Condition Based Monitoring Redefined

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Abstract

What do we mean by the term "condition monitoring" when applied to reciprocating machinery? Condition monitoring (CM) is used in many industrial sectors and there are many types of CM instruments commercially available.

Most maintenance engineers understand the word ‘condition’ and what that means. However, when we are trying to apply the term condition to say a reciprocating pump or compressor or engine, we could say that a perfect machine is in a good "condition" so at 100% similarly a machine that has failed is in 0% condition.

The problem is in defining any intermediate state. The result is that no CM instruments are calibrated in terms of ‘condition’. Normally they measure related characteristics of a machines operation which can be interpreted in terms of the possible implied condition.

In most cases anomalies and degradation in machine condition is related to wear/deterioration or operational processes. The occurrence of wear in a machine gives increased energy & performance loss which in most case results in noise, temperature and ultimately failure. Many of these anomalies can be detected using The various CM techniques.

When applying CM to reciprocating machinery its generally best to apply several CM techniques to enable us to provide a fuller and more complete analysis. Most CM programs typically would use only one CM technique such as vibration monitoring etc. However vibration analysis when applied to a reciprocating machine offers little information other than perhaps frame vibration. Its required to understand the "cycle" of a reciprocating machine in order to better determine any specific anomalies such as valve leakage, crank shaft problems, rod load and general performance & efficiency.

This paper will explain how Acoustic Emission (AE) together with pressure and vibration plus performance data gives a more complete diagnostic analysis that helps to more accurately determine anomalies related to reciprocating pumps, compressors and engines. This innovative patented solution allows for deeper remote analysis by providing source data to machine specialists wherever they are located. This significantly increases availability and access to information and links the experts with the knowledge needed to resolve critical machinery condition issues as quickly as possible. Machine experts no longer have to travel to remote locations to gather, analyze and diagnose issues; RecipNetwork Solutions brings the information to them on their iPhone or IPad/PC.

Benefits Include:

• Increase equipment uptime and minimize scheduled maintenance
• Real time diagnostics and notifications
• Increase revenue and reduce cost by 50%
• Scalable to enterprise level allowing machines to be added when needed