

# Rotor Bearing System Design and Analysis

## The AxSTREAM® Advantage

Purchase options are individually tailored for each customer.

Extremely cost-competitive compared to similar software packages; protected by ESS-G®, SoftInWay's price match guarantee.

Integrated solution from aero to rotordynamics.

Automation of analyses and workflow through batch processing and AxSTREAM ION™ for process integration and design optimization.

Extensive technical support by more than 75 engineers.

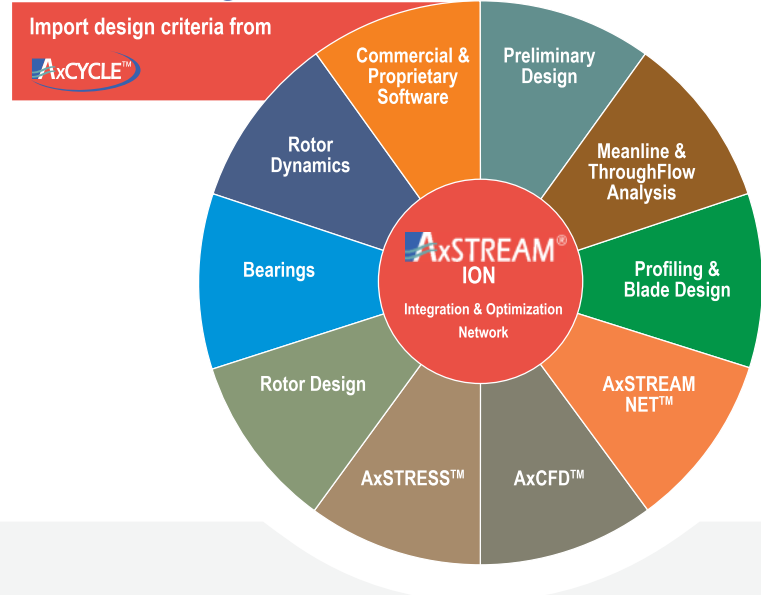
Streamlined user-interface makes learning a nonissue.

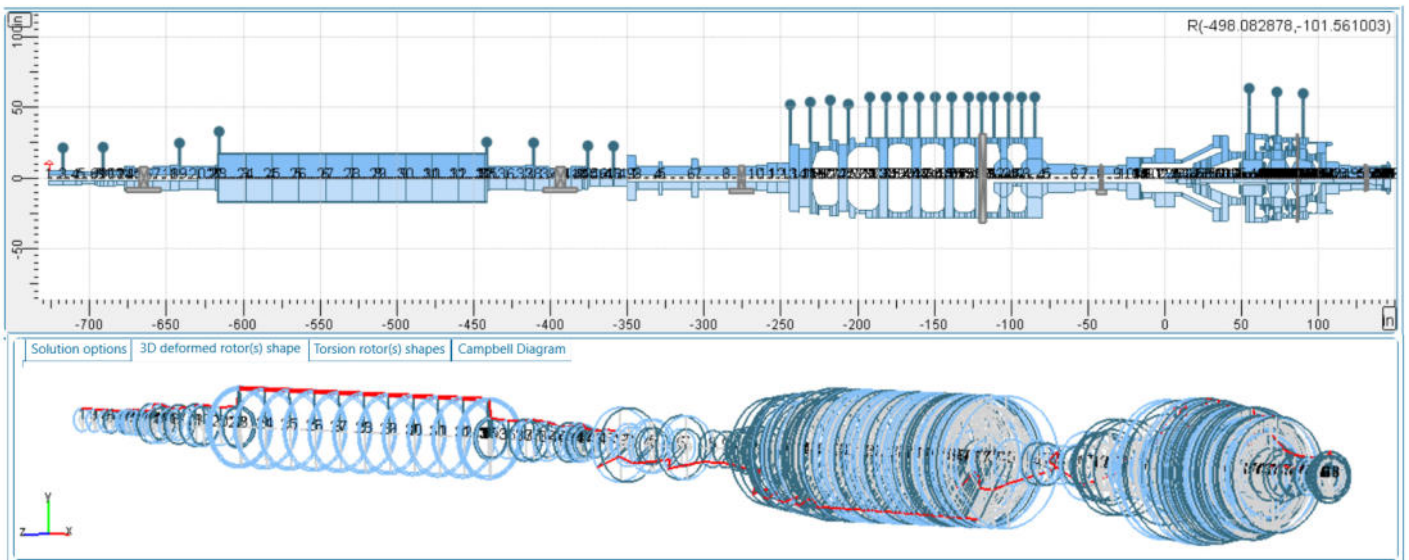
Constant updates are being added, and new features can also be added upon request.

