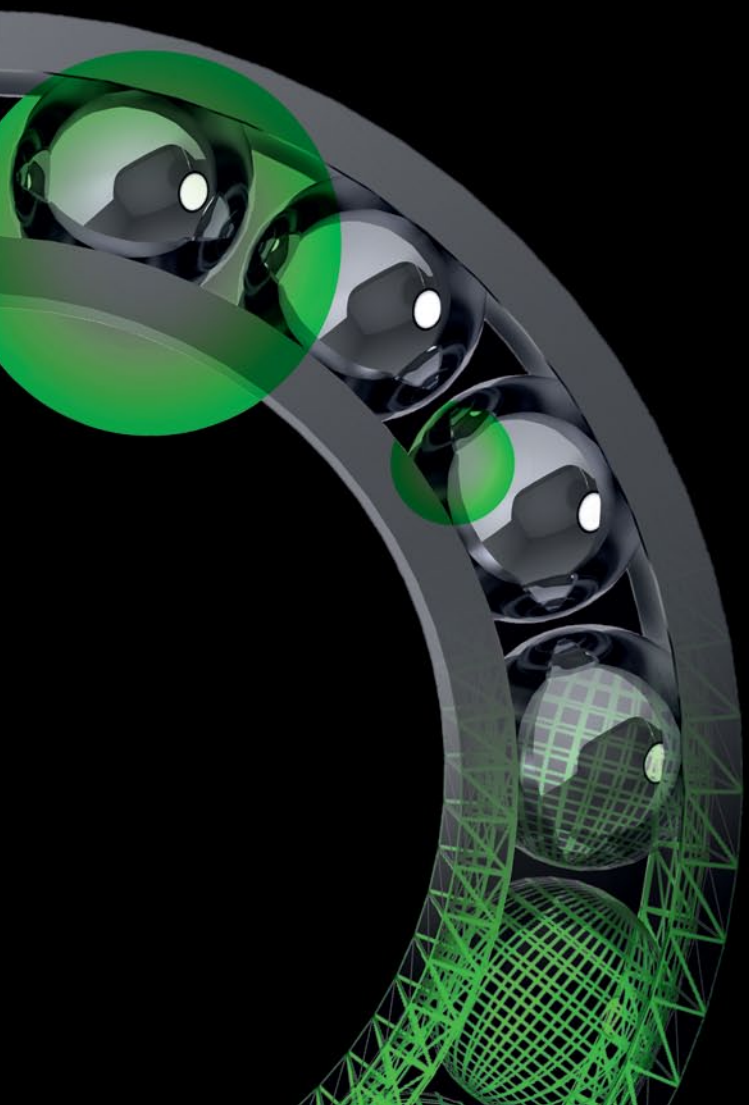
SPM HD

BEARING MONITORING AS YOU HAVE NEVER SEEN IT



SPM

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Meet the new generation in bearing monitoring technology

Forty years ago, SPM Instrument were pioneers in shock pulse measurement. Since then, the True SPM® method has found users in industries throughout the world, being commonly recognized as the best method for measuring bearing condition.

Monitoring rolling element bearings

The original Shock Pulse Method was developed specifically for condition monitoring of rolling element bearings. The method is characterized by its ease of use, presenting easily understood and reliable information on the mechanical state of the bearing and its lubrication condition. Requiring few input data, the method measures signals from rolling element bearings and instantly evaluates the condition in intuitive green - yellow - red condition codes. Without the need for expert skills, trouble spots are quickly and easily identified.

