SPM

Leonova® EMERALD

PORTABLE EFFICIENCY

CONDITION MONITORING IN A LEAGUE OF ITS OWN

Leonova® EMERALD

em·er·ald **\'em(ə)rəld**

Member of the beryll family of minerals and the most famous and valuable green gemstone. The name Leonova Emerald is inspired by the gem's reputation as the stone of foresight and prediction.

UNIQUE CONDITION MONITORING EFFICIENCY

TECHNOLOGY MEETING SIMPLICITY

No matter what industry you are in or what equipment you run, and whether straightforward or complex, your production environments and processes require knowledge and understanding in order to optimize maintenance practices.

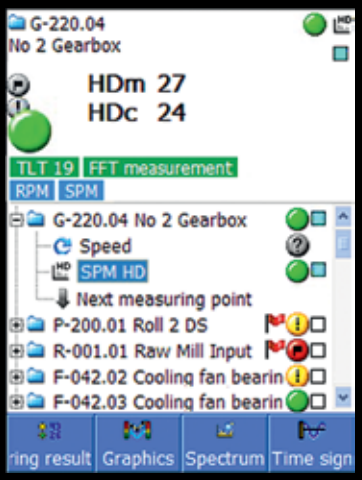
Condition monitoring the SPM way is uniquely easy to learn and practice. Our highly advanced measuring techniques, optimized for a minimal and smooth learning curve, quickly bring your maintenance department up to speed and enables rational management of large numbers of routine measurements. Immediate, on the spot condition evaluation is also a trademark of all SPM measuring devices.

The patented and award-winning SPM HD® measuring technique broadens the potential scope of condition monitoring to include more machinery than ever before. A maintenance productivity boost, it brings to light machine problems which are impossible to monitor with traditional vibration measurement techniques.

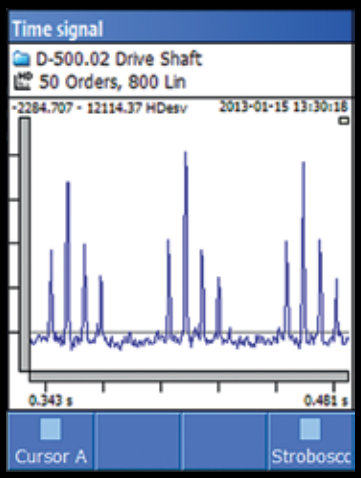
PORTABLE PRODUCTIVITY AND EFFICIENCY

Leonova Emerald® is a portable instrument for industrial maintenance. Ideal for daily use in rough environments, it is the ultimate frontline tool for maintenance engineers and technicians. Leonova Emerald takes the hassle out of managing large measuring routes and recording vast amounts of measurement data. A rugged workhorse for routine measurements and troubleshooting tasks, this versatile, high-performance data collector has the capacity to optimize the efficiency of your condition monitoring program.

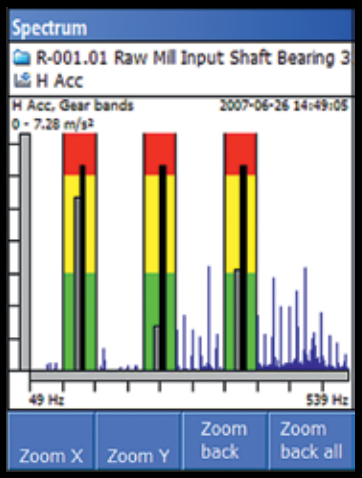
Providing reliable and actionable information on the condition of critical machinery, Leonova Emerald enables optimal coordination of maintenance and repairs. Packed with cutting-edge technology and a rugged design, Leonova Emerald will provide many years of reliable service under the toughest, most demanding circumstances. Designed for use in hazardous areas and hostile environments, Leonova Emerald is also available in an intrinsically safe version.



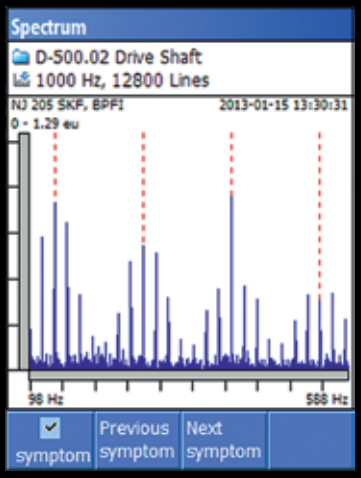
Fast and efficient execution of large measuring routes



Time signal from an SPM HD measurement



SPM HD spectrum with bands for trending



Vibration spectrum from an EVAM measurement

CONDITION MONITORING TECHNIQUES FOR EVERY NEED

BEARING MONITORING WITH SPM HD®

SPM HD is a new achievement in condition monitoring technology and a groundbreaking solution to problems involving condition measurement on low speed machinery.

