Mp2®/EAM® News Update
Predictive Maintenance- Yes or No?

When should I use predictive maintenance (also known as condition based monitoring) to manage my assets?

This is a question I am often asked by my clients. Predictive maintenance involves monitoring the condition of equipment for impending failure. Equipment can be monitored using vibration analysis, infrared thermography and oil analysis. Limits can be set to trigger maintenance activity. When a predefined condition limit is exceeded, a signal or output is turned on. This output can be sent directly to a CMMS so that a work order is generated. This is particularly relevant for continuous process plants where plant failure and downtime can be extremely costly.

Vibration analysis is the most widely used continuous monitoring technology. It is the primary diagnostic tool for mechanical systems that have rotating or moving elements, and when problems with machinery generate abnormal, yet identifiable vibrations. Some examples of machine problems that could be detected with vibration analysis are loose bolts, misaligned shafts, worn bearings & metal fatigue. Vibration sensors such as accelerometers are permanently mounted in the bearing housings of the most critical components and then hard wired back to a central computer that acts as a data collection system.

Under certain circumstances, temperature can be continuously monitored using infrared thermography. Kilns and rotary vessel dryers could benefit from thermography. Detectors are installed inside an electrical panel to monitor the temperature of a single connection.

Oil sampling involves collecting a sample of fluid from lubricated or hydraulic machinery for the purpose of oil analysis. The fluid sample is then analyzed for contaminants, and wear debris in the laboratory. Oil analysis is performed to provide meaningful and accurate information on lubricant and machine condition. By tracking oil analysis, sample results over the life of a particular machine, trends can be established which can help eliminate costly repairs.

When Should Predictive Maintenance be used?

The answer lies within the analysis of the failure mode you are trying to detect with the continuous monitoring system. The test for whether or not a continuous monitoring solution is right for an asset is as follows:

1) Is the cost of unplanned downtime for the machine extremely high?

2) Is it impossible to have a maintenance technician perform a periodic route to detect impending failure?

3) Is the machine critical to the plant operation?

If your answer to any of these questions is "yes" then continuous monitoring may be the best solution. You should take into account things such as installation and ongoing maintenance costs along with the initial purchase price when considering predictive maintenance technology .

About the Author

Jennifer Ohl is a maintenance and reliability consultant based in Miami. She was Regional Manager of Consulting Services for a leading maintenance software manufacturer and subsequently founded her own company, Midwest Software Specialists in 2001. For thirteen years, Jennifer has been helping companies implement maintenance systems that reduce costs and increase profits. Jennifer has an MBA in Finance and Operations and a BA in Business.