HD TECHNOLOGIES

SPM

next generation condition monitoring

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Changing the Reliability Game

A transition in condition monitoring technology, the unique and patented High Definition technologies provide extraordinary opportunities to plan maintenance and minimize downtime. The detection of very early stage gear and bearing faults has never been easier – or more efficient.

World-class condition monitoring

With HD technologies from SPM Instrument, condition-based maintenance enters a new age of possibilities. Condition monitoring with HD technologies provides incomparable forewarning times, thus maximizing the planning horizon for maintenance and repairs. The benefits are clear and measurable:

- Minimized production downtime
- Maximized productivity
- Extended component lifetime
- Reduced repair costs
- Less secondary damage
- Reduced stock of spare parts

Our HD technologies take condition monitoring and analysis into the age of highly defined resolution. Whether complex or straightforward, HD technologies have the power to address and resolve your reliability issues.

Profitable maintenance – it's about time

Early warning is a key element of a successful condition-based maintenance strategy and crucial to reducing the risks for breakdowns. Choosing the right monitoring technology can be the difference between getting several months or just a couple of weeks to plan replacements or overhauls.

The power of prediction

The power of early warning to impact profitability is indisputable. Having sufficient time to plan replacements or repairs can make or break maintenance budgets. HD technologies bring predictive maintenance and root cause analysis to a new level of precision and accuracy – and a new level of confidence to maintenance engineers. Armed with accurate, timely and detailed condition data, the maintenance department has the power to significantly reduce the amount of dollars spent on maintenance, and the potential to achieve World Class Reliability.

Superior gear and bearing monitoring

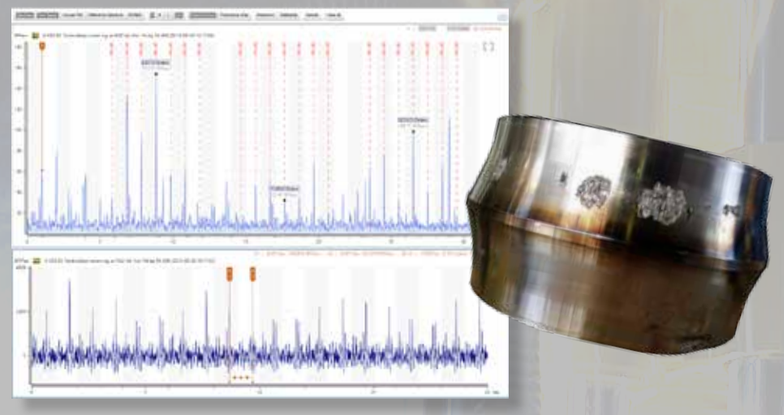
HD technology overcomes the limitations of conventional monitoring methods when it comes to detecting the earliest signs of gear and bearing damage and pinpointing the source with one-of-a-kind accuracy.

Condition monitoring as it should be

With HD technology, distorted measurement data, blurry spectrums and uncertain conclusions on mechanical condition are a thing of the past. The stages commonly seen in the failure process of rolling element bearings can be clearly observed and closely monitored throughout each stage of development. In spectrums and time signals with an outstanding level of detail, gear and bearing damages are easily identified.

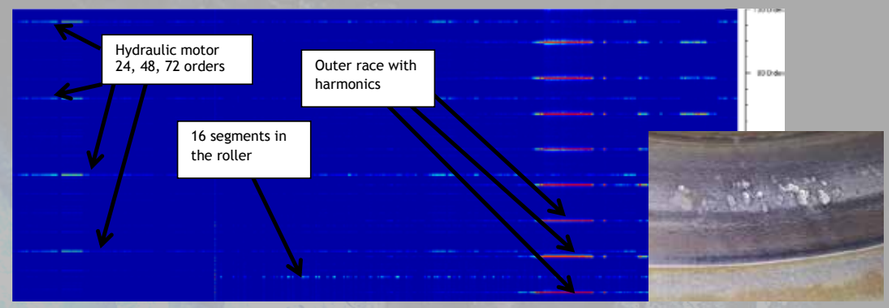
A set of predefined filters are available for easy selection; each designed to detect damages or anomalies in the different failure stages. After a completed measurement, machine condition is evaluated against set alarm limits and presented in an intuitive green – yellow – red color scheme.

CEMENT INDUSTRY



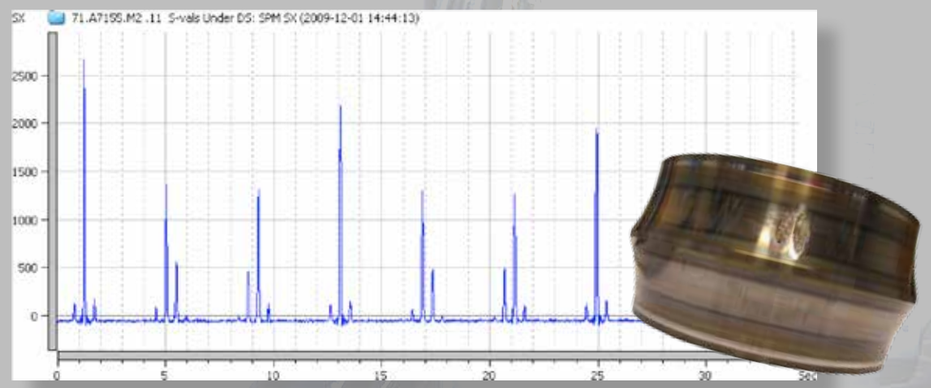
A clear spall on an inner race detected by HD technology in a ball mill application.