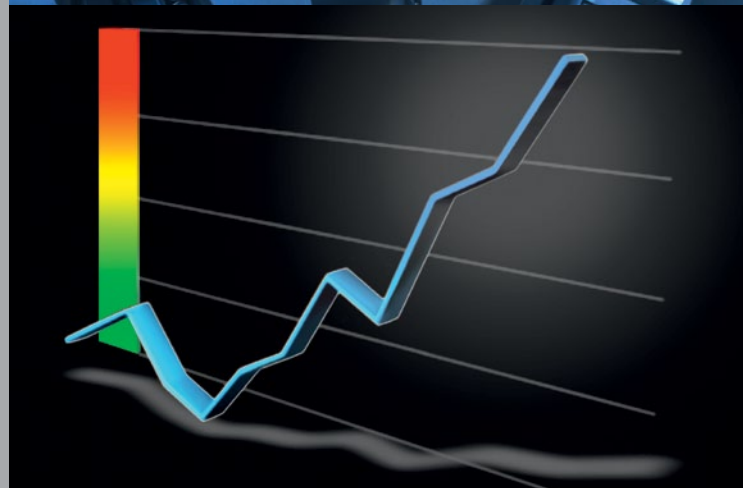
The SPM®HD measuring technique is a patent pending evolvement of the SPM method and represents a breakthrough in condition monitoring of low rpm machinery. SPM HD is unique in its unprecedented ability to measure in the 1 - 20.000 RPM range.

Condition monitoring redefined

Measuring results are presented in never before seen detail, giving a crystal clear picture of bearing condition. Razor sharp spectrums and time signals bring root cause analysis to a new level of understanding. Based on readings and expanded knowledge, bearing lubrication is readily optimized and bearing life can be significantly prolonged.

Where established methods fail, SPM HD detects deteriorating bearing condition and incipient failures with impressive accuracy and long prewarning times. The SPM HD method is also very effective for detecting gear mesh signals, caused for example by damaged teeth.

SPM HD paves the way for improved reliability in mechanical equipment and is the perfect companion to vibration analysis.



SPM HD

Extraordinary prewarning times

Early failure detection is vital to maximizing equipment life and effectiveness. Estimating the remaining lifetime of a component and knowing when is the right time for repair is difficult at best.

The power of prediction

Accurate condition information is a prerequisite for making informed decisions on planned maintenance. With outstanding prewarning times, SPM HD gives you the power to identify potential equipment trouble at the earliest possible stage.

The wear and tear of equipment and components over their lifespan is easily monitored. SPM HD efficiently detects machine parts showing early warning signs and automatically evaluates their current condition.

During the extensive SPM HD field testing, failure prewarning times have ranged from three to fourteen months.

SPM HD puts you in full control of your preventive maintenance program. No surprises, no finding out the hard way.

Tangible benefits

SPM HD makes it possible to incorporate the majority of plant machinery in your predictive maintenance program. When more machines can be monitored with longer failure prewarning times, the number of breakdowns and plant stops can be reduced.

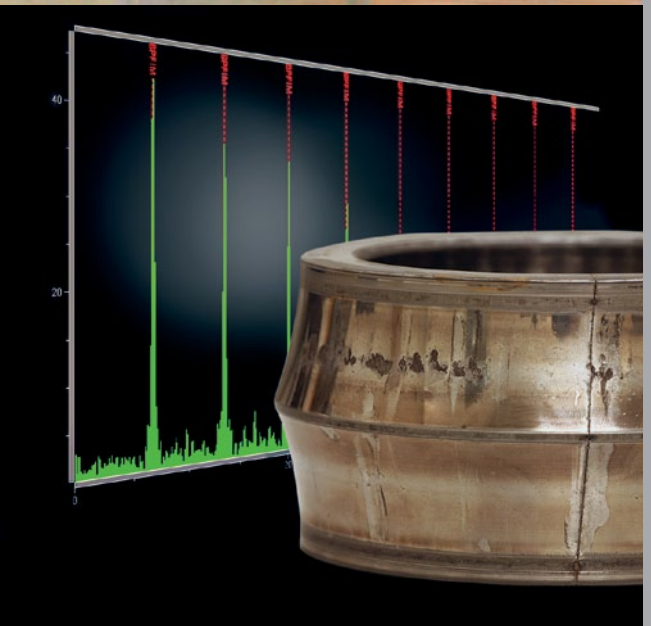
The benefits of early warnings of developing machine problems are obvious:

- Minimized production downtime
- Maximized productivity
- Less secondary damages
- Reduced stock of spare parts
- Higher-quality repairs and shorter repair times
- Retained asset value


The advanced SPM®HD
algorithms filter out
irrelevant signals.
Wire presses • Yankee cylinders • Gearboxes • Roller presses
Crushers • Conveyors • Cranes • Reclaimers • Rotary kilns • Ball mills
Agitators • Mixers • Digesters • Continuous casters • Planetary gears and more.