The method is a patented evolvement of the well-known and reliable True SPM® method, commonly recognized as the best method for measuring bearing condition on rotating machinery. 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 little input data, the method measures signals from rolling element bearings and instantly evaluates the condition in intuitive green - yellow - red condition codes. The SPM HD method is also very effective for detecting gear mesh signals, caused for example by damaged teeth.

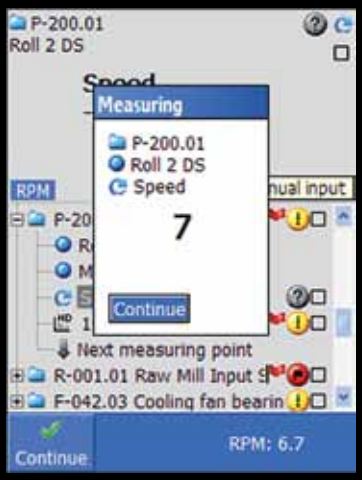
Where established methods fail, SPM HD detects deteriorating bearing condition and incipient failures with impressive accuracy and exceptional prewarning times. The perfect companion to vibration analysis, SPM HD can be used successfully on all types of machinery with rolling element bearings.

ULTRA LOW SPEED BEARING MONITORING

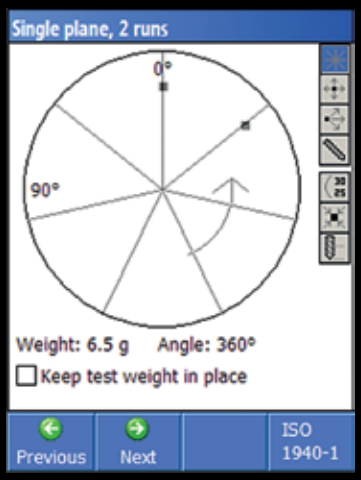
SPM HD is unrivalled in its ability to measure across the entire 1-20.000 rpm range. Advanced digital algorithms provide very high dynamics, enabling the method to distinguish the desired signal from background noise. The signal is picked up and enhanced, resulting in a clear and unobstructed view of machine condition.

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 helping to significantly prolong bearing life.

Leonova Emerald offers advanced and innovative order tracking functionality. For shock pulse and vibration analysis on variable speed machinery, the sophisticated HD Order Tracking algorithms very carefully trace RPM variations occurring during data acquisition. Measurements are more precise and spectrums more detailed than ever before, making in-depth bearing and vibration analysis possible even on the most complex industrial applications.



Speed measurement and High Definition Order Tracking



Dynamic balancing in single plane according to ISO 1940-1

HIGH-PERFORMANCE VIBRATION ANALYSIS

Leonova Emerald offers highly sophisticated vibration measurement, providing razor-sharp spectrums even where signals are weak and low in energy content. The instrument's excellent signal-to-noise ratio gives a decisive advantage where weak signals are present among stronger signals, such as in gearboxes.

Vibration severity is used to diagnose general machine condition. In the 0-20 kHz range, Leonova Emerald measures vibration velocity, acceleration and displacement according to the latest ISO 10816 standards. In addition to the RMS vibration readings, FFT spectrums are produced, where symptoms of imbalance, misalignment and structural weakness are easily identified. Enveloping with band and high pass filters can be selected.

The EVAM measuring technique supplies preprogrammed evaluation models for time and frequency domain parameters. FFT analysis produces an up to 12800 line spectrum with true zoom. Measurement data processing, machine fault symptom computation and trending is all done in the instrument.

Field rotor balancing according to ISO 1940-1 is fast and reliable. Step by step, the user is guided through the procedure, and alternatives for correcting the imbalance are automatically suggested.

MADE TO MEASURE

CONDITION MONITORING AT ITS BEST

Loaded with practical functions and useful features, Leonova Emerald gives maintenance technicians and engineers the flexibility to configure the instrument to meet a wide range of personal and field requirements. Multiple options are available to speed up the measurement process and render instrument operation more effective.

