



# Vibtek Ltd

Reliability Engineering



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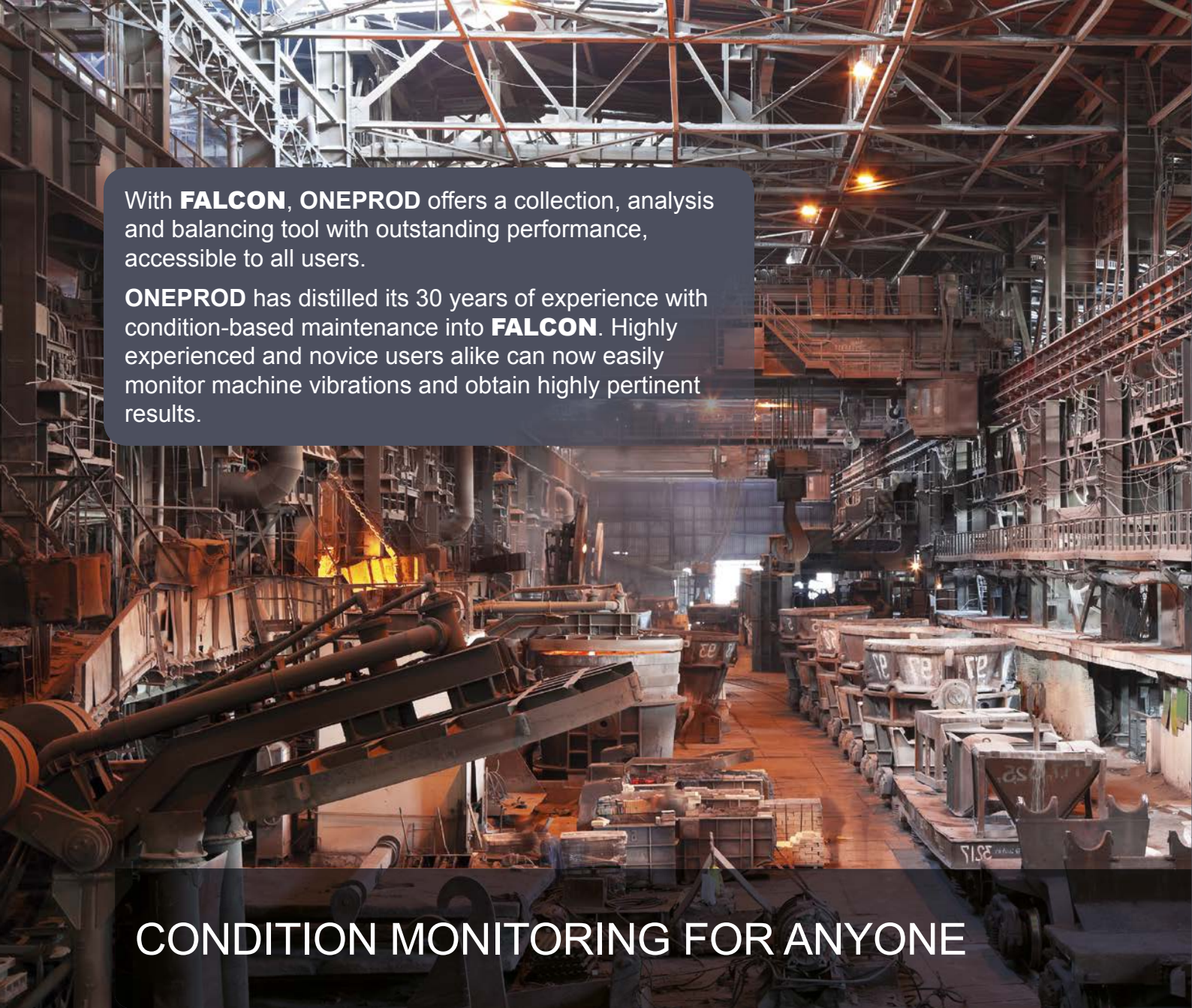
[www.vibtek.co.uk](http://www.vibtek.co.uk)

- ✓ **FALCON**  
Smart Portable Solution
- ✓ **NEST i4.0**  
Predictive Maintenance Software
- ✓ **EAGLE**  
Smart Wireless Solution
- ✓ **ONEPROD MVX**  
Condition-based maintenance for critical machines
- ✓ **NEST SOFTWARE SUITE**  
Technical datasheets
- ✓ **BEARING DEFENDER**  
Bearing Health status in seconds
- ✓ **CONDITION MONITORING SERVICES**
- ✓ **ONSITE FIELD BALANCING**



**FALCON** Smart Portable Solution  
Condition monitoring has never been so easy!!





With **FALCON**, **ONEPROD** offers a collection, analysis and balancing tool with outstanding performance, accessible to all users.

**ONEPROD** has distilled its 30 years of experience with condition-based maintenance into **FALCON**. Highly experienced and novice users alike can now easily monitor machine vibrations and obtain highly pertinent results.

## CONDITION MONITORING FOR ANYONE



### A HOST OF INNOVATIONS

**FALCON** provides the best that technology has to offer, in an innovative product meeting the needs of all users.

Powerful yet easy to use, **FALCON** makes optimum productivity available immediately.

Right from the outset, **FALCON** stands out with its wireless sensor, large color touch screen, automatic detection of measurement points via QR Codes, built-in accessories including a pyrometer, stroboscope and camera, shock-resistant design, and more.

Nothing has been left to chance!



WIRELESS

FAST

AUTOMATIC CONFIGURATION

AUTOMATIC DIAGNOSIS

ALL-IN-ONE



## RELIABILITY IN AUTOMATIC MODE!

### AUTOMATIC CONFIGURATION

Any user can now set up vibration monitoring configurations with no expert assistance: All it takes is a straightforward kinematic description of the machine in the visual tool.

