Machine Defender

APP-BASED INSTANT MACHINERY DIAGNOSTICS

Revolutionising asset maintenance through machine diagnostics

Machine diagnostics is the key to predictive maintenance. This technology involves the collection of data from machinery sensors and the analysis of that data to identify patterns and anomalies. By analysing data from machines, predictive maintenance systems can detect signs of wear and tear, providing an early warning of potential problems.

The integration of AI into maintenance strategy can deliver numerous benefits, including reducing maintenance costs, prolonging equipment life, enhancing safety and boosting overall efficiency. Additionally, AI can ensure program efficiency despite skill management challenges such as turnover, while optimising the time of trained personnel. By proactively addressing potential issues, organisations can minimise the risk of unexpected downtime and improve the reliability of their machinery.

Machine diagnostics is the future of predictive maintenance and its power lies in its ability to provide organisations with actionable insights that help them optimise their equipment and improve overall performance. With it, organisations can stay ahead of potential problems and increase the longevity of their machinery.

Roadblocks for Machine Diagnostics

Limited and right data
Machine diagnostics heavily rely on accurate data, but the availability and quality of data for a route-based application (where data collection is performed by those people's operators) is dependent on the human skillset.

Ineffective Machine Learning Investments
The adoption of traditional machine learning solutions requires time, but an immediate solution is necessary for field personnel, especially with the use of portable systems that gather data at low intervals. Waiting for a machine to malfunction before conducting a first measurement is not viable, and the solution must perform effectively from the outset.

Complex systems
Modern machines and systems are often highly complex, with multiple components and subsystems that must work together seamlessly. This can make it difficult to identify the source of an issue...

It takes time to become proficient in vibration analysis and acquire the necessary experience to be fully operational. AI provides a solution by guaranteeing program performance and allowing trained personnel to focus their attention on machines with problems

Presenting the Machine Defender app
Instant machine diagnostics at your fingertips

The Machine Defender app and tablet-based diagnostic tool effectively integrates Artificial Intelligence to process large amounts of data quickly and accurately. This helps users to identify problems within a machine or system that might otherwise go undetected.

It can instantly analyse sensor data from a machine in real time, looking for patterns or anomalies that indicate a potential fault. Our built-in Accurex™ AI can quickly provide a diagnosis of the issue, along with possible solutions or recommended actions, starting from the very first measurement.
In addition, the mobility of a tablet allows for the diagnostic process to be done easily and periodically which can save time and money, increasing the efficiency of the diagnostic process.

The multipurpose Machine Defender:

· Empowers non-expert maintenance operators with the ability to confirm correct repairs commission long-term asset preservation,
· Expands the pool of individuals who can participate in portable data collection for predictive maintenance programs.

"Assess the health of your rotating machinery quickly, easily & accurately using Acoem's Machine Defender app & wireless sensor."

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App Store

A new environment of possibilities with an app based solution

Set up in seconds

Just input a few parameters and you'll be ready to identify risks and make prioritised maintenance decisions based on Machine Defender's automatic diagnostics. Even if you've never used a vibration diagnostic tool before, Machine Defender makes the process effortless. Simply select your machine's components, transmission type (direct driven, belt drive or gearbox) from the icons on the screen, then the machine's speed in RPMs and power range in horsepower.

Easy to use

Thanks to our patented, color-coded and icon-based GuideU™ user interface, the operation of the Machine Defender app is intuitive and adaptive, minimizing the risk of operator errors and wrong interpretations of the result.

