

# 4X Diagnostics Products and Services



Family Owned and Operated since 2005

**45+ years experience**

providing

**Vibration Analysis, Training & Diagnostic Measurement**  
consulting services nationwide

## We provide:

- ✓ Route-Based Vibration programs
- ✓ Motion Amplification Video Surveys
- ✓ Advanced Diagnostic Vibration Testing
- ✓ Wireless Sensor Installation & Monitoring
- ✓ Remote Vibration Monitoring and Analysis
- ✓ Floor Vibration Studies
- ✓ Noise Studies
- ✓ Vibration Mentoring, Training & Certification

## Serving industries nationwide including:

- |                        |                       |
|------------------------|-----------------------|
| ➤ Manufacturing        | ➤ Power Generation    |
| ➤ Aluminum             | ➤ Food & Beverage     |
| ➤ Technology           | ➤ Cement              |
| ➤ Water Treatment      | ➤ Pulp & Paper        |
| ➤ Tooling              | ➤ Mining              |
| ➤ Research             | ➤ Service             |
| ➤ Local Municipalities | ➤ Government Agencies |
| ➤ E- Component Mfg.    | ➤ And Many More       |

# 4X Diagnostics Products and Services



## Top Services



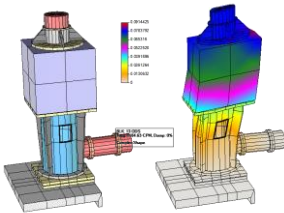
### Route Based Data Collection & Analysis

Vibration and stress wave measurements are used to determine the mechanical health of machines and identify bearing and gear faults. Including Database Creation & Tune-ups.



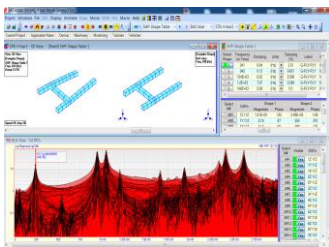
### Motion Amplification Video Surveys

Motion Amplification detects subtle motion and amplifies that motion to visible levels. Every pixel becomes a sensor creating millions of data points in an instant.



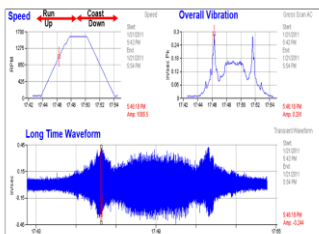
### Operational Deflection Shape Studies

Time or frequency based Operational Deflection Shape (ODS) studies are used to animate and analyze the motion of rotating equipment and structures.



### Modal Analysis

An experimental method of determining the natural frequencies, damping values and mode shapes of a structure.



### Resonance Testing

Resonance results whenever forced vibration, from mechanical faults, coincides with a natural frequency. At resonance, a small change in the exciting force produces a large change in vibration.

# 4X Diagnostics Products and Services



## Additional Diagnostic Services

### Wireless Sensor Sales/Installation/Monitoring/Analysis

Providing wireless sensor solutions for continuous machine monitoring and diagnostic testing.

### Acceptance Testing

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

### 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 capable of measuring and storing long time waveform captures, trends, spectrums, and detailed waveforms.

### Fan/Rotor Balancing

Dynamic balancing of rotating equipment in-situ.

### Turbine Startups

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

### Sound/Noise Studies

Airborne noise measurement used to diagnose vibration on rotating machines, investigate neighborhood noise or document fence-line noise and human exposure levels.

### Permanent Vibration Sensor and Tachometer Installations

Including spot face/surface prep, epoxy/drill and tap, connector & junction box wiring

### Phone Support

For all vibration related services.

# 4X Diagnostics Products and Services



## Special Measurements

### Seismic Vibration Studies

Floor vibration, structure or ground vibration monitoring and analysis. Used for vibration sensitive equipment and slow speed equipment.

### Product Defect Analysis

To investigate product quality issues. Signal types include flow, pressure, vacuum, density, speed, displacement, force or any other analog signal.

### Speed Variation or Torsional Analysis

Used to identify dynamic changes in shaft torsion, rotational or linear speed.

### Displacement Measurements

Static or dynamic measurement of displacement using eddy current, laser and Motion Amplification camera systems.

### Ultrasonic Measurement and Analysis

Used to identify air or fluid leaks, mechanical or electrical faults or corona in power distribution.

### Ultrasonic Thickness and Inspection

Used to determine the thickness of metal castings, metal components and concrete structures.

### Phase Studies

Relative or absolute phase studies to diagnose the source of vibration issues.

## 4X Diagnostics Vibration Training, Mentoring and Certification

We provide public and on-site vibration training, mentoring and vibration certification courses for many subjects including:

Basic Data Collection & Best Practices

Fundamentals of Vibration Analysis

Advanced Vibration Analysis Techniques

Operational Deflection Shape, Modal Analysis  
& MEscape training

Motion Amplification Workshop

Route Database Training & Tune-up

Rotor Balancing Workshop

Onsite Custom  
Mentoring  
available



# 4X Diagnostics Products and Services



## Mobius Institute Training Courses



**4X Diagnostics is a certified Mobius training instructor and reseller of Mobius training products in North America**

Call for pricing and to schedule web-based video training, public courses and online classroom training and certification delivered by a certified Mobius instructor.

