holds positions within API as 617 vice-chair, 684 chair and vice-chair of SOME.

This course is aimed at machinery and project engineers and technicians who need a basic understanding of critical speeds, response to unbalance, and stability of rotating machinery. The course is intended for the layman's approach to rotordynamics and its application to Turbomachinery. The focus of the course will be the rotordynamic behavior of petrochemical gas handling rotating equipment; centrifugal/axial compressors and steam/gas turbines. However, the concepts presented can be applied to virtually any class of rotating equipment.

- I. Introduction
- II. Lateral Analysis
- III. Stability Analysis
- IV. Case Histories of Bearing-Induced and Low-Frequency Instabilities