PULP AND PAPER INDUSTRY



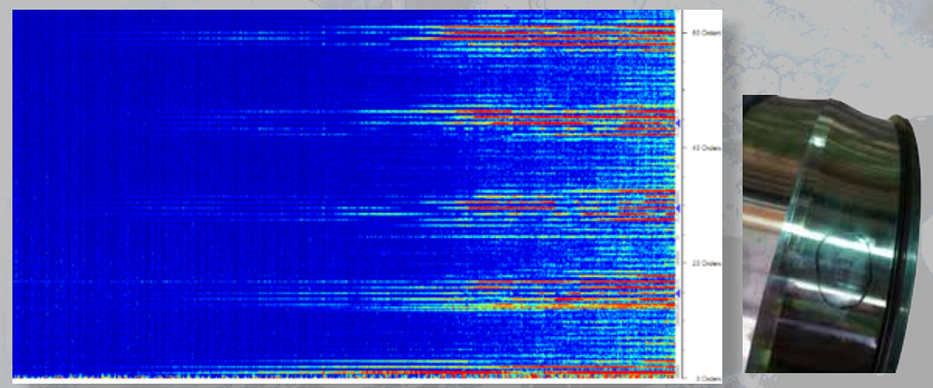
In the above **Color Spectrum Overview**, there are a number of distinct horizontal lines related to what is know as the commutation frequency from the hydraulic motor at 24, 48, 72, 96 orders. The outer race bearing signals are also clearly identified in the above plot.

PULP AND PAPER INDUSTRY

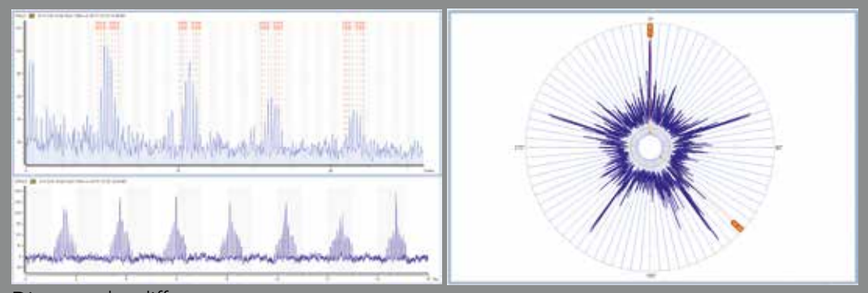


An HD technology time signal showing an inner race damage from a twin wire press (15 RPM).

MINING INDUSTRY



A **Color Spectrum Overview** from a gearbox driving a mine cage. The development of this clear inner race spall was monitored for six months prior to replacement.



Discover the difference

The difference is in the data

HD is the future of digital condition monitoring technologies. The ability to present disturbance-free condition data in high definition quality sets HD technologies apart from others.

Extreme sensitivity and unrivaled clarity

Our HD technologies offer the most advanced visualization technology available in condition monitoring. Cleverly engineered and patented digital signal processing algorithms extract and enhance the signals of interest from dominant, overall machinery signals. Spectrums and time signals are marvels of clarity, providing a snapshot of machine condition to give the maintenance department a heads-up on potential problems.

The HD methods deliver a scalar value which represents the signal's true peak value. This value is used to determine the severity of a given damage and to trigger alarms. With HD Order Tracking, the number of samples per revolution remains constant regardless of RPM variations, thus ensuring crystal clear spectrums with no smearing issues, where the source of the signal is easily identified.

Supreme performance at all RPMs

HD technology is the ultimate condition monitoring solution for complex machinery - such as multistage gearboxes - or machines with extremely low or variable speeds.

Complex machinery diagnostics

The early fault detection capability of the HD technologies is attributed to digital signal processing algorithms which extract and enhance relevant gear and bearing information with exceptional clarity from noisy industrial environments. The result is very clear and precise time signals and spectrums which can be used to identify faults even in complex machines.

Our HD technologies deliver reliable condition measurement from below 1 RPM and upwards. The results from ultra-low RPM applications - such as wash presses, agitators or disc filters - are unmatched. Variable RPM equipment is handled with HD Order Tracking, which maintains a constant number of samples per revolution regardless of the actual RPM. The order tracking algorithms very accurately measure RPM parallel to the condition measurement, providing distinct results despite RPM variations up to +/- 50%.

Technology and expertise you can trust

We are the champions of condition monitoring. It is our only business, and we are passionate about what we do. We live and breathe condition monitoring and have done so for nearly fifty years. The power of our innovations enable our customers to tap into the potential of the world's most efficient condition monitoring technologies.

Total solutions provider

SPM Instrument exclusively develops and markets all the technology to measure, analyze and present condition data from complex machinery. We are a total solutions provider, offering a complete line of measuring techniques and high performance products for condition monitoring of industrial machinery.

In addition to advanced measuring technologies, the extensive SPM product line covers everything from transducers, transmitters and cabling to power-packed instrumentation and software. Our training facility SPM Academy offers standardized courses and customized training for all levels of staff involved in condition monitoring, enabling them to be fully proficient and continuously update their knowledge of our products and technologies. Through our partnership with Mobius Institute, SPM Academy provides accredited Vibration Analyst CAT I, II, III courses according to ISO (18436-2/3).