"The measuring technique is very reliable and has not generated any false alarms; every time the system has indicated damage, it has proven correct when we dismounted the bearing. The prewarning time has been as long as up to fourteen months."

Per Ljungström, Preventive Maintenance Engineer, Holmen Paper Hallsta, Sweden.



Ultra low speed bearing monitoring

The premature failure of bearings in low speed machinery is a notorious problem. The special requirements associated with measurement on low rpm applications have been beyond the limits of established monitoring techniques – until now.

The low-speed challenge

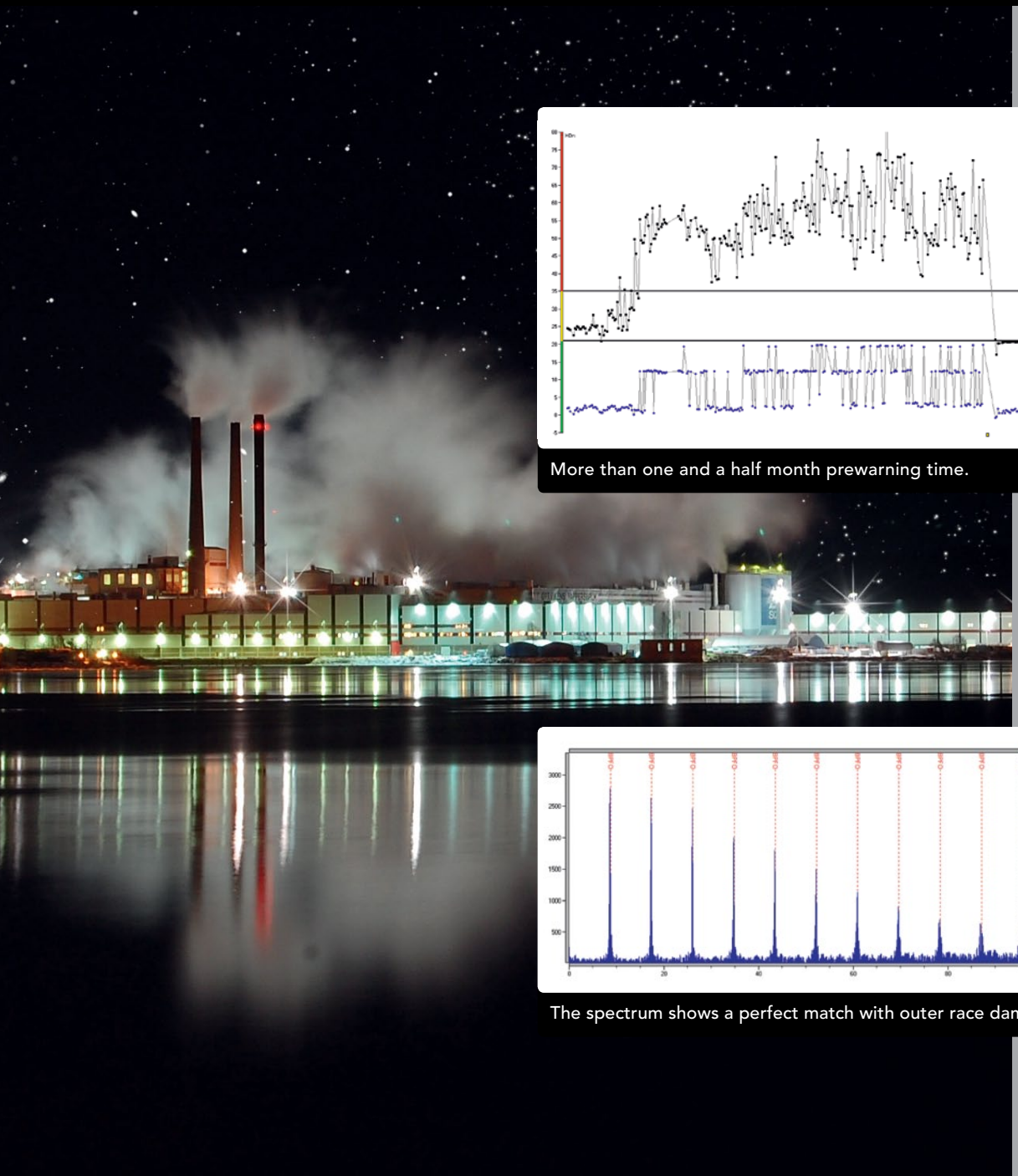
Condition monitoring on machinery operating at low speed is more complicated than on industrial machinery in general. Signals originating from bearing and gear problems are typically low in energy content, jumbled up and practically unanalyzable. Distinguishing these signals from background noise in order to extract meaningful bearing information can be a very difficult task. Measurement data collected at low speeds are often mistakenly dismissed as being "just noise". Hence, bearing wear and damage often goes undetected until it is too late.

