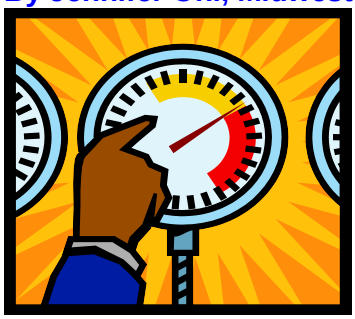
**Moving Towards Predictive Maintenance**

**By Jennifer Ohl, Midwest Software Specialists, Inc.**



The basic idea of predictive maintenance, also called condition based maintenance, is that equipment doesn't break down all of a sudden- instead, it breaks down over time and provides warning signals along the way. These warning signals are changes in the machine's condition such as vibration, sound and temperature and can be detected by diagnostic equipment. Once a change has been detected, the equipment can be repaired before it fails, and you avoid expensive and unnecessary downtime.

With **vibration analysis** you can monitor the condition of a machine by checking its vibration level. Increased vibrations usually indicate that the machine is deteriorating. Vibration analysis can also reveal the cause of the vibration. The vibration characteristics that we can measure are:

- Amplitude- how much movement occurs
- Frequency-how often the movement occurs and if there is a cyclical pattern to the movement
- Direction What direction the movement is going

**Oil analysis** is another tool that can help detect problems before they cause unplanned and expensive outages. By analyzing the debris of a machine, you can determine which components are wearing, how severe the situation is and through additional analysis, the root cause of the problem. Oil analysis will also indicate if your lubricant is fit for continued service. You an meet these objectives with the following simple field tests:

- Viscosity test will tell you if the wrong oil is in the machine and if the lubrication has deteriorated
- A particle counter will tell you the amount of abrasive debris in the machine. As particle counts increase, the life a machine will decrease.
- A Wear particle counter will tell if you debris is from dirt or machine wear. Once this is determined, more testing can determine the source of the debris.

With both vibration and oil analysis, you need to collect data regularly and look for trends. An increase or decrease in you data could mean the machine is deteriorating.

**All versions of Mp2® contain standard reports which are very easy to run. Below is a list of some popular reports:**

Mean Time Between Failure Report

- Use this report to identify equipment that fails frequently
- Sort the equipment in ascending order with equipment failing most frequently at the top

Work History Report, With Costs

- Use this report to determine which equipment has high maintenance cost
- Sort the equipment by total cumulative cost

Downtime

- Use this reports to identify equipment with the most downtime
- Run a report for each machine and compute the total downtime
- List equipment with highest amount of downtime

Reason For Failure/Outage Reports

- Use these reports to identify the reasons why equipment failed
- Each reason for failure/outage will be represented by a code. The same code listed numerous times could indicate a problem. Codes are faster and easier to review on a report than comments on individual work orders.

**About the Author**

Jennifer Ohl is a maintenance and reliability consultant based in Chicago and 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 twelve 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.