The possibility to combine multiple measuring techniques in a single measuring assignment is a strong cost and time efficient feature. Measuring routes are easily organized and the very large memory stores thousands of readings for evaluation, trending and analysis.

Inside and out, Leonova Emerald is designed to last. Its durability and sturdiness are attributed to an uncompromising choice of premium quality components. Thanks to the heavy-duty, rubberized enclosure where connectors are well protected and electronic components reliably and securely attached, Leonova Emerald will endure shocks and impacts, extremes of vibration or temperature, electromagnetic fields and 1 meter drops onto concrete. The wear-and-tear resistence of Leonova Emerald makes it perfect for demanding industrial settings.

3.5" TFT-LCD colour display with back light

Programmable function keys

One hand operation, right or left

Accepts IEPE standard vibration transducers

Carbon-fiber-reinforced enclosure, IP65

Exchangeable Li-Ion battery pack for min. 18 hours normal use

RF transponder for contact free measuring point identification, read and write functions in connection with CondID® memory tags

Drop test 1 meter according to IEC 60079-0

Weight 860 g

Ex version available

RFID measuring point identification

Powerful battery pack - exchangeable

Interfaces for industrial environments

Frequency range DC to 20 kHz

Dynamic range up to 120 dB, 24 bit AD

Up to 12800 line FFT spectrum

Pre-fault symptoms for spectrum analysis

Waterfall, phase and real time spectrum

Simultaneous recording for up to 50 hours

Enveloping, true zoom, time synchronous measurement

Stroboscope input/output for rpm measurement

Motor current analysis

Speed measurements 1 – 120 000 rpm

Download thousands of measuring points

Stethoscope function, earphones

Automatic transducer line test

Voice recording of comments

Language selection

BUILT TO LAST, MADE TO PERFORM

ENGINEERED FOR PERFORMANCE

Leonova Emerald is a dependable and highly potent analysis tool, addressing all of your condition monitoring needs. It offers a wide range of sophisticated measuring techniques as well as all the supporting diagnostic and troubleshooting capabilities.

Leonova Emerald efficiently and reliably handles different machine characteristics and variable running conditions. State-of-the-art digital technique and careful software design enables superior data aquisition and processing.

Start-up is rapid; the instrument is ready for measurement when you are. Features such as conditional measurement, continuous order tracking and dynamic alarm limits provide sharp, reliable readings and relevant alarms. General and user defined fault symptoms are automatically computed, evaluated and trended over time. All data processing and condition evaluation is carried out in real time. Multiple measuring assignments can be carried out with the push of a single button. Immediate condition evaluation in green-yellow-red, alarm generation, historical data and trends – all delivered right in the instrument, at the point of measurement.

DESIGNED FOR EASE OF USE

A tool is more than its functions. Leonova Emerald is design and functionality working together to combine handiness with excellent performance. Designed for heavy industry, the look and feel of the instrument reflects its intended use.

Simplicity and ease of use characterize the instrument. Leonova Emerald has a light and compact design, enabling an ergonomic one-hand grip. The keypad layout is optimized to allow users to operate the instrument with gloves on.

The intuitive user interface largely corresponds to that of the Condmaster® Ruby software. Programmable software function keys make it possible to customize navigation to user preference.

The high-resolution TFT-LCD color screen provides excellent visibility in darkness as well as daylight and outdoor conditions.

All input and output connectors are placed away from the display and keyboard for easy access and maximized freedom to operate the instrument.

