

Remote Condition Monitoring

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Is remote condition monitoring worth the investment? Is it a good fit for your facility? What can it really do to help you with monitoring the day-to-day performance of the rotating machinery you are responsible for? Does it really help with maintenance and repair? If you've asked any of these questions, you've come to the right place for straightforward answers.

What is Remote Condition Monitoring?

Remote condition monitoring allows you to track the condition and performance of your equipment in real-time and do so remotely. The data collected during remote condition monitoring is typically sent to cloud storage where it can be downloaded for analysis, report creation, and visualization. In addition, the monitoring system can also be used to send out alerts when it has detected a serious condition.

How Does Remote Condition Monitoring Work?

In remote condition monitoring, a sensor gathers information at regular increments that you assign. That data is transferred (most often wirelessly, either via Bluetooth or Wi-Fi) and stored either on a data server or in the cloud. If the data triggers a condition that you have pre-set, an alert can be sent to the managers and technicians you choose. The data is analyzed and visualized to produce useful, actionable information.

What Can Be Monitored?

Remote condition monitoring is ideal for rotating equipment (e.g., fans, pumps, electric motors) and can be used to monitor these three key characteristics or rotating machinery:

- **Vibration** (can indicate issues with balance, bearing defects, misalignment, looseness, resonance, issues with flow, etc.)
- Temperature (can indicate excessive wear of load bearing components, imminent bearing failure, or electrical issues)
- Performance (reductions can indicate excessive wear, a need for maintenance, or imminent failure)
- Pressure
- Current
- Voltage
- Process Data

This type of data can provide an excellent overview of machine and equipment health, when used correctly.

Using the Data from Remote Condition Monitoring

The sheer amount of data that you can gather from remote condition monitoring can seem overwhelming, and the fact is that the data itself doesn't serve any useful purpose unless you use it. Software for analysis and visualization can help you transform raw data on factors such as vibration and performance into useful information. That information can be put into reports and used for ...

- Performing **PdM (Predictive Maintenance)** and **Condition Based Maintenance**
- Determining when equipment is about to fail
- Recognizing trends that indicate potential issues with equipment
- Justifying the refurbishment or replacement of equipment

However, the **data must be used** if you want to justify an investment in remote condition monitoring. And certain types of data really need to be reviewed by an expert, such as having a **Certified Vibration Analyst** make recommendations for your setup and periodically review the data with you.

Benefits of Remote Condition Monitoring

Let's talk about the benefits of remote condition monitoring:

- Continuously monitor your equipment from anywhere
- Speed up the trouble-shooting process by allowing operating characteristics and performance trends to be visualized over time

- Configure alerts for certain parameters so that a problem or impending failure doesn't get out of hand
- Evaluate the overall health of your equipment
- Establish baseline performance for your equipment
- Reduce average downtime and mean time to failure
- Reduce overall M&O costs

Again, these benefits will only occur if you correctly use the data gathered by remote condition monitoring.

Should I Switch to Remote Condition Monitoring?

Whether to invest in remote condition monitoring can be a tough choice, but it essentially boils down to a financial decision. There are obvious costs (e.g., equipment, sensors, software, etc.) as well as some costs that might not be so obvious (e.g., initial downtime, training). The good news is that the costs of sensors, wireless equipment, and software have gone down over the last several years, making remote conditioning monitoring much more affordable.

Over the long term, however, remote condition monitoring has the potential to positively impact your M&O costs as well as the costs associated with unexpected downtime and equipment mean time to failure.

Another consideration is whether you and your team are willing to commit to using the data and have someone on your team that can analyze the data correctly. This may involve outsourcing some of the data analysis.

It is also key to remember that even the most high tech, exhaustive remote condition monitoring system cannot take the place of “boots on the ground.” You still need feedback from the employees and technicians that work with your rotating equipment every day.

Example: Remote Conditioning Monitoring and Performance

As an example, let's say you have an electric motor whose vibration you have been remotely monitoring. Once you have enough data, it is possible to establish what the baseline performance of that motor is. Several months later, there is an aberration in that performance data which could be a sign that it is about to fail.

It would be much easier for you to schedule a time to pull the motor and replace it with a spare than have it fail unexpectedly or experience additional damage that could render it unusable. You have the vibration data for that motor reviewed by a certified vibration analyst to aid in establishing that the issue may be and how it should be resolved. And remember that it is **cheaper to prevent a failure** than it is to fix a failure!

HECO Knows Remote Condition Monitoring

HECO has **over 25 years of experience in PdM and remote condition monitoring**, and ready to put it to work for you. Whether you are ready to purchase the ITT I-ALERT2 system or need some expert assistance with analyzing vibration data, we have the knowledge and certifications to help you. We can even assist you with developing your own PdM program and addressing the issues it may reveal. If you have questions about remote condition monitoring or are interested in setting it up for your facility, contact the professionals at HECO.