Software Solutions | Consulting Services  
 Training and Technology Transfer  
**Turbomachinery Mastered**

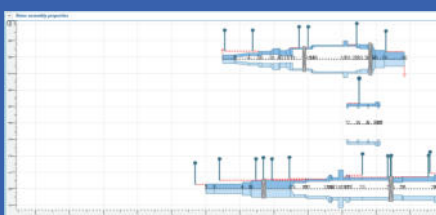
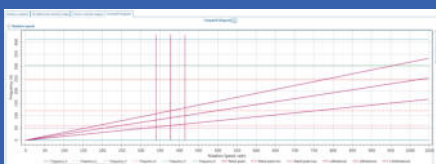
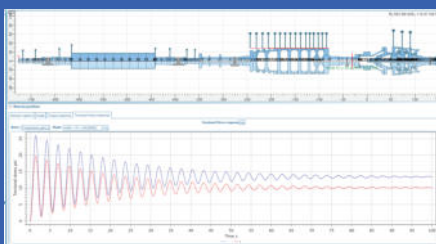
SoftInWay, Inc. is a global R&D engineering company specializing in the development of efficient turbomachinery components and systems by offering its industry leading software platform, AxSTREAM® for rotating machinery design, redesign, analysis, and optimization, as well as engineering services and educational courses.