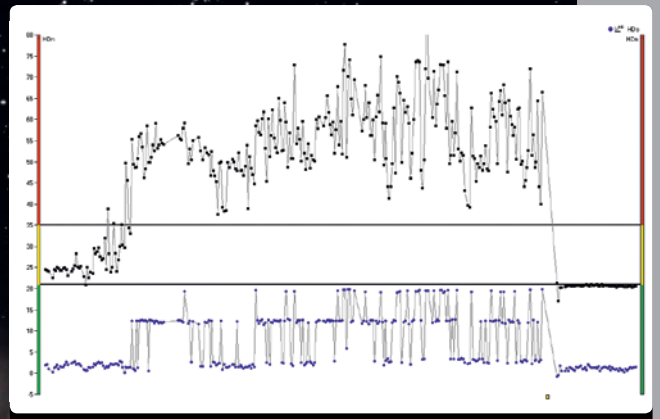
Extending the scope of predictive maintenance to include condition monitoring at low speeds, SPM®HD is all the bearing monitoring technology you need.

The SPM®HD solution

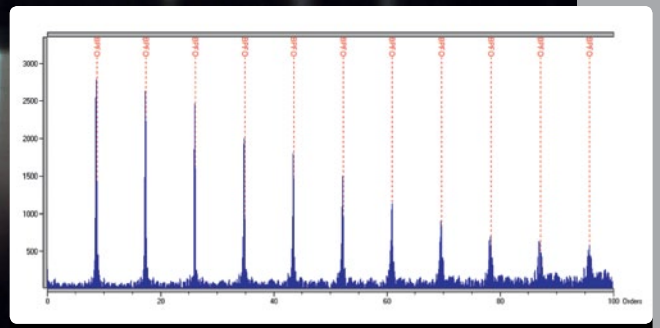
SPM HD makes optimal use of hardware and software capacity for maximized performance. Advanced digital algorithms provide very high dynamics, enabling the method to distinguish the desired signal from background noise. The signal is picked up and enhanced, resulting in a clear and unobstructed view of machine condition.

SPM HD is the result of an intense development effort by SPM Instrument in close cooperation with customers in industry. The method has been field tested successfully on low speed applications such as twin wire presses, screw presses, drying cylinders and wind turbines, some running at only a few revolutions per minute.





More than one and a half month prewarning time.



The spectrum shows a perfect match with outer race damage.