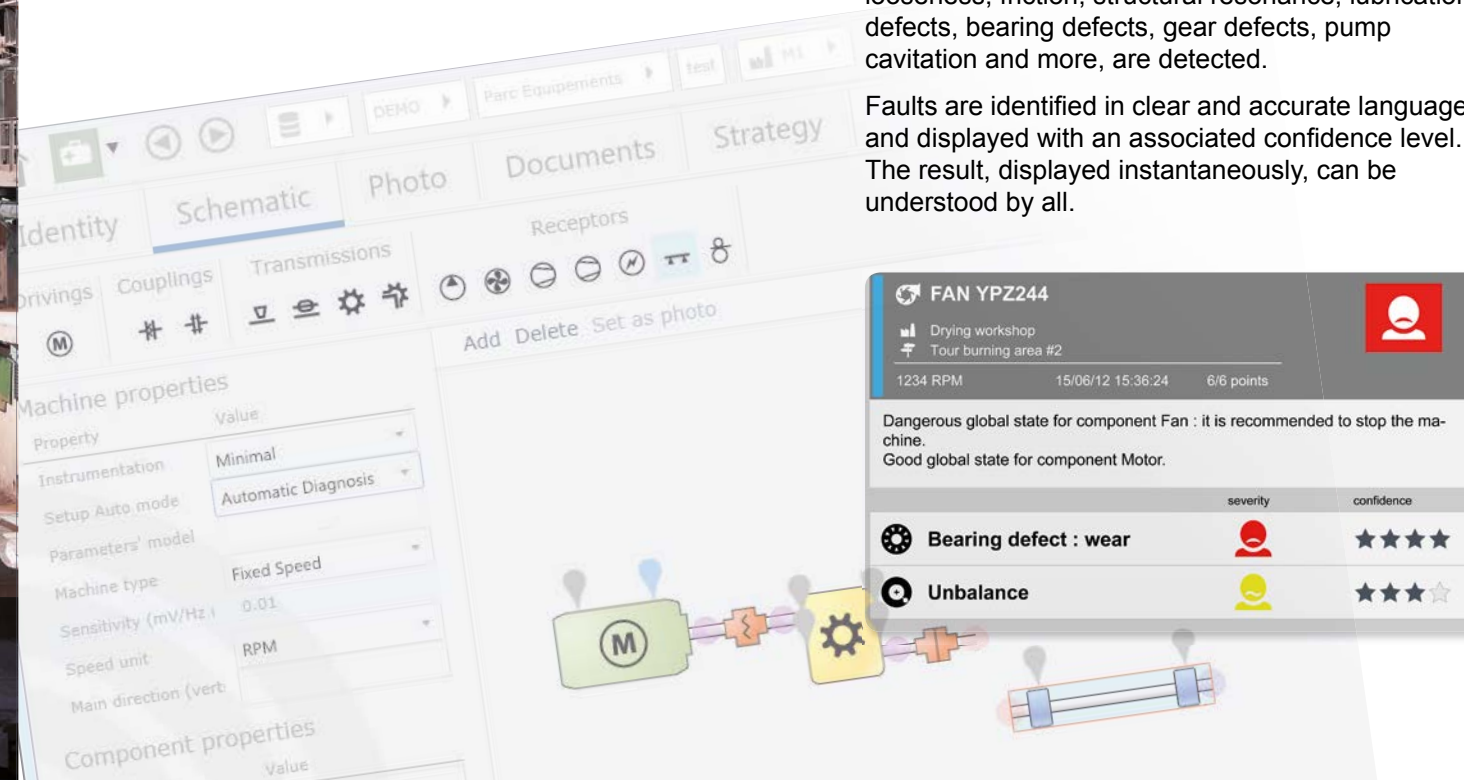
Child's play!

### AUTOMATIC DIAGNOSIS

**FALCON**'s built-in automatic diagnosis module provides unbeatably relevant and dependable results.

All faults commonly encountered in industry, such as unbalance, misalignment, defective mountings, looseness, friction, structural resonance, lubrication defects, bearing defects, gear defects, pump cavitation and more, are detected.

Faults are identified in clear and accurate language, and displayed with an associated confidence level. The result, displayed instantaneously, can be understood by all.



### FALCON TAKES THE MYSTERY OUT OF VIBRATION ANALYSIS

The **FALCON** automatic diagnosis **Accurex™** engine packs **ONEPROD**'s 30 years of experience in vibration monitoring for condition-based maintenance.

Validated in real-life situations and on historical data from numerous companies, **FALCON** automatically detects defective machines, with a reliability close to 100%. Based on vibration symptoms observed on the machine, **FALCON** automatically displays the most likely defect(s).





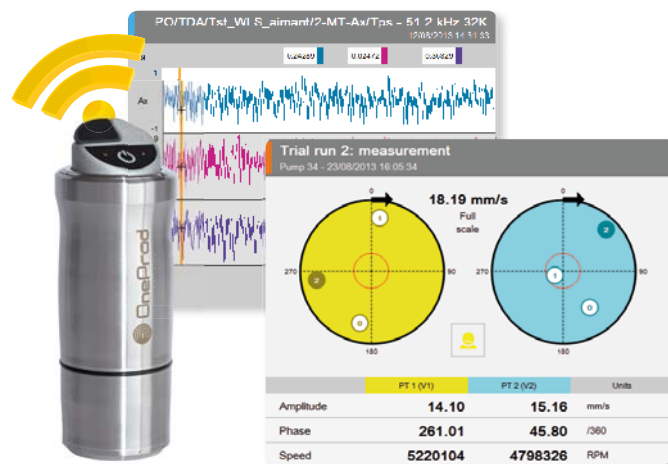
## → OPTIMAL PRODUCTIVITY

### WIRELESS

The exceptional measurement capabilities of the **FALCON** three-axis wireless sensor make a genuine contribution to productivity. Synchronous acquisition reduces data collection times.

