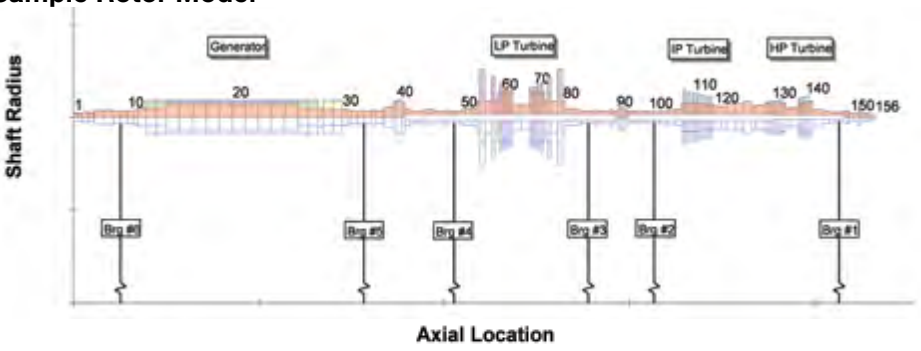
Rotordynamic Analysis

Waukesha Bearings® offers unmatched technical support and analytical capabilities for OEMs and end users seeking to improve the reliability, efficiency and service life of their rotating equipment. The expert engineers at Waukesha Bearings can provide comprehensive rotordynamic analysis to validate original builds for OEMs or to diagnose problems and propose the right solutions for end users.

BEARING AND SEAL EXPERTISE

Along with the rotor, the bearings and seals are the most influential components in rotating equipment vibrations. Therefore, the accuracy of a rotordynamic analysis relies on the analyses of the bearing and seal characteristics. As a global leader in the engineering and manufacturing of bearings and seals, Waukesha Bearings has the most reliable and accurate tools to perform those analyses.

Sample Rotor Model



With 65 years in the industry, Waukesha Bearings has upgraded numerous bearings and seals via rotordynamic analysis and offers proven solutions to improve stability, control vibrations, reduce power loss, eliminate pivot wear and address a myriad of other challenges.

Proprietary product solutions include:

ISFD® technology

Maxalign® bearings

Flexure Pivot® bearings

Damper seals

THE WAUKESHA BEARINGS ADVANTAGE

- The most comprehensive analytical capabilities in the industry
- Wide and deep knowledge of bearings and seals
- Accurate in-house tools for bearing and seal analysis
- Accurate rotordynamic analysis and predictions
- Proven engineered solutions
- The right solutions, available at the right time
- Fast turnaround times based on skilled expertise
- Continuous research and development of new technologies

ROTORDYNAMIC ANALYSIS FOR YOUR APPLICATION

- Compressors
- Steam and gas turbines
- Expanders (radial turbines)
- Turbochargers
- Microturbines
- Motors
- Generators
- Pumps
- Gearboxes
- Propulsion shafts
- Blowers
- Fans

WAUKESHA BEARINGS

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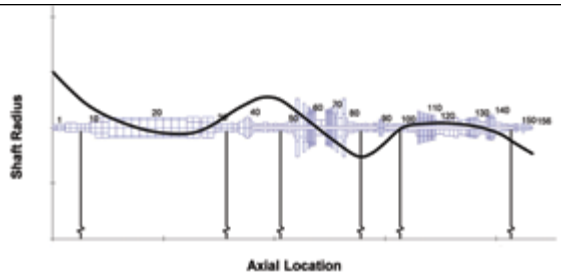
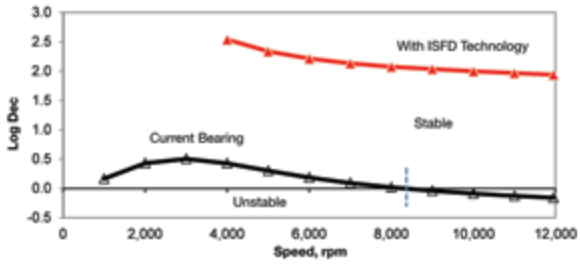
DOVER PRECISION COMPONENTS

Mode Shape Analysis



Stability Analysis



ACCURATE, COMPREHENSIVE REPORTS

Upon receipt of the relevant rotor and coupling information, Waukesha Bearings engineers build a rotor model and then analyze the bearings and seals using proprietary codes. The customer receives a comprehensive report of the findings to include the following, based on the type and scope of analysis performed.

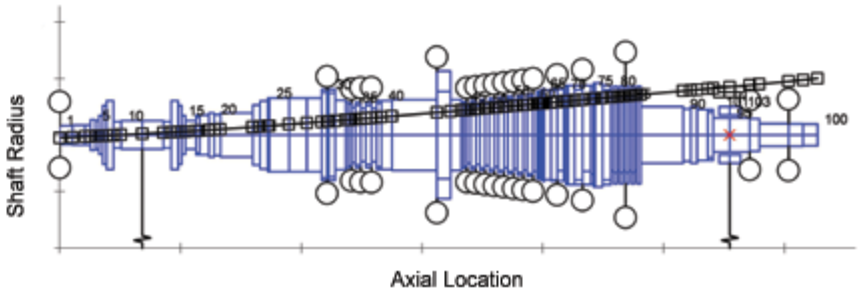
Lateral Rotordynamic Analysis

- Undamped critical speed (UCS) analysis
- Damped critical speed analysis
- Eigenvalue analysis (mode shapes)
- Unbalance response analysis
- Stability analysis (level I and II)
- Bearing and seal optimization
- ISFD optimization, if needed
- Brush seal contact–induced stability and unbalance analysis, if needed

Torsional Rotordynamic Analysis

- Torsional natural frequencies (TNF)
- Eigenvalue analysis (mode shapes)
- Damped torque or stress response analysis, if needed
- Transient analysis for start-up or short circuit analysis for motor or generator trains
- Transient torsional stress analysis on critical points (e.g., coupling, rotor)

Sample Lateral Rotordynamic Analysis



Sample Torsional Rotordynamic Analysis