



Refined SPM method saves money at Hallsta Paper Mill

Since April, 2009, Hallsta Paper Mill in Roslagen, Sweden has been engaged in a successful project together with SPM Instrument, where bearing condition has been measured on four twin wire presses using the SPM[®]HD measuring technique.

Hallsta Paper Mill has worked actively with condition monitoring for many years, and its maintenance staff is well acquainted with the problems concerning condition measurement at low speeds. Low speed applications produce signals with low energy content. This makes the signals difficult to measure, often yielding unsatisfactory measuring results. Strong signals caused by factors other than damage phenomena have tended to "override" the weaker signals which indicate bearing damage.

When Hallsta Paper Mill was given the chance to test run SPM[®]HD, it was seen as an interesting opportunity to further optimize operations. Since SPM[®]HD is particularly well suited for measurement on low speed applications, four twin wire presses were selected as suitable objects for test measurements. The twin wire presses run at 10 to 15 rpm in a harsh environment, where bearings and other machine parts are exposed to high degrees of moisture and running water.

Per Ljungström, responsible for preventive maintenance at Hallsta: "When the twin wire presses do not work properly, the negative impact on the process is significant. Over the years, we have tried a number of different measuring techniques to keep the presses running in an optimal way, but before SPM[®]HD, no method has given satisfactory results."

SPM[®]HD is a development of the original True SPM[®] method for shock pulse measurement on rotating machinery. Advanced digital technology makes SPM[®]HD extremely sensitive. Hence, the method can capture and enhance the weak signals and provide very high signal quality. For a full picture of bearing condition, the measuring cycle is based on number of revolutions rather than time. This maximizes the chances of capturing

relevant signals during the course of one measuring cycle. By adjusting the sampling frequency to rpm, spectrums are clear and concise also when measuring cycles are long.

Highly detailed results in spectrums and time signals make them excellent tools for analysis, where the source of the signal is simple to identify because every component has its own, distinct damage signature. The time signals are easily interpreted, making it easy to determine the type and extent of the damage.

SPM[®]HD also generates two scalar values, HDm and HDc. HDm represents the highest value measured during the measuring cycle, while HDc is a measure of bearing lubrication condition. Both values are suitable as the basis for setting alarm limits, regardless of machine type. Automatic evaluation of measuring results, presented on a green - yellow - red scale, provides a quick overview of machine condition.

"Among all the measuring techniques we have tested, SPM[®]HD is the first one able to indicate developing bearing damage. Thanks to the SPM[®]HD readings, we have been able to see months ahead that the lifetime of a particular bearing is nearing its end. A forewarning time of up to six months has given us plenty of time to plan our bearing replacements. It has saved us hundreds of man hours", says Per Ljungström. "To date, we have detected six bearing damages. In rough numbers, we have saved about 7,000 EUR per bearing replacement on working hours alone because we have been able to do the necessary replacements during planned stops, rather than running the machine till breakdown. On top of that, there are costs for extra material and quality losses incurred by deteriorating running condition and breakdowns."