After quickly mounting the wireless sensor, measurements can be made remotely and safely.

Data point identification and sensor positioning are automatic. The monitoring controls repeatability is thus ensured. Most measurement errors stem from connections and wiring: with **FALCON** this is a thing of the past.



### UNRIVALLED PERFORMANCE

**FALCON** offers exceptional real time processing capabilities, making it the fastest collection device on the market!

It has never been so easy to identify critical speeds: synchronous acquisition of 4 vibration channels and rotation speed makes the measurement easier. Also, patented Bode-Ellipse technology allows neglecting the direction-based uncertainty.

### QUICK AND EASY BALANCING

With automatic simulation tools and assistance in positioning weights, **FALCON** is the benchmark tool correcting unbalance issues on site.

**FALCON** provides intuitive visual assistance to guide users through operations. The results are automatically compared against standards to ensure accurate balancing. A report showing all data, graphs and photos is automatically generated in a single click!

**FALCON** reduces intervention times:

- Wireless three-axis measurement
- Real time processing
- User guidance

At the scale of an industrial site, **FALCON** really stands out!

## → THE NEW GENERATION IN CONDITION-BASED MAINTENANCE

### QUICK AND EFFECTIVE

- Synchronous three-axis collection with a single sensor
- Simultaneous 4-channel acquisition at 40 kHz + tachometer, 2 channels at 80 kHz
- Real time processing
- Long time waveform, up to 80 seconds at 51.2 kHz (4 Mega samples)
- More reliable identification of critical speeds based on patented Ellipse Spectrum technology

### WIRELESS

- Measurements taken in total safety
- Enhanced productivity: easily installed with one hand, reducing intervention time
- No measurement errors
- No wires: reduced maintenance and transport costs



### AUTOMATIC

- Automatic configuration
- Automatic diagnosis
- Automatic recognition of measurement points

### 7" DISPLAY

- High definition
- Readable even in bright sunlight
- Touch screen usable with gloves

### COMMUNICATING

- USB, WiFi, Ethernet, Internet
- Remote display mode: the **FALCON**'s screen is displayed on a PC
- Remote control of the CMS platform
- Results easily exchanged via the **SUPERVISION** tool

### ALL-INCLUSIVE

- Built-in rotation speed measurement (stroboscope)
- Built-in pyrometer with laser sight
- Built-in camera for recording sensor positions, inspection photos, and so on

### SUITABLE FOR HARSH CONDITIONS

- ATEX Zone 2 certification
- IP65
- Withstands a 1.2 meter drop





## NEST i4.0

### Predictive Maintenance Software

This Industrial Internet of Things (IIoT) version of the Nest integrates your entire condition monitoring program:

- Fast visual insight into potential machinery health issues
- Allows secure worldwide access to your program's data set.
- Software augmented diagnostic and predictive analysis: based on OneProd's 30 years of expertise in preventive maintenance technology



PREDICTIVE MAINTENANCE, MEET BIG DATA

### Machine Health Matrix

Fast, easy identification of the health of your machines

- Analyze a machine's health in just one screen
- Overview of all parameters and easy drill-down to each individual parameter and point
- Manage and access data for even the largest machines
- Full reporting capability
- Add parameters and points as needed
- Direct access to waveforms and spectra
- Easily locate and identify possible defects

#### Bearing Defect Factor™

- Evaluates the roller/ball bearing health automatically
- Continuously grows during the bearing life cycle
- Early fault detection

#### Shock Finder™ Index

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

#### HarmoniX™ Index

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

#### Accurex™

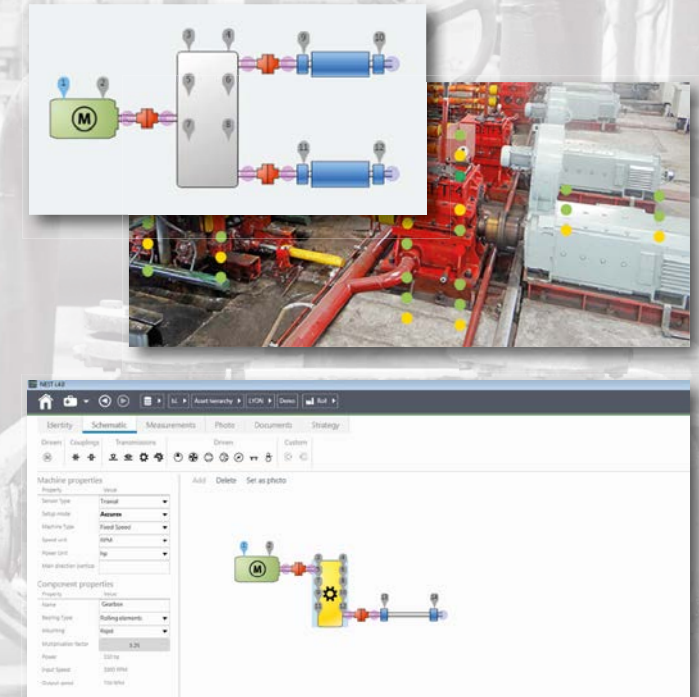
automatic machinery diagnostics

- The color of the machine (Green, Yellow, Red) corresponds to the first level diagnostic and shows the urgency of the analysis
- Results of faults identified are pre-filled and can be modified by the user

## Machine Builder

### Quick and intuitive set up: drag and drop

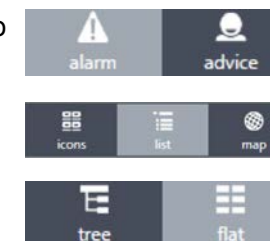
- Build complex machines with hundreds of vibration parameters in just minutes.
- Create virtually any machine using built-in or customized templates
- Compatible with Accurex™ automatic diagnostics
- Accessible to all staff levels
- Build what you will see during the analysis
- Easily add or modify a parameter or signal on one of several measurement points at the same time
- Create custom complex machines with the use of the custom component:
  - Customizable: number of bearings, 1 or 2 shaft outputs, speed ratio for each shaft
  - Free component labelling



