

Agenda

Presented by Albert Storage, PE

Introduction and Background

- What is rotordynamics
- Objectives of rotordynamics analysis
- Lateral vibration
- Unique aspects of rotordynamics as compared to static dynamics
- Vector nature of dynamics

Basic Rotordynamics Analysis and Modeling

- Jeffcott rotor model and phase angle interpretation
- Jeffcott rotor model calculations
- Beyond the translational Jeffcott rotor model
- Forward and backward whirl and critical speed
- The Campbell Diagram

Expanded Rotordynamics Analysis and Modeling

- Modeling gyroscopic stiffening and softening
- Modeling rotor internal damping

Multi Degree of Freedom Analysis and Modeling

- The transfer matrix method
- The finite element method
- Transforming the transfer matrix to the stiffness matrix
- Solution methods and computer codes

Rotor Balancing and Rotor Stability

- The balance equation
- Field balancing
- Balance machine
- Cross-coupled stiffness and stability

Rotor Bearing Damper and Testing

- Squeeze-film dampers
- Use of the squirrel cage
- Testing methods
- Data reduction methods

Rotordynamics

Cincinnati, OH - Thursday, February 21, 2019

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Learning Objectives

You'll be able to:

Obtain a practical knowledge of rotordynamics.

Understand the unique aspects of rotordynamics as compared to static dynamics.

Learn the methods for the dynamic modeling and analysis of rotor systems.

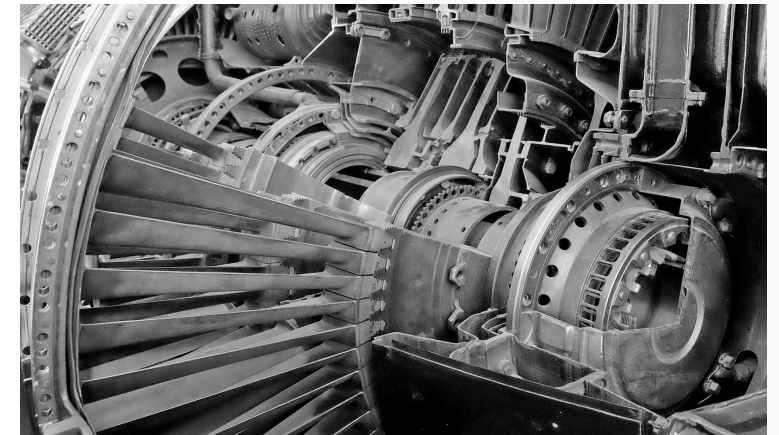
Study how rotor systems are balanced.

Examine the methods used for testing and troubleshooting of rotor systems to solve vibration problems.



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Continuing Education Credits

Professional Engineers
6.5 CPD/PDHs



Faculty

Albert Storace, PE

Mr. Storace has more than 40 years of industrial experience in the areas of jet engine dynamics, structures and mechanical design, and he has authored numerous design practices, papers, and reports in his fields of experience. He has developed design process improvements and computer codes for jet engine rotordynamics, squeeze-film dampers, and composite structures, and he has performed conceptual and detailed design and analysis for Wankle rotating combustion engines and for advanced turbine engines. Mr. Storace developed the architecture and design for wireless jet engine radio-controlled auto balancing systems. He developed and coded the VISTA computer program used for the dynamics architecture and rotordynamics design and analysis of all GE Aviation jet and aero derivative marine and stationary engines. He developed the modal stability criterion used at GE Aviation for the prediction of engine dynamic instability caused by blade tip-clearance aerodynamic forces.

In an industrial setting, he has instructed in courses on rotordynamics, jet engine systems integration, and digital signal analysis. Mr. Storace managed Air Force programs on jet engine exoskeletal structures and foreign object damage, an Army program on jet engine advanced magnetic bearings controls, and NAVY programs on jet engine magnetic bearings and integral starter- generator systems. He developed and coded a jet engine transient dynamics analysis program for NASA. Mr. Storace performed the design and analysis for NAVY jet engine aero derivative marine engine shock and vibration mounts that attenuate underwater shock loads into the engine to acceptable levels and minimize the transmission of structure-borne noise.

As member of the American Society of Mechanical Engineers (ASME), he has served as a rotordynamics session organizer for various ASME International Gas Turbine Institute (IGTI) meetings. Mr. Storace has received best paper awards from the Structures and Dynamics and the Turbomachinery Committees including the Melville Medal, the highest honor for the best original technical paper published in the ASME Transactions over a two-year period.

Mr. Storace earned his bachelor’s and master’s degrees in Mechanical Engineering at the City College of New York. He is a registered professional engineer in Ohio and holds five patents.

He holds a commercial pilot license with instrument rating and is an aircraft owner.

Seminar Information

Holiday Inn Eastgate (I-275E)

4501 Eastgate Blvd.
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Tuition

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Commercial Solar Peaker Batteries

- **Commercial Solar Peaker Batteries, Part I**
Wed., Jan. 9, 2019, 11:00 AM - 3:15 PM CST
- **Commercial Solar Peaker Batteries, Part II**
Thurs., Jan. 10, 2019, 11:00 AM - 2:15 PM CST

Proposal Writing

Fri., Jan. 11, 2019, 11:00 AM - 3:30 PM CDT

Technical Writing

- **Technical Writing Basics**
Mon., Jan. 14, 2019, 11:00 AM - 1:00 PM CST
- **Planning Documents**
Mon., Jan. 14, 2019, 1:30 - 3:30 PM CST
- **Writing Documents**
Tues., Jan. 15, 2019, 11:00 AM - 1:00 PM CST
- **Revising and Editing Documents**
Tues., Jan. 15, 2019, 1:30 - 3:30 PM CST

Fiber-Reinforced Composites

- **Portland Cement and Masonry**
Thurs., Jan. 17, 2019, 11:00 AM - 1:00 PM CST
- **Fiber-Reinforced Composites**
Thurs., Jan. 17, 2019, 1:30 - 3:30 PM CST
- **Fiber-Reinforced Polymer (FRP) Composites Reinforcement**
Fri., Jan. 18, 2019, 11:00 AM - 1:00 PM CST
- **Overview of Sandwich Materials and Structures**
Fri., Jan. 18, 2019, 1:30 - 3:30 PM CST

Pumping and Piping Systems

- **Introduction to Pumps: Operation, Principles and Calculations**
Thurs., Jan. 24, 2019, 12:00 - 2:00 PM CST
- **Design Standards and Codes**
Thurs., Jan. 24, 2019, 2:30 - 3:30 PM CST
- **Piping System Components, Materials and Calculations**
Fri., Jan. 25, 2019, 12:00 - 2:00 PM CST
- **Handling Pump and Piping System Problems**
Fri., Jan. 25, 2019, 2:30 - 3:30 PM CST

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Registration

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