

# Fluid Film Bearing Online Seminar

By



DELTA JS AG

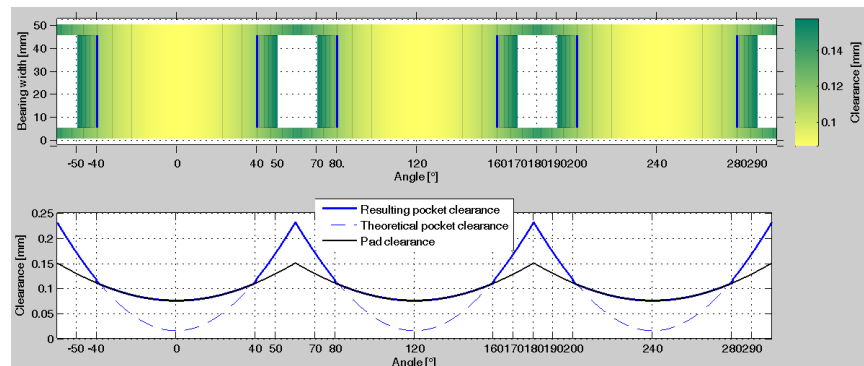
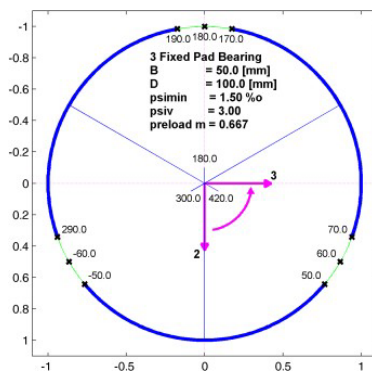
On June 21<sup>st</sup> and 22<sup>nd</sup> 2023

DELTA JS is a leading engineering and consulting company for rotor dynamics. Its in-house developed, commercial software MADYN 2000 with an integrated fluid film bearing module is widely used to simulate the behaviour of fluid film bearings and the dynamics of complex rotor-gear-bearing systems.

Participants will learn the **state of the art in fluid film bearing modelling and design** from a practical point of view. Basic **theory** and **design rules**, fundamental effects of fluids on **rotor behaviour**, different types of bearings and their properties such as temperature, film thickness, oil consumption, power loss as well as **engineering and design standards** are explained. The selection of the appropriate bearing type is presented as well as the optimization of load carrying capacity, power loss and stability. The seminar is concluded with examples from **field experience**.

Attendees will be able to better assess the **design** and anticipate potential **risks** for rotating machines **arising from fluid film bearings**. Thus, the seminar is suited for engineers of manufacturers, plant constructors, contractors and machine end users (rotating equipment specialists, design engineers, commissioning engineers, sales engineers and project managers).

Course instructors are experienced engineers of DELTA JS: Dr. Joachim Schmied, who is the founder of DELTA JS, and Dr. Andreas Fuchs, who is a recognised expert in the area of fluid film bearings.



# Fluid Film Bearing Online Seminar on June 21<sup>st</sup> and 22<sup>nd</sup> 2023

## Contents of the Seminar (2 days):

- Fluid Film Bearings, Basic Theory
  - Basic Properties
  - Mechanism of Fluid Pressure
  - Velocity Profiles
  - Lubrication Clearance Function
  - Main Equations (Reynolds, Energy)
  - Boundary Conditions, Cavitation
  - Dynamic Properties of Radial Bearings
  - Dimensionless Numbers (Sommerfeld, Reynolds)
- Instability Caused by Fluids
  - Fluid Excitation
  - Forces from the Fluid (cross coupling)
  - Characteristics of Self-Excitation
  - Stability Criteria
  - Vibrations of Unstable Rotors (subsynchronous, oil-whirl, oil-whip)
- Examples of Radial Fluid Film Bearings
  - Designs and their Basic Properties
  - Fixed Pad Bearings and their Properties
  - Tilting Pad Bearings, Design Parameters, Properties
  - Design Layout of Radial Fluid Film Bearings
- Floating Ring Bearings
  - Design and Basics (ring speed ratio, velocity profiles, So-number)
  - Example Turbocharger Rotor
  - Semi-Floating Ring Bearings, Design and Example
- Examples of Axial Fluid Film Bearings
  - Bearing Types and Arrangement
  - Main Equations
  - Fixed and Tilting Pad Bearings and their Properties
  - Analysis according to DIN
- Field Experience
  - Case Studies, Dynamic Phenomena
  - Bearing Damages and Failures

After each block there will be time for discussions. All attendees will receive seminar documents in English.

## Organisational Information

The seminar will take place online. Registered participants will receive a link to log into the seminar. The documentation will be distributed as PDF documents beforehand.

The seminar will take place over a period of 8 hours on each day starting at 9:00 Swiss time. Pure presentation time per day will be about 4 hours. Between sections of the seminar time to answer questions is foreseen. At the end of each block practical problems of real machinery will be discussed. The description of the problems is part of the documentation. Between blocks and over lunch time there will be breaks. A detailed time schedule will be distributed in advance.

## Registration: [Online](#) or e-mail to DELTA JS AG

Deadline for binding registration is June 14<sup>th</sup>.

Name:	Mrs./Mr.		
Company:			
Department:			
Address:			
Phone:		Fax:	
E-mail:			

DELTA JS reserves the right to cancel the seminar in case too few people sign up at this date.

## Fee and Payment

**Seminar (2 days): CHF 1'600**

Invoice will be issued upon registration.