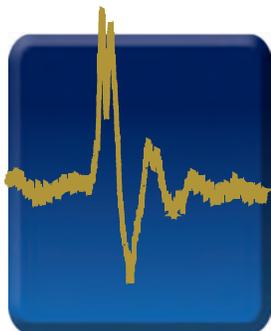


PREDICTIVE MAINTENANCE & VIBRATION ANALYSIS

- Avoid Costly Failures
- Reduce Downtime
- Increase Productivity



EMDS

ELECTRO-MECHANICAL
DIAGNOSTIC SERVICES

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PREDICTIVE MAINTENANCE

EMDS identifies issues before they cause failure in your operation.

Offering over 100 years of combined experience, our analysts are among the most highly trained professionals in the world. Each analyst is Level III or Level IV certified per ISO standards by the Vibration Institute and ANSI.

Experts at developing, executing and reinvigorating vibration analysis programs, we apply cutting-edge technology and complete commitment to customer satisfaction in order to:

- Identify Problems Before They Shut You Down
- Prevent Consequential Damages
- Decrease Costly Downtime



Torsional Measurements

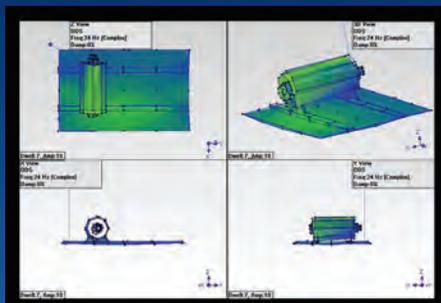


AVOID EXPENSIVE AND CATASTROPHIC EQUIPMENT FAILURES

Though all equipment deteriorates over time, predictive maintenance from EMDS can significantly reduce your maintenance costs and production loss.

Our predictive maintenance program offers consistent, ongoing monitoring of equipment and machinery. This enables us to identify operating trends and patterns that are highly effective at predicting failure. Our program operates with two objectives:

- To Improve Equipment Reliability, Mitigating Risks Before They Cause Failures
- To Increase Production by Eliminating Unplanned Downtime



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To Improve Your Operational Performance, Contact the Experienced Analysts at EMDS

EXTEND THE LIFE OF YOUR MACHINERY

If you'd like to improve your operational performance, contact the experienced analysts at EMDS. Providing advanced vibration services and machine diagnostics, we'll help you extend the life and performance of your machinery.

ADVANCED DIAGNOSTIC SERVICES

Structural Vibration	Used to identify the source of noise or destructive vibration in office buildings or manufacturing facilities. Site evaluation for CMM and MRI units can also be performed.
Resonance Testing	Identifies the frequency and shape of a structural vibration. Using this information, these problems can be quickly and efficiently corrected.
Operating Deflection Surveys (ODS)	The measurement of the structure and equipment to develop a 3D model of how the equipment vibrates.
On-Site Balancing Services	EMDS has the equipment and experience to efficiently balance all types of rotating equipment, from simple fans to complex, multi-rotor turbine generators.
Motor Rotor Testing	AC motors can be damaged through the thermal cycling that results from starting and stopping. By measuring the modulation resulting from cracked or broken rotor bars and end rings, we can accurately determine their condition. SCR controlled DC motors can also be evaluated.
Electrical Line Harmonic Testing	SCRs and other non-linear devices can inject harmonics into power circuits. These harmonics produce heat, but no driving power, in electric motors. They can also damage sensitive electronics. Detection is the first step in correcting this problem.
Acoustical Testing & Sound Measurements	Sound is just vibration traveling through the air. By using a microphone rather than a vibration transducer, vital information is available about machinery condition.
Turbine & Compressor Monitoring	To monitor turbines and compressors, it's necessary to have high-speed, multi-channel data acquisition equipment. This captures rapid speed changes and transients. This can be done remotely or on-site.
Torsional Vibration Analysis	Torsional vibration occurs when, as a result of alternating torque values, the speed of a shaft varies rapidly with time. Reciprocating components, universal joints, and eccentric gears are common sources of torsional vibration. This requires highly specialized test equipment and personnel that few companies outside of EMDS can provide.

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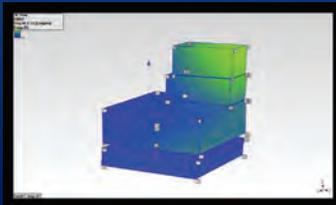


Increase Asset Optimization Through the Use of Vibration Analysis

Vibration analysis is used for early detection of potential faults in your equipment. Analysis detects the root cause of a problem, such as misalignment, looseness or other issues, and focuses only on machine parts that are predicted to fail. This approach allows you to avoid unnecessary replacement of properly working components.

**Repair or Replace
Deteriorating
Machinery Before
Expensive Failures
Occur**

**Avoid Unnecessary
Replacement
of Properly Working
Components**



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COMMON ISSUES IDENTIFIED THROUGH VIBRATION ANALYSIS:

- Imbalance in Rotating Components
- Misalignment of Couplings, Bearings and Gears
- Deterioration of Rolling-Element Bearings
- Resonance
- Looseness and Excessive Clearances
- Rubbing
- Electrical Problems
- Gear Wear
- Aerodynamic or Hydraulic Problems



EMDS is a proud business partner of Horner Industrial Group

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