## Supervision Tool

### Easily browse your assets

- Show the machine according to the alarm or expert advice
- Display in icons / list / picture
- Use the Flat mode to show all assets in one view



### Worldwide data center

- Display can be customized to the user's profile (analyst, reliability engineer, manager and more)
- Any place, any time login allows users to access reports via the optional NEST Dashboard



Drill down from a global view to an individual machine





**EAGLE** is ONEPROD's easy-to-deploy continuous monitoring system for condition-based maintenance.

**EAGLE** eliminates wiring, meaning that you can easily instrument more of your critical machines. **EAGLE** offers outstanding performance, ensuring optimal process reliability with minimal maintenance costs.

This new smart wireless solution enables early fault detection through analysis of dynamic vibration signals.

## EASILY ENHANCE THE RELIABILITY OF YOUR FACILITIES



### UNIQUE MEASUREMENT CAPABILITIES

**EAGLE** automatically acquires vibration signals (including time waveforms and FFTs) on one or three vibration axes, together with temperature data.

Your machines are kept under close watch: Smart enough, **EAGLE** automatically trigs measurements if the vibration levels exceed predefined threshold limits.

Signals of up to 16 K-samples are transmitted wirelessly, for accurate and targeted diagnosis of all kinds of faults on all types of rotating machinery.

### DESIGNED FOR HARSH ENVIRONMENTS

Right from the design phase, the materials used were selected to meet detailed and demanding specifications.

With ATEX Zone 0 certification, **EAGLE** offers appropriate solutions in places where wiring is costly or too complex.

A true alternative to manual data collection, **EAGLE** enables automatic measurements to be taken safely in extreme conditions!

**EAGLE Smart Wireless Solution**  
Condition monitoring installation has never been so easy!!



## → UNRIVALLED EASE OF DEPLOYMENT

### WIRELESS ANYWHERE

**EAGLE** is a self-powered wireless sensor. No cables are needed.

- **Autonomous:** the sensor acquires data with no external intervention
- **Up to five years of unattended operation**
- **Data is transferred wirelessly** to the ONEPROD NEST condition-based maintenance software
- **Expand boundaries:** Use of Wireless Expanders to reach the most isolated machines



### ATTACH AND GO!

**Attach** the sensor to the machine.

**Position** your gateway at an appropriate distance depending on your environment (up to 100 m).

**Add wireless Expanders** to increase the range and turn around obstacles.

**Start** acquisition from your ONEPROD software interface.

**Your data is there, ready for processing!**

### MOVE AND MONITOR!

It is not always feasible to monitor all critical production facilities continuously.

The solution: temporary monitoring

**EAGLE's** ease of deployment means that it is particularly suitable for such cases. Doubts about a machine that isn't monitored? Nothing could be easier: simply move sensors and start monitoring it!

That should give you some new ideas for improving the reliability of your facilities!

## → BENEFIT FROM ALL THAT ONEPROD HAS TO OFFER

### A CENTRALIZED SYSTEM

**EAGLE** is totally integrated with the ONEPROD system.

Process data from **EAGLE** using the powerful range of analysis and post-processing tools available in ONEPROD NEST software: advanced vibration indicators, calculations covering all historical data, concatenated spectra, 3D spectra, Shock Finder filter, and more.

Regardless of how many machines you have, your entire installed base equipped with **EAGLE** sensors can be supervised remotely from any Internet browser using the NEST SUPERVISION module.

### TAILORED SUPPORT

**EAGLE** eliminates implementation constraints and enables you to benefit from targeted support on a particular machine from ONEPROD experts.

Avoid a production shut-down that could have disastrous financial consequences!

For more information, see [www.oneprod.com](http://www.oneprod.com)

### MONITORING OF COMPLEX MACHINES

Monitor machines with varying operating conditions using **EAGLE**.

ONEPROD's expertise is embodied in this new wireless solution for monitoring even the most complex machines!

Information about the operation of your equipment is used to direct the monitoring system. The repeatability of measurements ensures that diagnosis are even more pertinent and analyses are even more effective.



*"Doubts about a machine that isn't monitored? Nothing could be easier: simply move sensors and start monitoring it!"*



### RELIABLE COMMUNICATION

ONEPROD offers a proven smart solution for wireless communication capable of operating alongside other networks used in industry, such as WiFi, Bluetooth and Wireless Hart. The communication quality is guaranteed using smart algorithms to avoid interference with systems in the unit's environment!

**EAGLE** uses the 802.15.4 protocol which guarantees safe conditions for people, facilities, and security of data.





# → A HIGH-PERFORMANCE INDUSTRIAL SOLUTION

## EASY INSTALLATION

- Cable-free installation
- Use of wireless Expanders to reach the most isolated machines
- Up to 50 sensors per gateway

