Efftek

Diagnostic Engineers

Our goal is to help our customers achieve increased machine reliability through condition monitoring thereby improving productivity, profitability and competitiveness.

Steve Ferry—Senior Engineer

Since 1992, Efftek Diagnostic Engineers have been supplying independent condition monitoring services to customers including power stations, water authorities, food and tobacco processing, pharmaceutical and petrochemical sectors including many world class and blue chip companies.

Our services are ideally suited to any business using either batch or continuous process machines where downtime can be costly.

Our aim is to provide a responsive, competitive and reliable service of the utmost integrity. To ensure this, our experienced engineers all work within strict quality procedures.

Intrinsically Safe Equipment is available for use in hazardous areas.

Fast report turnaround is considered vital and a written report is usually sent within 48 hours. Any urgent problems would have been notified to site personnel immediately.

Customer Benefits

- ✓ Reduction in Machine Downtime
- ✓ Increased Productivity
- ✓ Safeguard against Health & Safety and environmental problems
- ✓ Cost Savings

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Services Provided

Vibration Analysis

VA forms the backbone of any condition monitoring program because unlike certain other CM techniques, VA is applicable to all sections of a machine train. For example, oil analysis can be carried out on a gearbox but not the motor or the fan whereas VA can be carried out on the motor, gearbox and fan. It is also very powerful at identifying exactly what type of fault is developing on which component.

All rotating and reciprocating machinery will vibrate. The different components will vibrate at their own rotational frequency. Information about the condition of that machine is contained within the vibration waveforms. As a fault develops, so the waveform will change and increase in amplitude. Vibration analysis is a non intrusive method of collecting these waveforms and extracting this information.

Analysing this information can give prior warning of component failures thereby reducing the risk of unexpected breakdowns.

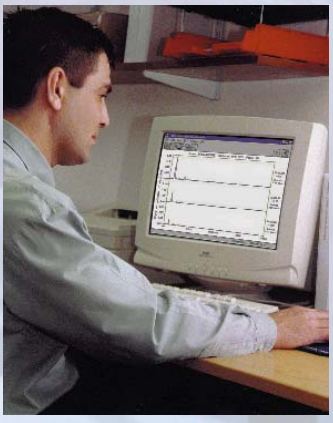
Standard velocity readings are used to detect unbalance, misalignment and insecurity. Wide or high frequency band (HFB) acceleration readings show lubrication deficiencies and de-modulated or enveloped (ESP) spectras pinpoint developing bearing defects by extracting impactive spikes frequencies from the resultant bearing resonance.

Acoustic Emission

An ideal tool for detecting bearing and gear defects and indicating poor lubrication. AE is not as sophisticated as VA and does not give such detailed information however, at slow speeds, where there is insufficient energy generated by a developing fault for VA equipment to detect, AE techniques are invaluable.

AC Motor Analysis

Motor Current Analysis can detect a wide range of AC motor faults such as broken rotor bars, cracked end rings, poor brazing, air gap eccentricity etc.



MCA involves taking a high resolution frequency spectra of the supply current using either a fitted CT or a current clamp around one of the phases and an FFT data collector.

Analysis of the ratio of the supply frequency peak to sideband peaks indicate if a fault is present and how severe it is.

Testing is carried out under normal working conditions and is usually done every 3 to 6 months depending upon the number of starts per day a motor experiences.

Thermography

Thermal (IR) cameras have been seen a lot on television recently being used for finding missing persons on mountain sides and tracking criminals etc.

The same techniques can also be applied to condition monitoring. Typical mechanical faults such as bearing defects, over-tensioning of belts and excess friction due to misalignment are all sources of localised heating and can be detected with an Infra Red camera.

Electrical problems such as over loading, high resistance connections and overheating of cables, relays and contacts are also easily detectable due to increased temperatures and this is the area in which the technique is most frequently put to use.

Thermography is a non intrusive technique and can measure temperature through guards and at safe distances with high accuracy. It has a wide temperature range, typically -20 to 1500 °C.

Chromatographic Oil Analysis

A gas chromatograph is a chemical analysis instrument for separating chemicals in a complex sample. Using this method on gearbox and hydraulic oil, it is possible to identify and quantify wear metals and contaminants in oil filled compartments. Wear metals such as iron, copper and aluminium as well as contaminants such as sodium and boron can be measured in parts per million (ppm) giving an overall picture of both machine health and lubricant condition. In addition to giving you an insight into how your machinery is performing, by spotting machine wear long before it becomes a costly repair, it also enables you to extend the oil change intervals by basing them on oil condition rather than manufacturers recommendations.

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