

PROActive machinery management requires a proactive condition monitoring and evaluation technology – one that recognizes when conditions are right for degradation and damage to occur before it actually starts. Alerting production, operations and maintenance management to the fact that damage has already occurred is an important but secondary goal. Unfortunately, the traditional technologies focus on the latter and not the former.

Provides:

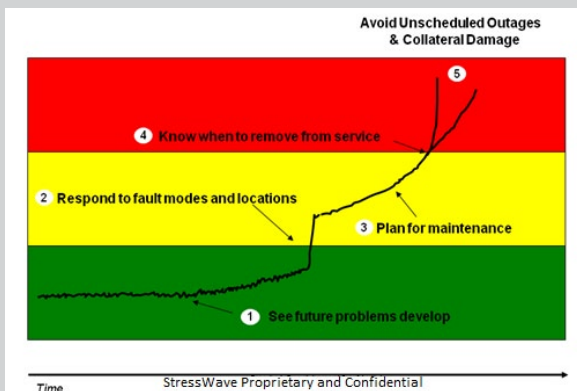
- Increased process reliability
- Increased machine longevity
- Reduced energy consumption
- Reduced maintenance cost

Results:

- Increased profits
- Enhanced quality
- Reduced risk

Traditional condition monitoring providers have focused most of their discussions towards the benefits of predictive maintenance programs using their technology with little consideration given to proactive maintenance--the only true approach to improving reliability. Why? Because it simply was not supported by the traditional technologies. Both run-to-failure and predictive approaches are reactionary in nature, requiring irreversible damage to have already occurred before there it is recognized that a problem even exists. Predictive maintenance typically enables repair or replacement planning in advance of the failure. Once traditional condition monitoring and evaluation technologies have detected the fact that damage has occurred, the failure clock is ticking faster.

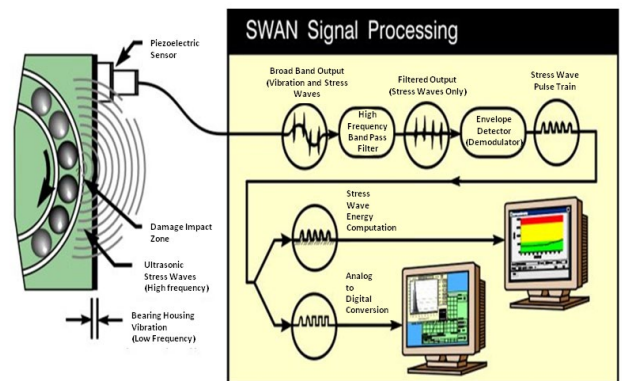
Patented, advanced signal processing and pattern recognition algorithms return information that recognizes the difference between proactive indications that conditions are right for damage to occur and the identification and localization of damage within seconds of it actually starting. StressWave energy analysis provides the maximum amount of time possible to take action to eliminate the cause of failures and manage necessary repairs.



Condition Monitoring and Evaluation Technology Finally Leaps from Predictive to PROActive!

StressWave Energy analysis provides PROActive “health” information on process equipment such that operating conditions are not allowed to progress to premature degradation, damage and failure by focusing on the ultimate root cause of all failures – friction and impacts.

StressWave energy analysis can be thought of as an advanced vibroacoustic method for monitoring very high frequency structural energy. It differs from traditional vibration based methods in that it does not require the external surfaces of the structure to be shaking for data to be acquired. Rather, it filters out and ignores the relatively low and audible frequency shaking and “listens” for the much higher frequency StressWave pulses inside the structure which are generated by friction and impact events.



- All machine vibration is filtered out.
- Only friction and shock in the Stress Wave Pulse Train.

StressWave energy levels are influenced by friction conditions that are present when conditions are right for damage to occur, such as:

- Contact surface area and smoothness/roughness
- Relative surface speeds
- Contact pressure
- Lubricant condition
- Operational load and speed

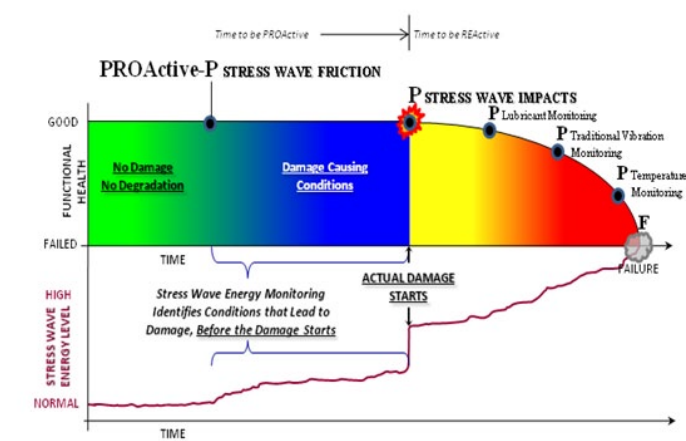
Similarly, when damage actually starts, StressWave energy levels are immediately influenced by impact events and are sensitive to characteristics such as:

- Impact velocity
- Damage depth
- Damage size and area

StressWave Analysis...goes beyond traditional condition monitoring!

Experienced reliability engineers will recognize the figure at right as a stylized, extended version of the well known P-F Curve. The curve describes both normal operations to the left of the point where physical damage occurs and degradation to failure to its right. Point P on the curve identifies where an objective observation or dedicated condition monitoring measurement would first recognize the fact that the process condition has, in fact, started to degrade. Point P represents the first time that the Potential for Failure not only exists but it can be objectively acknowledged to exist. Point F is clearly the point where the Failure occurs.

The advantage of monitoring StressWave energy over the more traditional condition monitoring technologies is that StressWave is a precursor to the damage first noted at point P. Traditional condition monitoring methods and technologies are only effective after the initial damage has occurred and progressed to the point where it can be recognized over its routine measurement background levels. Traditional methods merely identify the fact that significant damage has already occurred and progressed to their respective, Point P's, and that without proper and timely intervention, failure is inevitable.



Failure is a Process, Not an Event

The extension to the typical P-F Curve shows how the healthy machine progresses through the stage where damage inducing conditions exist, but have not yet caused the damage. The PROActive Point P for Stress-Wave friction monitoring indicates the point where Stress-Wave energy monitoring is capable of recognizing that changes in operating or lubricant condition have occurred and if left unaddressed, will likely cause damage to start. An example StressWave energy trend is shown below the extended P-F Curve to show how both damage inducing conditions and the true initiation of the damage itself can be seen. Both operational anomalies and damage initiation are recognized and reported within seconds

StressWave energy analysis based condition monitoring and evaluation provides production, operations and maintenance management with the ability to make informed, proactive decisions on all aspects of process and system management. Patented algorithms not only alert users to the fact that operational anomalies exist but also provide detailed diagnoses through a browser-based user interface, MODBUS/ TCP connection with process control and historian systems and e-mail notifications to appropriate management, operations and maintenance personnel.

Asset availability means it is ready to be used when it's needed and will last as long as expected (MTBF).

On Demand,
At Capacity, and
Within Quality Standards.

With Scientech's patented StressWave system, asset availability is a constant--never a surprise.

For additional information contact
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visit <http://scientech.cwfc.com>

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