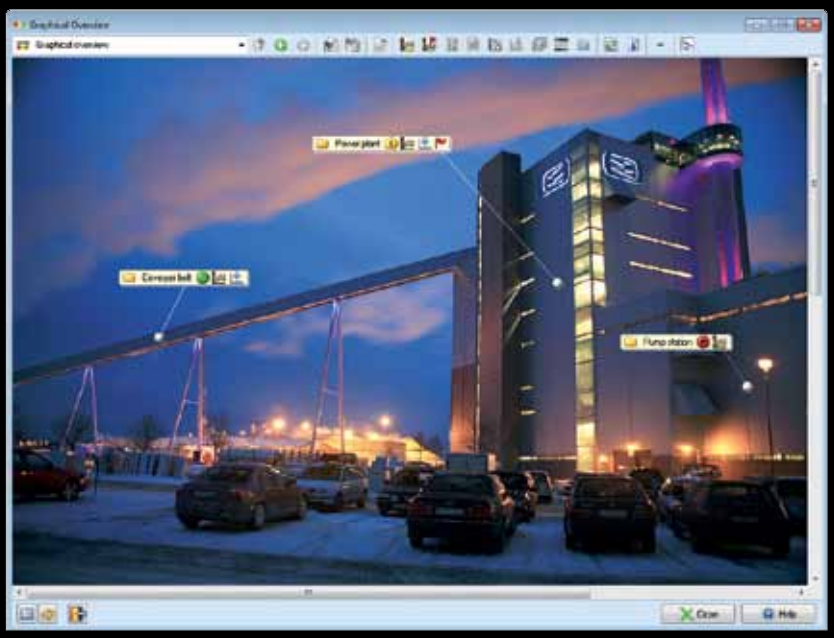
ACCESSORIES AND AUXILIARY EQUIPMENT

In every sense of the word, Leonova Emerald is a multipurpose instrument. To unlock its full productivity potential, a complete range of optional accessories is available.

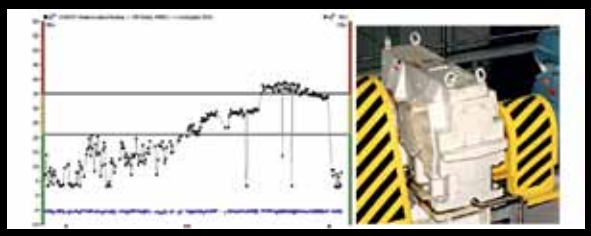
For safe transportation and storage, a durable carrying case with foam insert is provided. Extra rechargeable battery packs, power adapter and battery charger (100-240V or 12V) offers maximum power and flexibility.

The range of instrument accessories also includes a laser-based tachometer with IR temperature sensor. A headset with microphone is available for convenient voice recording of measuring route comments.

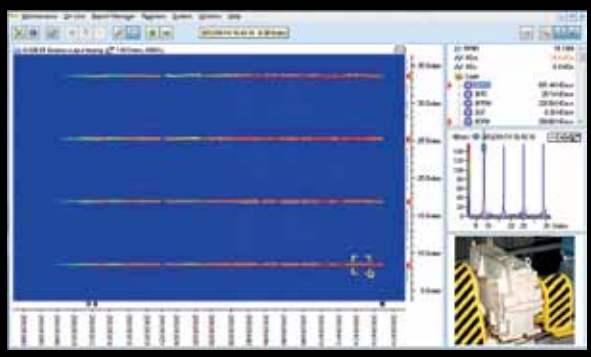
The extensive range of transducers, transmitters and installation accessories meet the requirements for a wide range of applications, including tough and potentially explosive environments, or narrow spaces. Available in a variety of options, there is a shock pulse or vibration transducer for every need. The intelligent CondID® memory tags for contact-free measuring point identification are useful complements.



