

Machinery Vibration and Rotordynamics

March 7-11, 2022

Location: DoubleTree by Hilton Houston Intercontinental Airport hotel

15747 John F. Kennedy Blvd. Houston, TX

SYLLABUS

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Monday 3/7

8:30 – 10:00	Vibration Results and Terminology for Rotordynamics Reviews basic vibration theory and shows how it is used for diagnostic and troubleshooting; lecture includes case study.	Childs-1
10:00 – 10:30	<i>Break</i>	
10:30 – 12:00	Introduction to Rotordynamics 1 2DOF Vibration absorber, 2DOF models for rotordynamics, the Föppl (1895) - Jeffcott(1919) (F-J) Model for rotordynamic analysis; Lecture includes case studies.	Childs-2
12:00 – 1:30	<i>Lunch Break</i>	
1:30 – 3:00	Introduction to Rotordynamics 2 Critical speed case studies, bent shaft excitation, Spiral Vibrations, Morton Effect; Lecture includes case studies	Childs-3
3:00 – 3:30	<i>Break</i>	
3:30 – 5:00	Design and Application of Fluid Film Bearings Fluid film bearing fundamentals, advantages and disadvantages of bearing types and bearing analysis programs	Zeidan-4

Tuesday 3/8

8:30 – 10:00	Introduction to Rotordynamics 3 Fractional-Frequency Whirl, Parametric Excitation, Rotordynamic Instabilities, Case Studies	Childs-5
10:00 – 10:30	<i>Break</i>	
10:30 – 12:00	Field Vibration Problems, Diagnosis, Analysis, and Resolution	Zeidan-6
12:00 – 1:30	<i>Lunch Break</i>	
1:30 – 3:00	Liquid Seals and Their Effect on Pump Rotordynamics	Childs-7
3:00 – 3:30	<i>Break</i>	
3:30 – 5:00	Gas Seals and Their Effect on Steam Turbine and Compressor Rotordynamics,	Childs-8

Wednesday 3/9

8:30 -10:00	Squeeze Film Dampers, Design, Operations, Models and Technical Issues	San Andrés-9
10:00 – 10:30	<i>Break</i>	
10:30 – 12:00	Gas Bearings for Turbomachinery	San Andrés-10
12:00 – 1:30	<i>Lunch Break</i>	
1:30 – 3:00	Experience in the Use of Squeeze Film Dampers and Damper Seals	Zeidan-11
3:00 – 3:30	<i>Break</i>	
3:30 – 5:00	Fluid Film Bearing Failures, Identification and Corrections	Zeidan-12

Thursday 3/10

8:30 – 10:00	Planning and Making Rotordynamic Measurements	Delgado-13
10:00 – 10:30	<i>Break</i>	
10:30 – 12:00	Making Analysis and Measurements Work Together	Delgado-14
12:00 – 1:30	<i>Lunch Break</i>	
1:30 – 3:00	Torsional Vibrations Overview and Analysis	Delgado-15
3:00 – 3:30	<i>Break</i>	
3:30 – 5:00	Torsional Vibrations, continued	Delgado-16

Friday 3/11

8:30 – 10:00	Rotordynamics Overview and API Requirements	Delgado-17
10:00 – 10:15	<i>Break (note 15 minute today)</i>	
10:15 – 11:30	Introduction to Computer Modeling of Rotordynamics	Delgado-18
11:30-12:15	<i>Lunch Break (note 3/4 hour today)</i>	
12:15 – 2:00	Computer Modeling of Transient Rotordynamics	Delgado-19
2:00 – 2:15	<i>Break (note 15 minute today)</i>	
2:15 – 3:45	Computer Modeling Demonstration	Delgado-no files