### AxSTREAM® Integrated Architecture





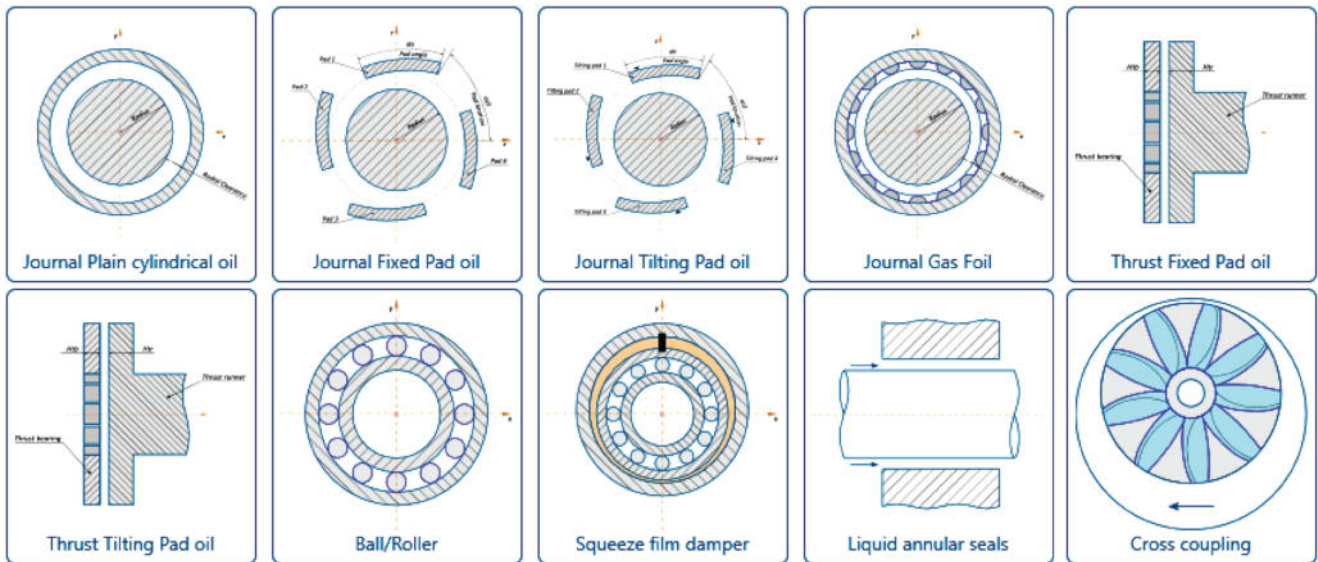
## Packages



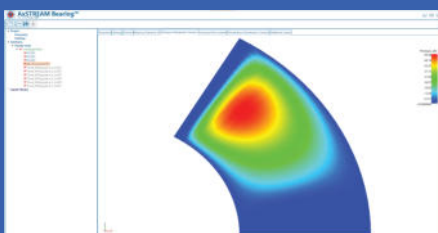
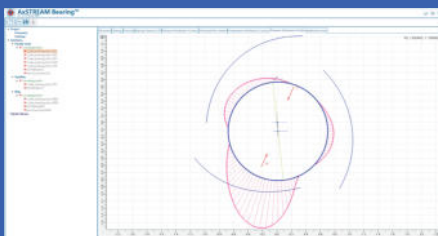
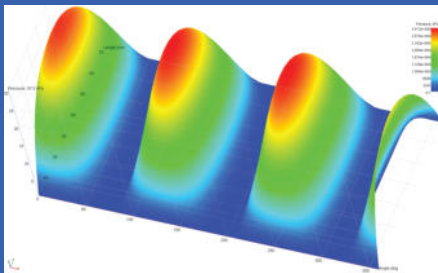
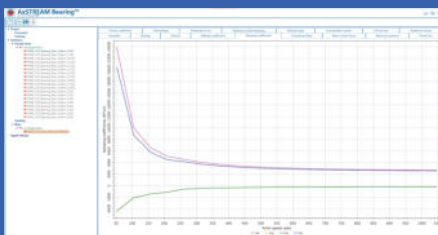
## AxSTREAM RotorDynamics™

AxSTREAM RotorDynamics™ allows users to perform the full scope of rotor dynamics analysis (**lateral, torsional and axial vibrations**) for all widely used rotor types in a user-friendly and intuitive interface, providing engineers with fast and accurate analysis results using the Finite Element Method (FEM), based on utilizing either beam (Bernoulli-Euler or Timoshenko) or 2D-axisymmetric elements.

- Model simulation capabilities:
  - Single rotor or entire rotor train (multi-rotor)
  - Coupling simulation
  - Journal and thrust bearing properties
  - Structural support by two approaches
  - Temperature dependent material properties
  - Rotor misalignment (angle and shear misalignment)
- Loads and excitation sources:
  - Forces and gravity acceleration in 3 directions
  - Harmonic lateral excitation
  - Torsional universal excitation sources
  - Earthquake simulation
- Analysis functions:
  - Lateral: Static deflection, critical speed, unbalance response stability, harmonic response, and time-transient analyses
  - Torsional: Modal and time-transient analyses
  - Axial: Modal analysis
- Post processing capabilities:
  - Plots and additional info calculation according to API standards
  - Automatic report generation for each analysis
  - Data exchange with other software