## UNIQUE PERFORMANCES

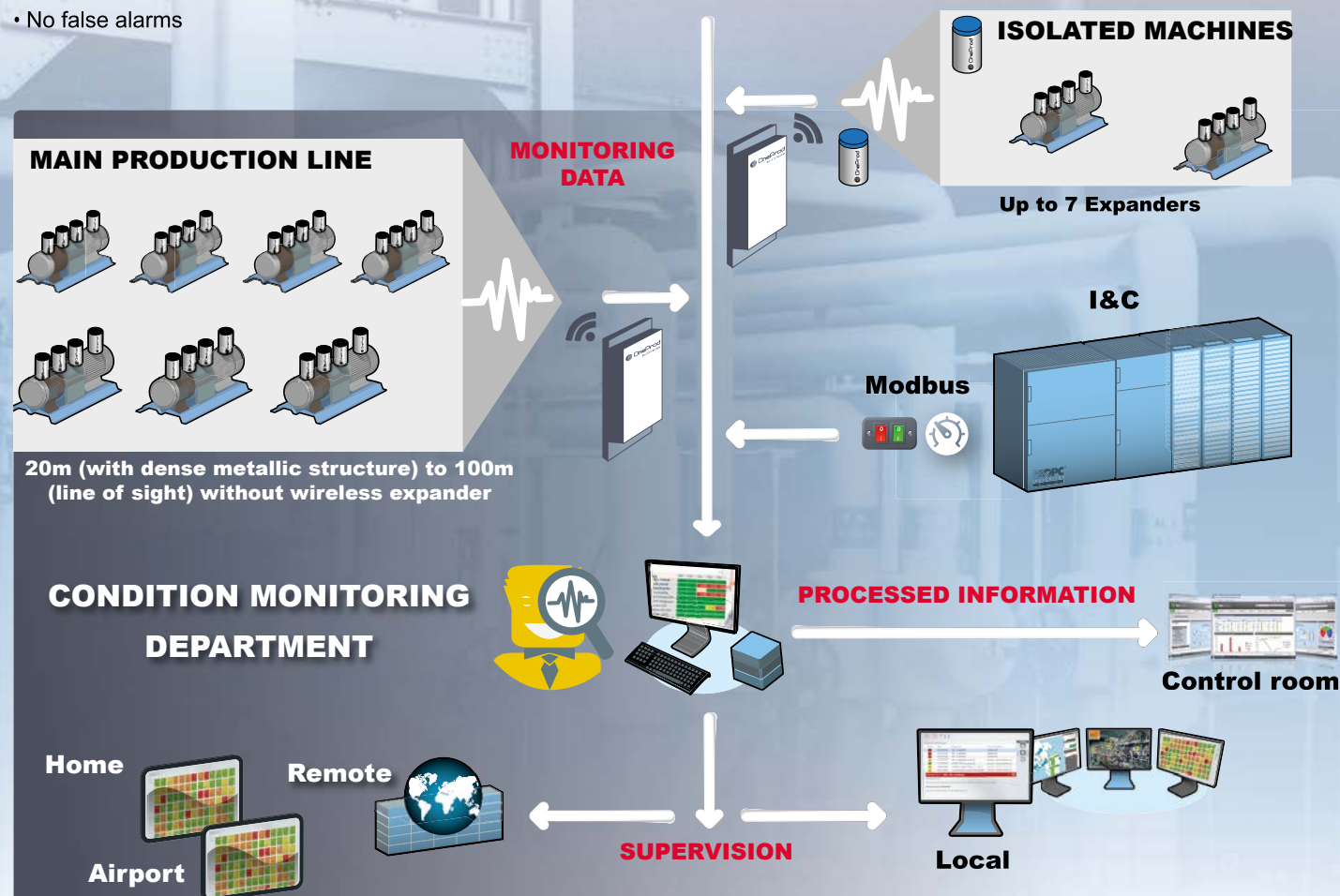
- 1 or 3 vibration axes + temperature
- FFT up to 20kHz analysis
- Measurement on alarm
- Monitoring of machines starting from 100RPM

## EASY MAINTENANCE

- Up to 5 years of unattended operation with several measurements per day
- Standard low cost battery replaceable by the end user

## ONEPROD METHODOLOGY

- Repeatable measurements: management of operating conditions
- No false alarms



## RELIABLE WIRELESS COMMUNICATION

- Immunity to interference with other wireless networks (WiFi, Bluetooth, Wireless HART, proprietary protocols)
- Secure data
- Very low power transmissions to ensure safe conditions for people and facilities

## SUITABLE FOR HARSH ENVIRONMENTS

- ATEX Zone 0 certification (Class I Div I) for both the EAGLE sensor and the Expander
- Withstands corrosive environments
- withstands a 120°C contact temperature
- IP67



# ONEPROD MVX

MULTI CHANNEL REAL TIME MONITORING



## ONEPROD MVX

Condition-based maintenance for critical machines





The reliability of critical machines is an essential factor for all industrial companies. The slightest unexpected shutdown results in direct production losses, and the associated maintenance issues (logistics, spare parts, etc.) can be significant. **ONEPROD MVX** is a multi-channel real-time monitoring system that enables the onset of faults to be detected early, thus providing peace of mind for industrial operators.

## ONEPROD **MVX**

### Monitoring and diagnostics for critical machinery



#### SMART MONITORING

The smart measurement and processing functions built into **ONEPROD MVX** are used to collect the highly qualified information required to monitor and diagnose your most critical machinery.

With **ONEPROD MVX**, kinematic complexity and the variability of operating conditions are no longer an issue.

#### SMART DESIGN

With 8 to 32 channels within the same sized instrument, **ONEPROD MVX** can receive vibration, electrical, oil or process information, and adapt to your mode of condition-based maintenance.

The system can be extended virtually to several hundred channels via communication interfaces with PLCs.



## MIGHTY AND POWERFUL FOR COMPLEX MACHINES

#### A RESPONSE TO ANY CHALLENGE

**ONEPROD MVX** can detect and capture transient sub-millisecond phenomena over 100% of the signal.

Time signals are recorded using a «pre-trigger» on all relevant channels so that the event can be analyzed retrospectively.

Its real-time processing capabilities make it possible to:

- capture and record a transient phenomenon on a turbine for subsequent analysis
- control a rolling mill based on its vibration behavior.

#### MONITORING OF LOW SPEED SHAFTS

**ONEPROD MVX** offers an unrivaled solution for the monitoring of low speed shafts with a smart Shock Finder indicator.

Abnormal impacts on shafts turning at very low speeds (from just a few rpm) are detected early and fully automatically.