### Vibration Analysis

Learn to be an effective vibration technician and progress to master analyst - capable of managing a condition monitoring program, diagnosing the widest range of fault conditions, verifying and correcting resonance and balance problems - with interactive simulations that make everything easy to understand.



**ISO Category I**  
*Basic Vibration Analysis*

**ISO Category II**  
*Intermediate Vibration Analysis*

**ISO Category III**  
*Advanced Vibration Analysis*

### The Asset Reliability Practitioner [ARP]

Training and accredited certification program provides the knowledge, qualifications, and growth path to enable a reliability program to be run successfully.



**ARP-A**  
*Reliability Advocate*

**ARP-E**  
*Reliability Engineer*

**ARP-L**  
*Reliability Program Leader*

# 4X Diagnostics Products and Services

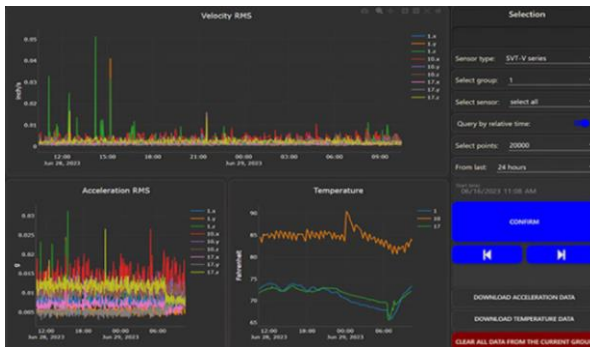


## Broadsens Wireless Sensors

4X Diagnostics is proud to partner with BroadSens Corporation for wireless sensor solutions.

Broadsens provides industry-leading wireless vibration & temperature sensors, and wireless high temperature sensors used for predictive maintenance, industrial IOT and machine condition monitoring.

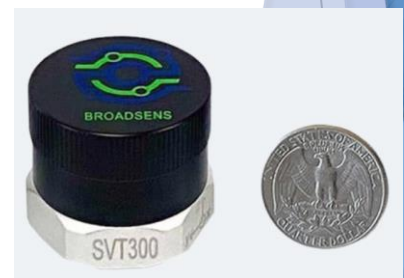
Vibration | Strain | Pressure | Temperature | Flow | Inclination  
Shock | Thickness | Displacement | Distance | Crack | Corrosion  
Leak | Delamination | Angle



- Easy Sensor Management
- Visualize Real-Time Data
- Historical Data Review
- Analytical Tools
- Free Software Upgrades

### *Applications include:*

- ✓ Machine Condition Monitoring
- ✓ Wireless Vibration Monitoring
- ✓ Industrial Internet of Things
- ✓ Structural Health Monitoring
- ✓ Composite Health Monitoring
- ✓ Ultrasonic Thickness Measurement
- ✓ Underground Leak Detection



Installation, remote monitoring and analysis services available.  
Contact us or for more information on pricing and options.

# 4X Diagnostics Products and Services



## ODS/Modal Software – MEscoPe VES

4X Diagnostics sells and supports MEscoPe VES Operational Deflection Shape, Modal Analysis and **new MEscoPe ODS video** software, which makes it easier for you to observe and analyze noise & vibration problems in machinery.



### Renew your Software Maintenance & Support (SMS)

Updates: Gain full functionality of the latest software improvements & upgrades

Avoid extra fees when renewing

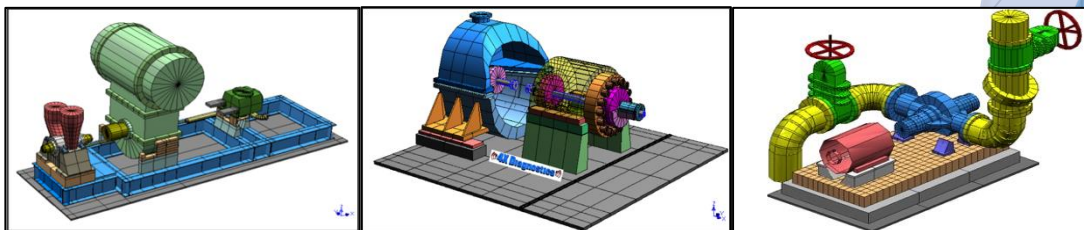
Get phone and e-mail support through Vibrant Technology

### Upgrade and gain access to more with your software

Visual Modal – Obtain Modal Parameters

Visual SDM – Experiment with Structural Modifications.

Visual Experimental – (FEA) Finite Element Analysis



**\*\*We are your authorized reseller\*\***

Contact us or for more information, pricing, package options or to renew support