Ortviken Paper Mill

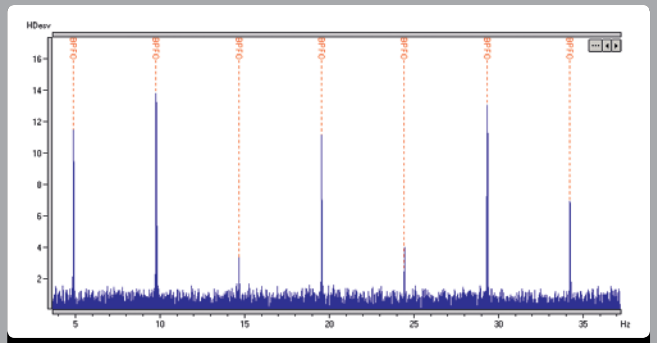
Ortviken Paper Mill in Sweden is owned by SCA and produces coated publication papers, LWC and news-print on four paper machines with an annual production capacity of 850.000 tons. They monitor their twin wire presses used for pulp dewatering, normally running at 6 to 15 rpm, with SPM online system Intellinova.

Following the installation of the system with SPM HD in June, 2010, six bearing damages have been success-fully identified. Examination of the replaced bearings have verified that SPM HD does indicate the correct type of bearing damage and bearing replacement costs are now significantly reduced.

Urban Lander, maintenance manager at SCA Ortviken, comments: *"After a few months of bearing condition measurement with SPM HD, we conclude that it works completely and to our full satisfaction.*

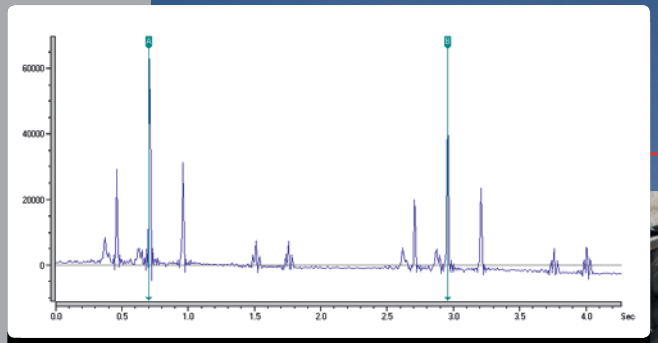
We are now planning for the application of SPM HD on more low RPM machinery and we can recommend SPM HD to other users with similar bearing problems."

WIND POWER



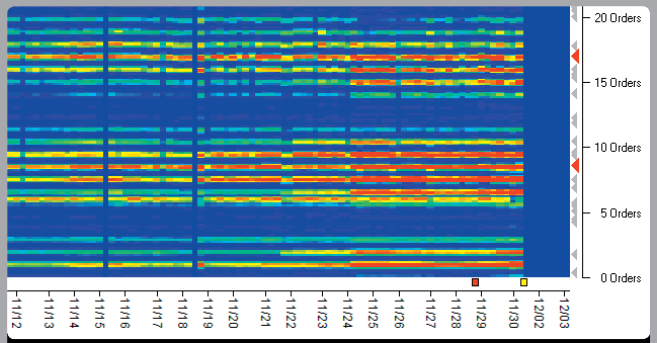
The **Spectrum** from a main shaft bearing on a wind turbine, NM52 900 kW, shows a damage on the outer ring. The shock pulse level is still very low but the spectrum is showing a developing damage. The shaft is rotating at 22 rpm. The wind turbine generated 752 kW, which is 84% of full effect.

STEEL



The **Time Signal** from a steel bar mill gearbox shows a broken roller. The bearing is running at 64 rpm. The time between the markers corresponds to the rpm of the rollers. The time domain is a very powerful tool when doing in depth analysis of the running condition of a machine.

PULP AND PAPER



The **Colored Spectrum Overview** from a twin wire press verifies that the signal origins from the inner race. The twin wire press runs at 10 to 15 rpm. The patterns consist of the center frequency with sidebands. After the replacement, marked with a yellow square, the bearing signals completely disappear.

AUTOMOTIVE

The **Shock Pulse Trend** for the slow running overhead conveyor gearbox shows a steady rise since the first readings taken. Initially the gearbox was in the green and in good condition, over the past few months the readings have risen into the red and there are signs of minor damage.