Real-time management of variable operating conditions enables **ONEPROD MVX** to escalate data required for analysis and allowing comparison over time.



#### ANALYSIS PRODUCTIVITY

**ONEPROD MVX** will notify you in real time of any event requiring your intervention, by e-mail, text message or digital output.

The stored data, associated with operating conditions, is highly qualified: no false alarms!

*« Reports are accessible in just a few clicks, navigating from a map of the world to a detailed view of a machine. »*



#### ONEPROD **MVX**

##### A cost-effective solution to technical challenges

Wagon tipplers are a perfect example: the purpose of the one in this photo is to load boats by overturning the wagons that arrive from the mines.

They operate at variable speed, with acceleration and deceleration phases. The impacts generated by mechanical faults must be distinguished from «normal» impacts relating to their operation, and the low-energy vibrations generated by the slow-rotating parts are drowned out by the vibrations generated by other parts of the machine.

**MVX** features all of the tools required to reliably monitor this type of equipment.



## → INTEGRATED AND CONNECTED

### A CENTRALIZED SYSTEM

The data acquired by ONEPROD **MVX** is automatically stored in the ONEPROD **NEST** software platform. Analysis of and access to the condition of production sites is simple: reports are accessible in just a few clicks, navigating from a map of the world to a detailed view of a machine. Wherever measurements have come from (a **FALCON** portable instrument, an **EAGLE** online wireless sensor, or an **MVX** online cabled monitoring system), the data is accessible via the same interface from any connected computer.

« With ONEPROD **MVX**, kinematic complexity and the variability of operational conditions are no longer an issue. »

En-V  
En-HF  
FZ  
F0  
Kurtosis  
Shock Finder

### EASY TO DEPLOY

ONEPROD **MVX** communicates and transfers its results in automatically and reliably to the ONEPROD **NEST** software via a secure Ethernet link.

Operators can choose to use the local cabled network, a Wi-Fi network, or over the Internet via a 3G link, for example.

### INTEGRATED INTO YOUR ENVIRONMENT

ONEPROD **MVX** can be fully integrated into your environment. Process information is retrieved directly from the PLCs, eliminating any duplication of data. The advanced indicators defined can be transmitted in order improve process management, and maintenance management is optimized thanks to an interface with the CMMS system.

Shock Finder automatic filtering

## → A UNIQUE SYSTEM WITH INFINITE CAPABILITIES

### SMART MONITORING

- Real-time monitoring of one or more machines
- Storage of measurements required for analysis: the right information at the right time.
- Easy analysis of complex machines through management of operating conditions
- Early detection of faults on slow shafts with Shock Finder

### COMMUNICATION

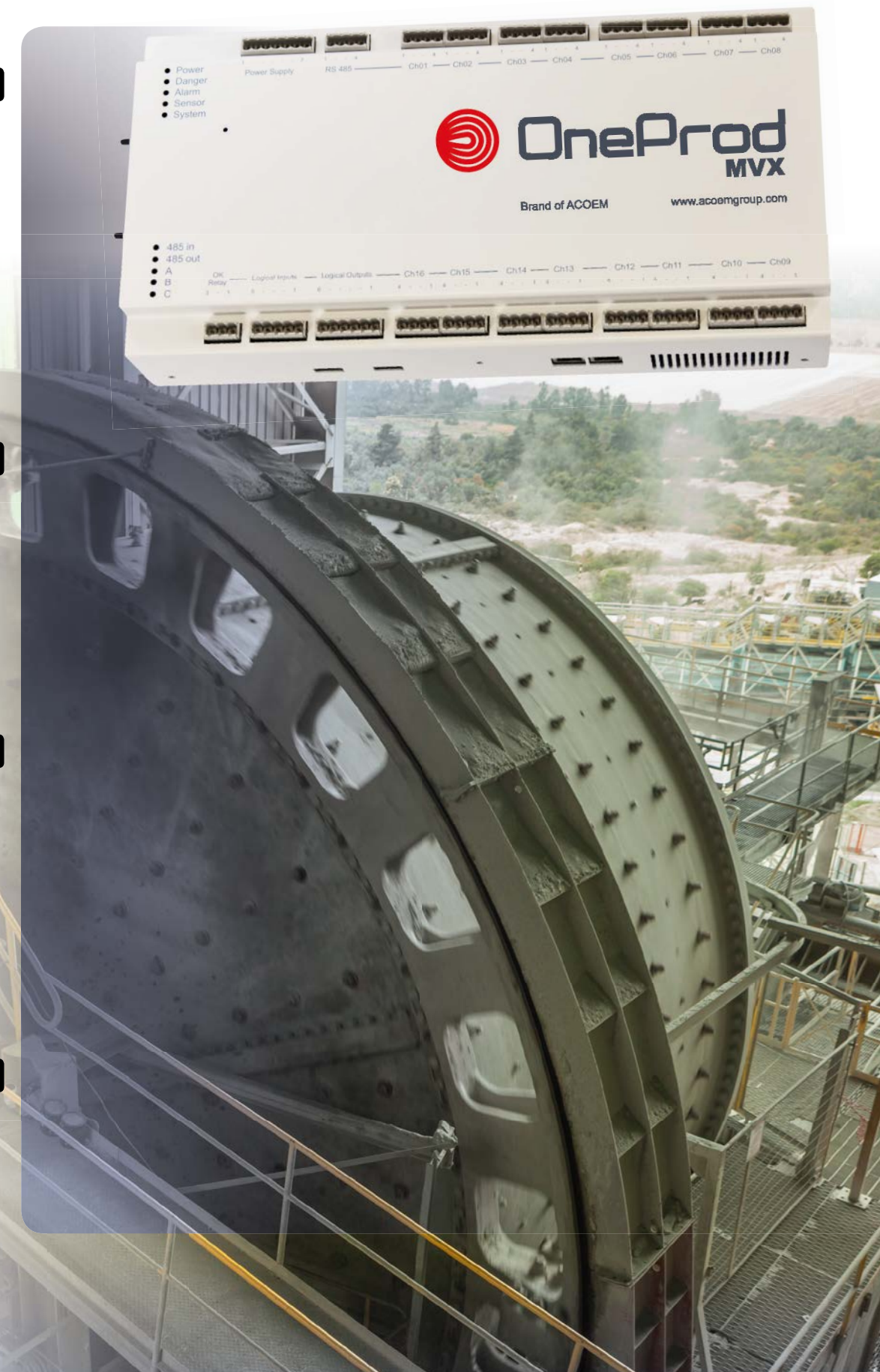
- Two-way communication with PLCs
- Alerts by e-mail / logic outputs
- Management of sub-optimal communication conditions (3G) for isolated machines

