

Vibration Route

Understanding vibration routes as part of predictive maintenance can save you a ton of money

If you want to keep your plant equipment running smoothly and reliably, then you need to look into vibration analysis and having a vibration route. While there may be an initial investment involved or regular payments to a vibration analysis vendor, you'll find that vibration analysis as part of a predictive maintenance (PdM) approach will reduce your M&O costs and minimize the downtime of crucial machines. Read on to learn more!

What is a Vibration Route?

Route-based vibration analysis means that you collect vibration data on a regular basis by following a specific route through your plant. Your vibration route refers to the route you follow -- the order in which you gather data from different machines. The analysis performed on a vibration route is usually done monthly, bimonthly, or quarterly. If your plant depends on rotating equipment, route-based vibration analysis is an important part of **predictive maintenance**.

Quick Review: Vibration Analysis

Vibration analysis is one of the tools for monitoring and troubleshooting plant equipment. Basically, a sensor (vibration sensor) is used to measure the movement of a point on a machine by converting mechanical motion into an electrical signal. The measurements, represented by an electrical signal, are collected by a data acquisition system for visualization and analysis.

How Does Vibration Analysis Work

During analysis, the data compiled by the data acquisition system is processed by a computer to generate useful information about the vibration taking place. A vibration analyst can use this information -- usually in the form of **Time Waveform or a FFT Spectrum** -- to detect a variety of issues with your machines (including your electric motors and the equipment they drive). This is **how vibration analysis works** in a nutshell. So, a vibration route would be a sequence of machines that you would have vibration analysis performed on.

Vibration Monitoring Systems

There are several different types of **vibration monitoring systems**.

Portable Data Collectors

Portable data collectors are handheld units that store the data on the analyzer while the data is being collected. The data can then be transferred to a computer for analysis. These portable data collectors can be costly, but are more scalable to your plant needs.

Wired Monitoring Systems

A wired monitoring system will continually collect data, unlike a portable data collector. Vibration data is gathered every second and sent to a computer system for storage. The system can be set up to monitor the data (in addition to compiling data for analysis) so that an alarm will trip and the machine can be shut down if something is going seriously wrong. Wired monitoring systems are going to be very expensive.

Wireless Monitoring Systems

Wireless monitoring systems take advantage of advances in wireless technology to provide much of the same functionality as wired systems with the exception that they do not gather data every second. On the other hand, they often have more advanced features and are easier to install than their wired counterparts.

ITT iALERT2 Equipment Health Monitor

Another option that doesn't really fit into any of the other categories is the ITT iALERT2 Equipment Health Monitor. It collects data every 5 minutes and transmits that data to your phone or tablet via Bluetooth technology. It also collects FFT and time waveform data for detailed analysis when the device detects levels in alarm on two readings in a row.

Using Data from Vibration Monitoring Systems

So we've talked about what vibration route data consists of and some different tools for gathering data -- but what is that data really for? You can have all kinds of data collected, but all the money you invested in monitoring systems and route analysis are a waste unless you use that data. Maintenance data, including vibration data, is supposed to be **used to make informed decisions about your equipment**. This type of data can be used to help you determine when equipment needs maintenance, when equipment needs to be repaired or rebuilt, and when a machine has passed its useful life.

Data can also be used to track down potential sources of trouble before problems manifest, making vibration data a critical tool for predictive maintenance of your assets. Of course, vibration data in the right hands can be a powerful tool for troubleshooting and detecting the source of machine faults.

Considerations When Choosing a Vibration Analysis Vendor

Many plants will **outsource vibration analysis**, including analysis done in connection with a vibration route. If you are thinking about outsourcing, here are some important considerations you need to discuss with potential vendors before making a decision:

1. *Who owns the data?* If you don't own the data, then it will be difficult for you to switch vendors in the future
2. *How are you being charged?* There are quite a few different ways to charge -- hourly rate, flat fee, per point -- and certain ways of charging that can cause what seems like a reasonable price to skyrocket quickly. Get the vendor to be as specific as possible.
3. *What vibration analysis **certifications** do they have?* There are different types and levels of vibration analysis certification.
4. *How many people does the company have?* If they only have one or two people that perform the analysis, you could find yourself in the midst of problems if something happened to one of them.

HECO Offers Vibration Route & Analysis

Vibration route analysis is one of the services we offer at HECO as part of our Predictive Services Group (PSG). We have a team of highly skilled and ISO-certified vibration analysts with over 25 years experience in not just analysis but corrective actions as well. We perform monitoring and predictive maintenance for all aspects of your system. Our certifications include ISO/ANSI Certified Vibration Analysts (Cat II to Cat IV), Level II Tribologist (Oil Analysis), Certified Motion Amplification Specialists (Level I & II), Certified Ultrasound Technicians, and Certified Infrared Thermographers. Give us a call to see what we can offer you!