Add the power of thermography

Integration of infrared pictures into the vibration report via the interface using the FLIR One app enhances the multi-technical capabilities of the app-based ecosystem (vibration, alignment, thermography). This makes it easier to confirm faults detected through vibration.
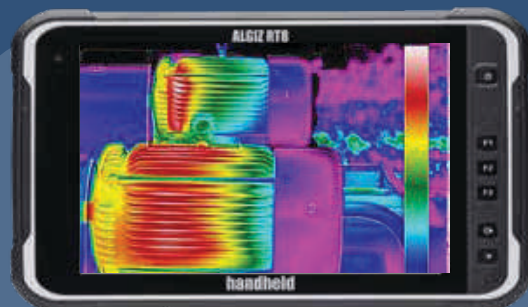
Simplify your reporting process

Machine Defender streamlines the field operator's reporting process, making it easier to illustrate reports with high-definition pictures from a mobile device. The PDF reports can be edited quickly and shared via OPC UA, CSV export. Gain immediate URL access to your machine's history from a mobile device, maximising the benefits of digitalising assets in the factory.

Acoem cloud - share secure data

With the Acoem Cloud Platform, obtaining a comprehensive view of your plant's health status and identifying performance levers is effortless. The platform offers detailed access to report history and trending capabilities, streamlining the maintenance decision-making process and enhancing the management of measurement tasks.

QR Code Scanning for automatic machine ID in field.

The QR code scanning capability automates machine identification in the field and streamlines operations. The feature improves efficiency and accuracy in the identification process and reduces the potential of human error.

GuideU™ Intuitive interface

GuideU™ is a next generation 3D graphical user interface. Our patented, customisable, icon-driven and colour-coded display system makes measuring, documenting and reporting on each job simple.

GuideU™ delivers precise measurement and correction values by minimising the risk of human error, guiding the operator through the process using visual, logical and easy-to-follow steps.

True remote diagnostics via NESTi4.0
Predictive maintenance solution

The Machine Defender app, powered by the NESTi4.0 software platform, delivers expert diagnostic information in a clear, concise and user-friendly format for all industrial machinery maintenance personnel. The app collects world-class measurements, including:

- Overall vibration velocity
- Overall acceleration
- Acoem Bearing Defect Factor
- Acoem HMx and SFx

- Peak-Peak acceleration
- High resolution FFTs for low, medium and high frequencies
- Envelopping
- High resolution time waveform

Shock Finder™ Index

- Easy shock identification and diagnostic
- Qualifies shocks automatically in the time waveform

Bearing Defect™ Factor

- Evaluates the roller/ball bearing health automatically
- Continously grows during the bearing lifecycle
- Early fault detection

Accurex™

Automatic machinery diagnostics

- The colour of the machine (green, yellow, red) corresponds to the first level diagonostic and indicates the urgency of the analysis
- Results of faults identified are pre-filled and can be modified by the user

HarmoniX™ Index

- Full frequency high resolution merged spectrum
- Quantifies harmonic families in spectra automatically

Open Data Platform

Easily connect your asset's health information to your ecosystem

- Automatically publish all measurements and diagnostics results available from the matrix
- Standard OPC UA and CSV export formats

Unleash the power of actionable data with Accurex™ AI-driven solution

Experience a new level of industrial performance with Accurex's innovative AI-driven diagnostic solution. Accurex has a proven track record, managing 80% of machines and defects in various industries, including electric motors, pumps, fans, compressors, gearboxes, rollers and shafts.

With its unique AI technology, Accurex provides users with confidence in the information it delivers. It makes machinery diagnostics accessible to every maintenance user, with diagnostic rules determined automatically, just by providing a simple machine description through its intuitive interface. In just a few seconds, you will receive accurate measurements, displayed in a traffic light colour-coded format, showing the performance and health of each machine.