### FLEXIBLE

- All types of sensor
- 8 to 32 channels
- Number of channels can be extended for process information using Modbus and OPC interfaces
- Option: portable version for temporary monitoring (VMS)

### ALL IN ONE

- Monitoring of vibrations
- Monitoring of oil (quality, particle count)
- Correlations with process information





## MONITORING AND DIAGNOSIS OF ROTATING MACHINES

Predictive maintenance is a powerful leverage of competitiveness for all industrialists. As its benefits are now undeniable, it is involving different people within a same company, working together on the same data, but at different steps of the process.



### CENTRALIZED INFORMATION

NEST offers a unique presentation of a factory or multisite overview, centralizing data coming from different systems (portable, online), and multi physical information.

### COLLABORATIVE PLATFORM

ONEPROD NEST is a modular software suite providing easy access to highly qualified information to all user profiles: Condition monitoring experts, Data collection personnel, Maintenance Supervisor, Reliability engineers, Instrumentalists... While working on the same data, they all benefit from the dedicated features available within ONEPROD NEST, thus providing them with the most productive condition monitoring tool of the market.

### INTEGRATED INTO THE EXISTING INFORMATION SYSTEM

Providing all required interfaces, ONEPROD NEST allows factories to benefit from all that condition monitoring has to offer. Advanced qualified information can easily be shared through various interfaces or displayed in the control room.



INTUITIVE ACCESS



EASY TRENDING



INSTANT REPORTING



POWERFUL ANALYSIS

## NEST Software - Technical datasheet

### General Specifications



#### Main modules

|                       |  |   |
|-----------------------|--|---|
| MACHINE SUPERVISION   |  | Supervision is a native Web interface providing a very easy access to the condition monitoring information, switching in a few clicks from the top site view to the detailed reports. Supervision can be used from any computer connected to the local network of the ONEPROD NEST application server.  |
| MACHINE SETUP         |  | Organize the data according to locations, sublocations, and easily define machines through the drag & drop tool that can be used according to 2 options (monitoring or automatic diagnosis).<br>Monitoring mode: fast measurement generation using predefined templates delivered with the different instruments or customized by the user.<br>Automatic diagnosis mode: automatic generation of the measurements required to perform automatic diagnosis with the FALCON portable data collector |
| ANALYST               |  | Powerful analysis module, with Easy, Advanced or Premium Automatic post-processing features   |
| COLLECT / COLLECTIONS |  | Define the routes, download them onto FALCON data collector, and upload them once the measurements are completed  |
| INSTRUMENT            |  | MVX Online instrument fleet supervision from anywhere   |

#### Centralized database

|                |   |
|----------------|---|
| ADMINISTRATION | Manage the different user profiles and customize their access rights (functions and data)<br>Manage virtual segmentation of the databases to provide an organized management of the global data and easy access |
|----------------|---|

#### Architecture

|                |  |
|----------------|--|
| Multi source   | Portable (FALCON, MVP-2EX), Online (EAGLE wireless sensor, MVX)            |
| Multi physical | Vibration, Process, Electrical, Oil, Thermography, Air gap / Magnetic Flux |

#### International application

|                           |  |
|---------------------------|--|
| Local database version    | A single database is installed on each computer.   |
| Intranet database version | A central database is hosted on an application server connected to the network. All users are directly working on the same data. |

#### User assistance

|           |   |
|-----------|---|
| Languages | English, French, Simplified Chinese, Korean, Russian, Portuguese, Spanish   |
| Units     | Management of metric and imperial units   |
| Tooltip   | Tooltips are displayed to provide more information on functions or buttons according to the modules                               |
| Help menu | The help menu automatically presents to the user the detailed description of the function in use, as referred in the user manual. |

### Interfaces & Data exchange

ONEPROD NEST provides various standard interfaces, making the outputs of predictive maintenance easy to share with third systems (PLC, analytics systems...).

#### OPC Server (option)

|                       |  |
|-----------------------|--|
| Parameter information | All parameter-related information can be published in the standard OPC format:<br>- Parameter value (stored from instrument or post-processed from the software) with timestamp<br>- Parameter threshold value |
|-----------------------|--|

|                     |  |
|---------------------|--|
| Machine information | Machine-related information can be published in the standard OPC format:<br>- Machine global alarm status<br>- Machine expert advice |
|---------------------|--|

#### Data exchange

|                 |  |
|-----------------|--|
| Import / Export | Easily share data between several ONEPROD NEST databases within the same or different factories. |
|-----------------|--|

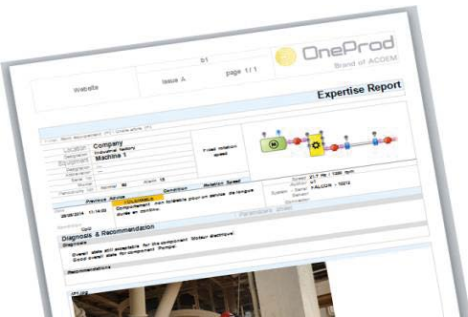


Automatic reporting capabilities

To improve maintenance planning and operations, one needs to be able to display in a very easy way:

