4X Diagnostics Products and Services

Providing vibration analysis & diagnostic measurement consulting services nationwide.

4X Diagnostics is ISO Category IV Certified and provides advanced vibration analysis testing, training, mentoring & certification. We also offer ME’scope software sales & support. Our customers include manufacturing, technology, research and service industries, local municipalities and government agencies.

Top Services:

Route based data collection & Vibration Analysis of rotating machines and equipment - Used to determine the mechanical health of machines. Typical measurements include vibration testing to identify mechanical and electrical issues and Stress Wave measurements to identify bearing and gear faults. Including Route Database Creation & Tune-ups.

Operational Deflection Shape Analysis - Time or frequency based Operational Deflection Shape (ODS) is used to analyze the motion of rotating equipment and structures. An ODS animates a computer generated model of the machine with phase and magnitude data or simultaneously measured time waveform captures. ODS is a non-intrusive testing technique.

Modal Analysis – An experimental method of determining the natural frequencies, damping values and mode shapes of a structure. Modal analysis is needed when machine vibration is amplified due to resonance.

Motion Amplification Video Recording - Motion Amplification is a revolutionary video-processing product and software package that detects subtle motion and amplifies that motion to a level visible with the naked eye. Every pixel becomes a sensor creating millions of data points in an instant. Spectrum and waveform data can be calculated from the video images. 4X Diagnostics owns Motion Amplification Equipment and is Trained & Certified to complete testing for you.

Resonance Testing – Resonant amplification (Resonance) results whenever forced vibration, from mechanical faults, coincides with a natural frequency. A natural frequency is the frequency or frequencies that a machine “likes” to vibrate or “ring”. At resonance, a small change in the exciting force produces a large change in vibration.
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**Seismic Vibration Studies** – Floor vibration, structure or ground vibration monitoring and analysis. Used for vibration sensitive equipment and slow speed equipment.

**Remote Data Analysis** – Remote analysis and reporting of route based data, online data or any diagnostic measurements.

**Short or Long Term Monitoring** – Short or long-term monitoring of vibration or process signals. Monitoring instrumentation is 24 channels and is capable of measuring and storing long time waveform captures, trends, spectrums, waveforms.

**Fan/Rotor Balancing** – Dynamic balancing of rotating equipment in-situ or in a balance stand.

**Turbine Startups** – Multi-channel measurement and data analysis of turbine startups and shutdowns. Including Speed, Orbits, Shaft Centerline, and Shaft Position measurements.

**Sound/Noise** – Airborne noise measurement used to diagnose vibration on rotating machines or to investigate neighborhood noise complaints, or document fence-line noise and human exposure levels.

**Phase Studies** – Relative or absolute phase studies to diagnose or confirm the source of vibration issues.

**Acceptance Testing** – To test and evaluate components for compliance & acceptability related to vibration and/or sound.

**Ultrasonic Thickness and inspection** – Used to determine the thickness of metal castings, metal components and concrete structures.
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Additional Services:

- **Speed Variation or Torsional Analysis** – Used to identify dynamic changes in shaft torsion, rotational or linear speed.
- **Laser Shaft Alignment** – Identification and correction of shaft misalignment.
- **Transient Capture Analysis** – Long time waveform captures used to study periodic or non-periodic signals. Transient capture analysis is commonly used when impacting or randomly occurring signals are present.
- **Displacement Measurements** – Static or dynamic measurement of displacement using eddy current, laser or other contacting or non-contacting displacement measurement systems.
- **Product Defect Analysis** – To investigate product quality issues. Signal types include flow, pressure, vacuum, density, speed, displacement, force or any other analog signal.
- **Ultrasonic Measurement and Analysis** – Ultrasonic testing is used to identify air or fluid leaks, mechanical or electrical faults or corona in power distribution
- **Permanent Vibration Sensor and Tachometer installations** – Typical installations include spot face/surface prep, epoxy/drill and tap, and connector/junction box wiring.
- **Phone Support** – For all vibration related services.

Training Services:

**Vibration Training, Mentoring and Vibration Certification Training**

4X Diagnostics provides public and on-site vibration training, mentoring and vibration certification courses for many subjects including:

- Operational Deflection Shape, Modal Analysis & ME’scope training
- Time Waveform Analysis
- Advanced Vibration Analysis Techniques
- Fundamentals of Vibration Analysis
- On-site Category I, II and III vibration training and certification classes (4X Diagnostics is a certified North America training instructor for Mobius Institute)
- Route Database Training & Tune-up
- Rotor Balancing Workshop

Vibration Consulting, Training & Mentoring

AJD@4xdiagnostics.com  www.4XDiagnostics.com
4X Diagnostics sells and supports ME’scope VES Operational Deflection Shape and Modal Analysis software, which makes it easier for you to observe and analyze noise & vibration problems in machinery.

**We are your authorized reseller**
Contact us or for more information, pricing, package options or to renew support

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