No action required

Monitoring required and/or action conceivable during scheduled shutdown

Action to be scheduled as soon as possible

Faults managed by Acoem Accurex™

Bearing / lubrication

Unbalance

Misalignment
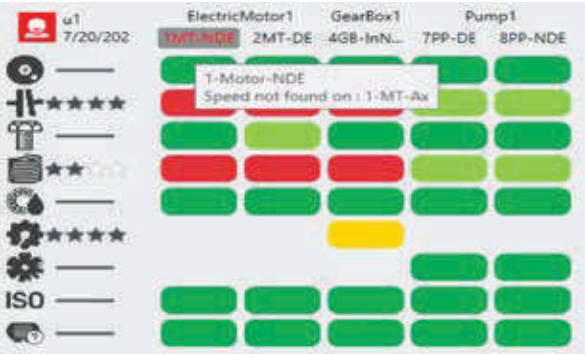
Structural resonance

Pump cavitation

Gear wear

Shocks/modulation resulting from looseness or electrical defects

ISO — Other ISO defects (soft foot, belt wear, nearby disturbance)

Suspicious machine

99%*

of assets in critical condition are accurately detected

* based on millions of data sets reviewed by experts

Fast wireless measurements

Wireless measurement up to 25m

Synchronous tri-axial measurements in typical 10s

Good diagnostic capabilities including for bearings, gears and cavitation problems

Dimensions: Ø42 x H116mm

Android and iOS comaptible

IP65

Resists to a 1.2m drop

8h rechargeable battery

What's included:

- 1 VT-300 wireless sensor
- 1 USB power supply module with international plugs and USB cable
- 1 High power bipolar magnet (suited for curved shafts) with orientation key for tri-axial positioning
- 1 Carry-on bag
- 1 Contact point to make single axis measurements on small surfaces
- 1 Printed safety instructions manual
- 1 Printed calibration certificate.

Augmented mechanics ecosystem

The ultimate solution for proactive & predictive maintenance

Machine Defender app is part of Acoem's Augmented Mechanics Ecosystem, the first truly flexible and scalable solution for combining different technologies on the same mobile platform to deliver reliable and precise proactive and predictive maintenance for industrial machinery.

Designed to allow you to continually add to or upgrade as new technologies become available, or as your specific needs change over time, the Ecosystem is made up of a combination of mobile applications, and connected wireless sensors.

In addition to the Machine Defender, the Ecosystem currently features additional applications:

Pre-Alignment | Horizontal Alignment | Vertical Alignment | Bearing Defender | Machine Defender | FLIR One Thermography app

A new environment of possibilities

- Total control over your machinery's proactive & predictive maintenance
- Accessible via any enabled device – tablet, smartphone, laptop etc.
- Upgradable, customisable & scalable based on your needs
- Links vibration & alignment data to optimise maintenance process
- Share information instantaneously among your teams
- Insightful product - training videos & Acoem technical support.
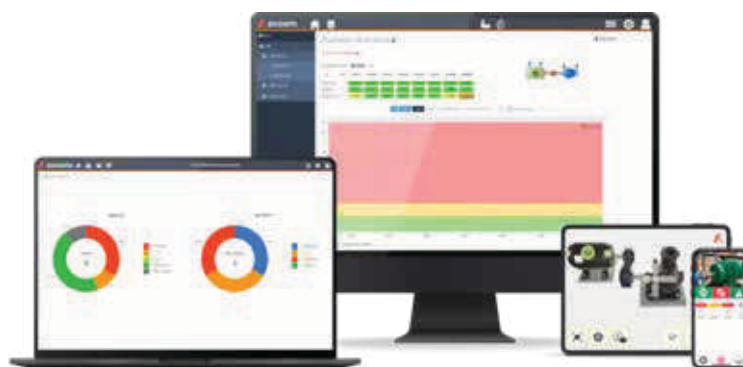
About **Acoem**

At Acoem, we create environments of possibility - helping organisations find the right balance between progress and preservation - safeguarding businesses and assets, and maximising opportunities while conserving the planet's resources. We deliver unrivalled, interoperable AI-powered sensors and ecosystems that empower our customers to make enlightened decisions based on accurate information.

Together with 220+ distribution partners,our 850+ employees work across 28 offices, 6 manufacturing facilities and 5 R&D centres in 11 countries, to provide trusted, holistic data solutions for customers worldwide.

For more information, please visit **acoem.com**

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