

How repeatable are AE measurements?

We don't know who the culprits are but someone has done a good job of convincing many engineers that high frequency or AE measurements aren't repeatable. We can't speak on behalf of other vendors of AE or high frequency technology but we can categorically state that using our unique implementation it is a simple matter to get reproducibility of measurements to within 1 dB when a sensor is removed and re-applied to a machine. In fact in a lab trial we showed that a 96% confidence of the measurement being within + 0.3 dB is easily attained. We think this is superior reproducibility to that you can achieve with accelerometer based vibration measurements.

Another aspect of repeatability in a measurement relates to the repeatability of the signal within the machine being monitored. Reproducibility to within 1 dB on real machinery in the field is not uncommon but of course there could be some variation in its operational performance and this may lead to a 'month to month' variation which is typically within a 3 dB band. Of course deterioration in the machines condition will also cause an increase in the AE signal magnitude and for normal speed machinery an increase of 30 or 40 dB prior to final failure is not uncommon.

For completeness its worth mentioning that the repeatability and measurement integrity referred to above is no accident but results from our paying great attention to transducer, signal conditioning and signal processing designs in all our products.