SPM HD

Technical solutions for every situation

The sophisticated SPM®HD measuring technique is integrated in the Intellinova family of high-end online systems. Online measurement ensures the earliest possible detection of developing machine damage.

Condition monitoring expertise

SPM Instrument is a total solutions provider, offering a complete line of measuring techniques and high performance products for condition monitoring of industrial machinery. Bearing measurement and lubrication analysis or advanced vibration analysis - we got it all covered.

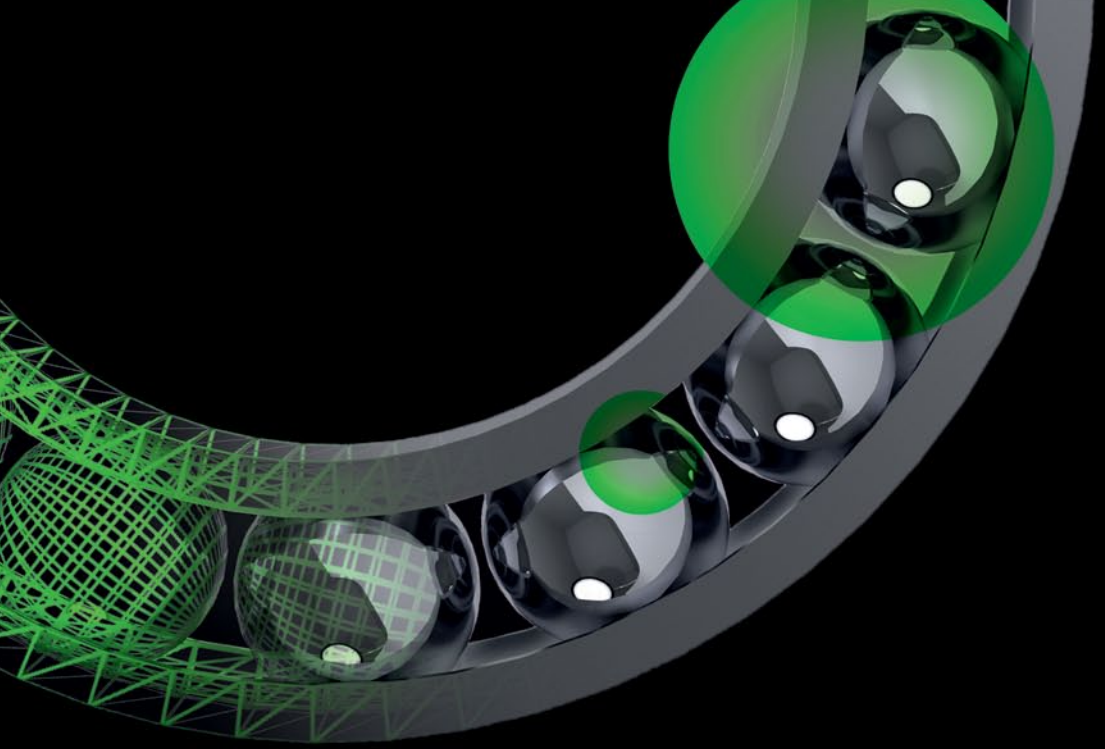
In addition to advanced measuring techniques, the extensive SPM product line covers everything from transducers, transmitters and cabling to portable instruments and online monitoring systems controlled by our own power-packed software platform, Condmaster®Nova. The SPM Academy provides standardized courses and customized training for all levels of staff involved in condition monitoring.

Operational excellence is at hand

SPM HD is the unique solution to the problems involving condition measurement on machinery running at low speeds. It sets a new standard for modern condition monitoring and can be used successfully on all types of machinery.

Almost every industry has low speed bearing applications which, until now, have been impossible to monitor – from wind turbines to conveyors in manufacturing and mining. Applicable to a wider range of machinery, SPM HD is an opportunity to truly maximize the promise of condition monitoring in all fields of industry.

SPM HD takes condition monitoring one step further. The ultimate reliability tool has now arrived.



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