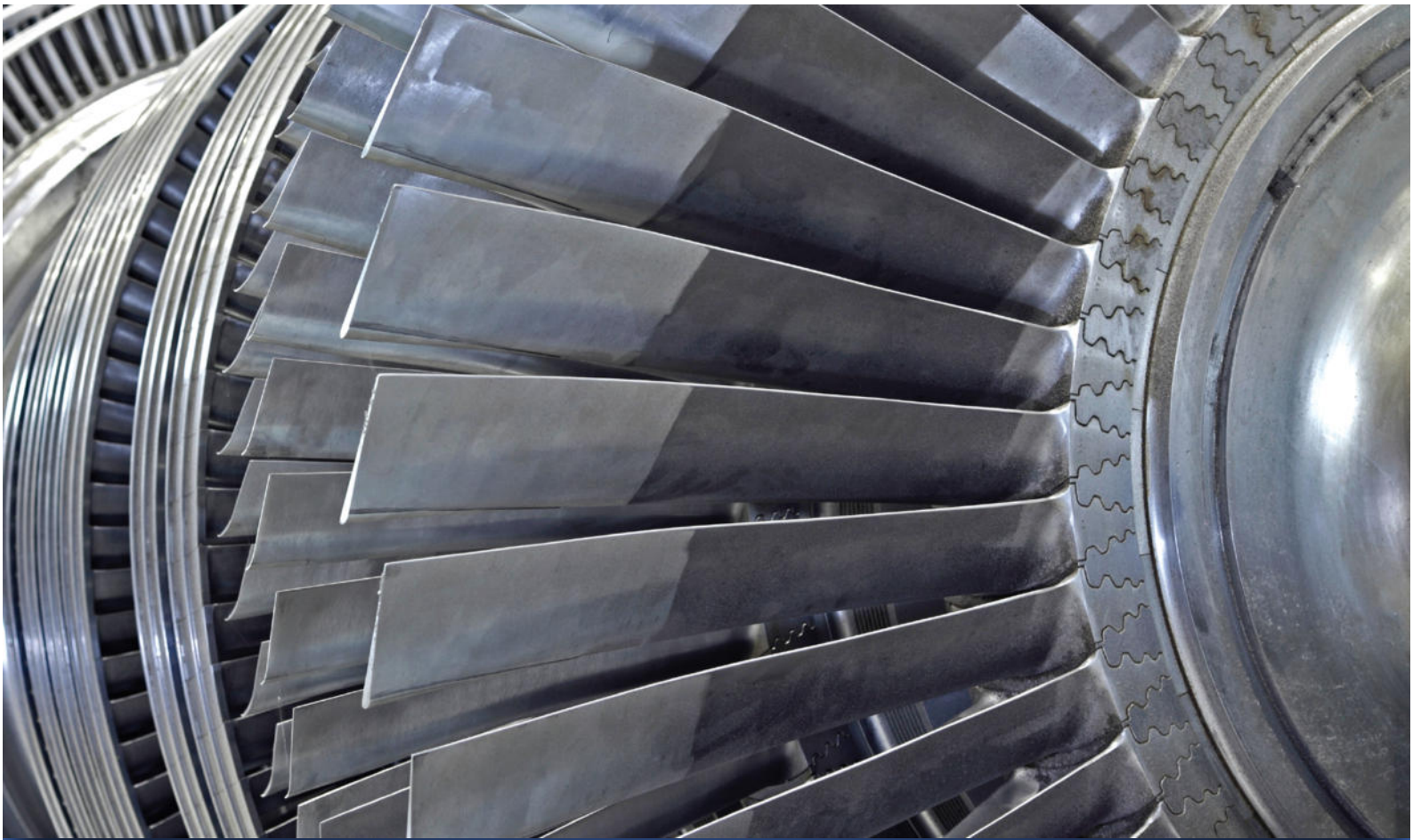
## Packages



## AxSTREAM Bearing™

AxSTREAM Bearing™ was developed to determine the performance and hydrodynamic characteristics of different types of bearings based on the Finite Difference Method (FDM) in a user-friendly and intuitive interface which provides users with fast and accurate analysis results.

- AxSTREAM Bearing™ allows users to simulate the following bearing types and additional calculations:
  - Fluid film bearings:
    - Journal bearings, including plain cylindrical, elliptical, and fixed/tilt pad
    - Thrust bearings, including fixed/tilt pad
  - Gas foil bump bearings
  - Rolling element bearings:
    - Deep groove angular contact ball bearings and self-aligning ball bearings
    - Spherical roller bearings
    - Straight roller or tapered roller bearings
  - Non-standard/custom bearings
- Auxiliary components:
  - Squeeze film dampers
  - Seals
  - Aerodynamic cross-couplings
- Available analyses include: bearing preliminary design, steady-state, bearing maps, and stability analysis.
- Post processing abilities:
  - Review 2D/3D corresponding plots and work with corresponding numerical data
  - Automatic report generation for each analysis
  - Data exchange with other software



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