Applied Technical Services

Machinery Monitoring & Diagnostics

We Take A Closer Look

- Nondestructive Testing
- Calibration
- Materials Testing
- Chemistry
- Environmental & EMI/EMC
- Consulting Engineering

Reliability Training

ATS Machinery Monitoring & Diagnostics course provides engineers, mechanics, technicians, operators and supervisors the knowledge and skills required to accurately identify, prioritize and correct the most common causes of machinery failure. Learn from our experience with over 1000 failed pieces of industrial and commercial equipment. Course attendees will learn and practice monitoring and diagnostic techniques on motorized test stands.

Upon completion of the course participants will demonstrate the ability to:

- Select and apply condition monitoring & diagnostic tools for expected damage mechanisms
- Perform a comprehensive visual assessment of machinery installation and installation design
- Collect meaningful data using commonly available diagnostic tools
- Assess diagnostic data with commonly accepted alarm limits from applicable codes, standards and specifications
- Evaluate condition and diagnostic data utilizing ATS diagnostic methodology
- Prioritize, report and execute corrective actions for machinery defects

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INDUSTRIES SERVICED
ADDITIVE MANUFACTURING - AEROSPACE - AUTOMOTIVE - CHEMICAL
COMMERCIAL PROPERTIES - CONSTRUCTION - DEFENSE/MILITARY
INSURANCE/LEGAL - MANUFACTURING - MEDICAL - NUCLEAR
OIL & GAS - POWER GENERATION - PULP & PAPER - MANY MORE

Day 1

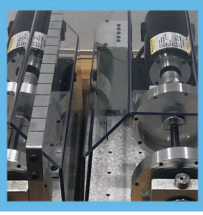
- Human error and its role in Machinery Failure
- Practical Plant Physics
- Common causes of Machinery Failure
- Condition monitoring tools, techniques, frequency of inspection and diagnostic test methods

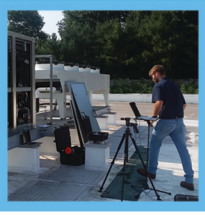
Day 2

- Practical application of monitoring tools and techniques
  - Observation
  - Noise
  - Temperature
  - Lubrication
  - Overall Vibration Analysis
    - Velocity
    - Acceleration
- Bearing condition

Day 3

- Suggested use of vibration spectral and phase analysis techniques
- Prioritization of Machinery Faults
  - Commonly accepted alarm limits
- Final Examination – condition assessment, diagnostics and prioritization of machinery defects





Condition Monitoring Advantages

Condition monitoring is a non-destructive method for analyzing machine characteristics and searching for changes that may indicate deterioration or damage. Locating and Identifying problems early helps to avoid failures, breakdowns, and collateral damage. Condition monitoring helps maintain proactive control over maintenance programs, reducing unexpected downtime and repair costs. Vibration-based condition monitoring is a form of observation that interprets machine vibration characteristics to diagnose issues with equipment health. Vibration monitoring findings can also help optimize machines to run faster or with increased loads, reducing the overall operating costs. Machinery operating at peak efficiency lasts longer with condition monitoring than with run-to-failure tactics.

Vibration Monitoring Applications

- Resonance
- Mechanical Looseness
- Imbalance
- Electrical Motor Faults
- Misalignment
- Lubrication Issues
- Gearbox or Bearing Failures
- Bent Shafts

Using Vibration Analysis

Vibration analysis is a versatile predictive testing science with a wide range of applications. Vibration monitoring uses testing, surveillance, and analysis to find potential issues with misalignment, bearings, drive belts, imbalance, pulleys, gearboxes, resonance, electrical supply, motors, and other components. Reliability Testing Services provides vibration-based condition monitoring as a program that we can set up from scratch, establishing routes, alarm limits, and monitoring frequencies, or supplement existing condition monitoring programs. Vibration monitoring programs indicate early signs of malfunction or deterioration, allowing proprietors to plan repairs or replacements before failure occurs.

Vibration can have a direct impact on product quality; excessive vibrations in paper machines and aerospace machine spindles can damage the product. Routine condition monitoring programs collect and trend data that can help prevent equipment performance issues. At RTS, our certified, experienced vibration analysts deliver clear, accurate data that allows clients to take prompt, informed actions regarding their equipment, scheduling maintenance only when necessary. Our experts also offer balancing and alignment services to help optimize equipment performance.

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