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.
4X Diagnostics Products and Services

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.
4X Diagnostics Products and Services

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** – Vibration, ODS Modal 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**

---

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

Matt: 585-315-8785
matt@4xdiagnostics.com