Graphical overview



Trend graph



Coloured Spectrum Overview

POWERPACKED SOFTWARE FOR IN-DEPTH ANALYSIS

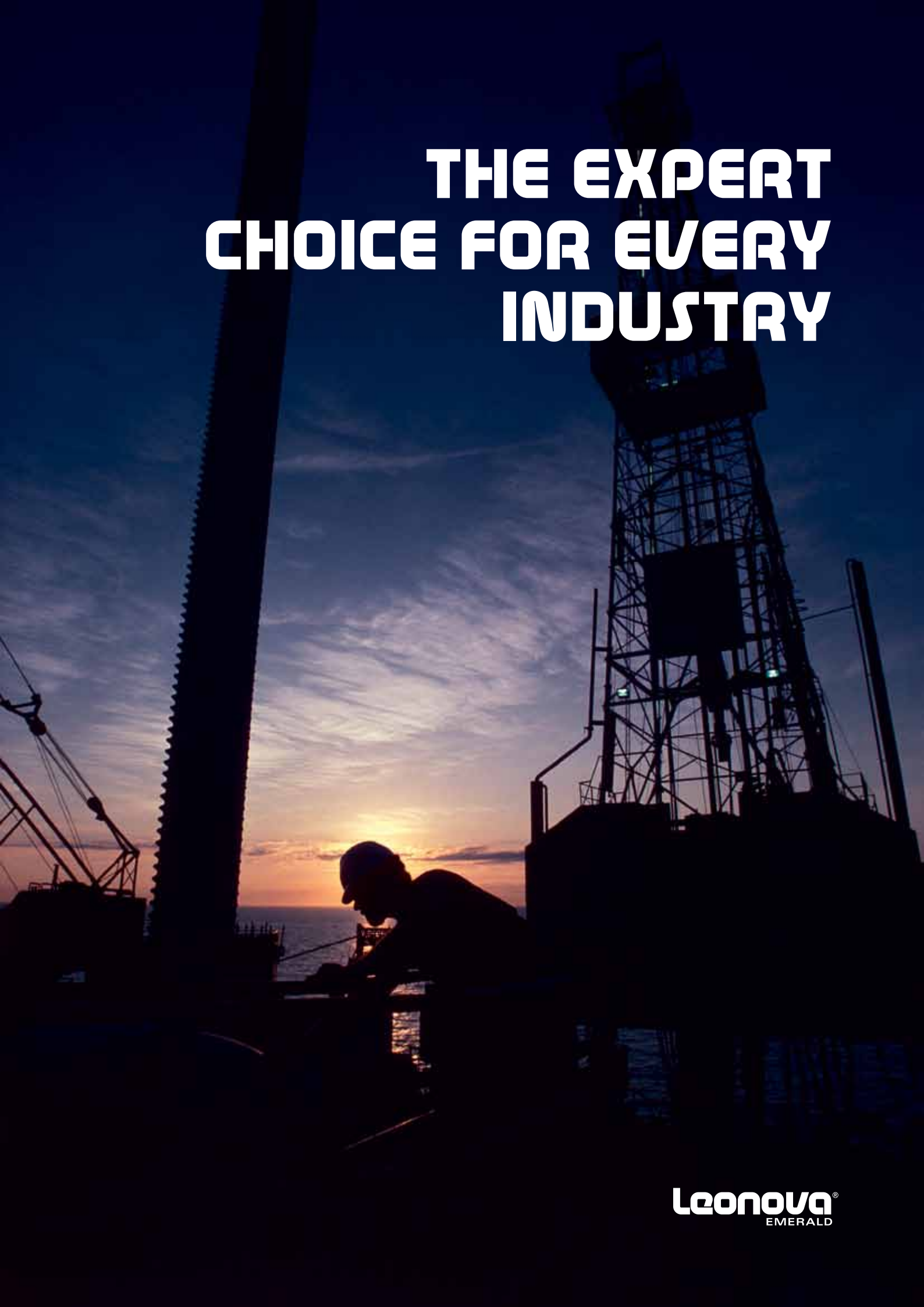
CONDMASTER® RUBY

At the heart of an SPM condition monitoring solution is the powerful Condmaster® Ruby software, containing the expert knowledge needed to evaluate machine condition. Condmaster Ruby collects and stores measuring results delivered from all SPM handheld and online measuring devices, for evaluation and presentation. The software is modular and system functionality can be tailored to specific customer needs.

Integral parts of the software are a complete bearing catalogue, lubricant data, bearing life calculation, SPM condition evaluation rules, ISO limit values, mathematical models for spectrum analysis and fault symptom detection, and much more. Condmaster Ruby accomodates administration of all maintenance activities, such as time schedules, measuring routes and work orders. Remote monitoring is enabled via CondmasterWEB.

Optional modules provide support for all measuring techniques as well as additional functionality, such as:

- *Coloured Spectrum Overview* for a historical overview of thousands of spectrums over a longer period of time.
- *Condition Manager* for flexible alarm configuration, where alarm limits automatically adapt to the conditions under which the machine is run at any given time.
- Alarms on component or measuring point level sent to users via e-mail or text messages.
- *Graphical Overview*, where machine and measuring point folders are arranged to preference. Photographs of the plant or individual machine components can be attached and downloaded to Leonova Emerald for instant recognition of monitored equipment.
- *Trending options* make it easy to observe changing operating condition. Readings may be averaged to further simplify analysis and spectrums from individual measuring points can be compared in various ways, e.g. in bands. Trending of symptom values presents graphs of evaluated condition and reduces the need to study spectrums and time signals.
- *Publishing measurement data* via Internet file storage.
- *Setup of personalized default settings* for Leonova Emerald.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CHOICE FOR EVERY
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