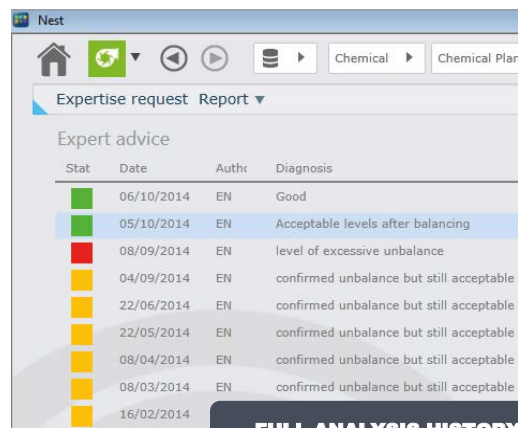
- what has been detected through predictive maintenance technologies
- what has to be done
- when it should be done

ONEPROD NEST provides full reporting capabilities, automatically illustrated and easily accessible.

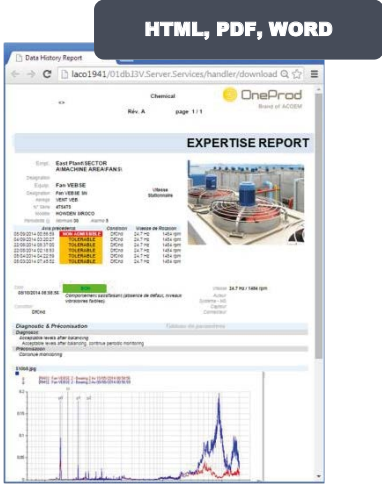
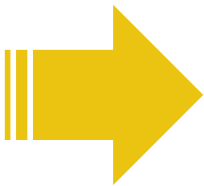


|                  |                                      |  |
|------------------|--------------------------------------|--|
| Analysis reports | Automatic reporting                  | Reports are automatically generated just in a touch of a button. They are available at any time, for a single machine, a multiple selection, a predefined list of machines, or a whole factory.      |
|                  | Format                               | HTML, PDF, or WORD compatible format (RTF).  |
|                  | Automatic picture insertion (option) | Machine pictures, pictures attached in appendix (analysis, thermographic) or taken with FALCON data collector, are automatically printed out in the reports.   |
| Web interface    | Hide / display parameter             | Advanced parameters can be hidden automatically and not be printed out in the reports. They remain fully available in the ANALYST module for the expert users.                                       |
|                  | SUPERVISION Module                   | The expert advice and recommendations are accessible through the simplified ADVICE view of NEST SUPERVISION module in read-only mode. Reports can be exported in HTML, PDF or WORD compatible format |
|                  | Customization                        | Selectable content : Synthesis Information, Measurement Setup, Diagnosis & Recommendation, Analysis, Measurement History, Maintenance History, list of machines with status                          |
| Customization    | Report profiles                      | Several report profiles can be memorized according to the content selection  |
|                  | Layout                               | Customizable layout, including the possibility to add your own logos   |
|                  | Template customization               | All templates of prelisted report types can be modified to manage the content automatically extracted from the database.   |
| Statistics       | Logo                                 | Templates customisation includes the modification of the logo printed out on the report.   |
|                  | Automatic statistical reports        | Measurement and analysis activity  |
|                  |                                      | List of equipment with expertise summary and access to full expertise report (possible sorting by advice)  |
|                  |                                      | Statistics on defects detected per equipment (possible sorting by anomaly level)   |
|                  |                                      | Status by equipment type   |
|                  |                                      | Status by equipment function   |
|                  |                                      | Statistics on equipment defects  |
|                  |                                      | Monitoring of the number of defects  |
|                  |                                      | Statistics on experts' advice  |
|                  |                                      | Monitoring of experts' advice  |
|                  |                                      | Statistics on alarm status   |
|                  |                                      | Monitoring of alarm status / equipment   |

ACCESSIBLE FROM ANY COMPUTER CONNECTED TO THE NETWORK



FULL ANALYSIS HISTORY



BEARING DEFENDER

BEARING HEALTH STATUS  
IN SECONDS



The wireless **Bearing Defender** offers instant advice on the health of your bearings.

Easy to use and incredibly fast, a first level of bearing health assessment can be achieved by all level of personnel. It such provides an easy leverage of improvement of your reliability program, especially when your reliability experts are fully focused on the most critical assets.

Patented Wireless Measurement

With its unique metrological performances, the Bearing Defender makes sure that your machine can keep spinning without risk.

A first level warning indicates automatically an abnormal behavior resulting from bearing defects, unbalance or misalignment, or other faults. Combining data from three directions, even faults occurring in a single axis can be detected with one measurement.

SMART VIBRATION SENSOR

Smart indicators computed from X, Y, and Z directions

3D Bearing Health Indicator .....  
3D Misalignment or Unbalance Indicator .....  
3D Miscellaneous defect Indicator .....

Green, Yellow, Red indicators



No bearing defect

Unbalance or misalignment defect to be corrected

Miscellaneous defect to be monitored

Tri-axial vibration readings

Vibration Velocity, Acceleration, Displacement ..  
Bearing Defect Factor™ (DEF) .....  
High frequency acceleration.....  
ISO Standard compliance .....  
Acquisition mode.....  
Measurement duration .....  
Audio listening.....

RMS values averaged on 5s  
Bearing health grade - absolute value (0 to 12)  
RMS value filtered from 3kHz to 20kHz (averaged on 5s)  
ISO10816-3  
Live reading of overall values or recorded mode  
8s typical (affected by distance and communication quality)  
listen to live measurement (e.g. while greasing)

Easy setup

ISO10816-3 classification .....  
Vibration setup .....

Guided and automatic selection of the machine class  
Automatic definition of the measurements based on the machine class

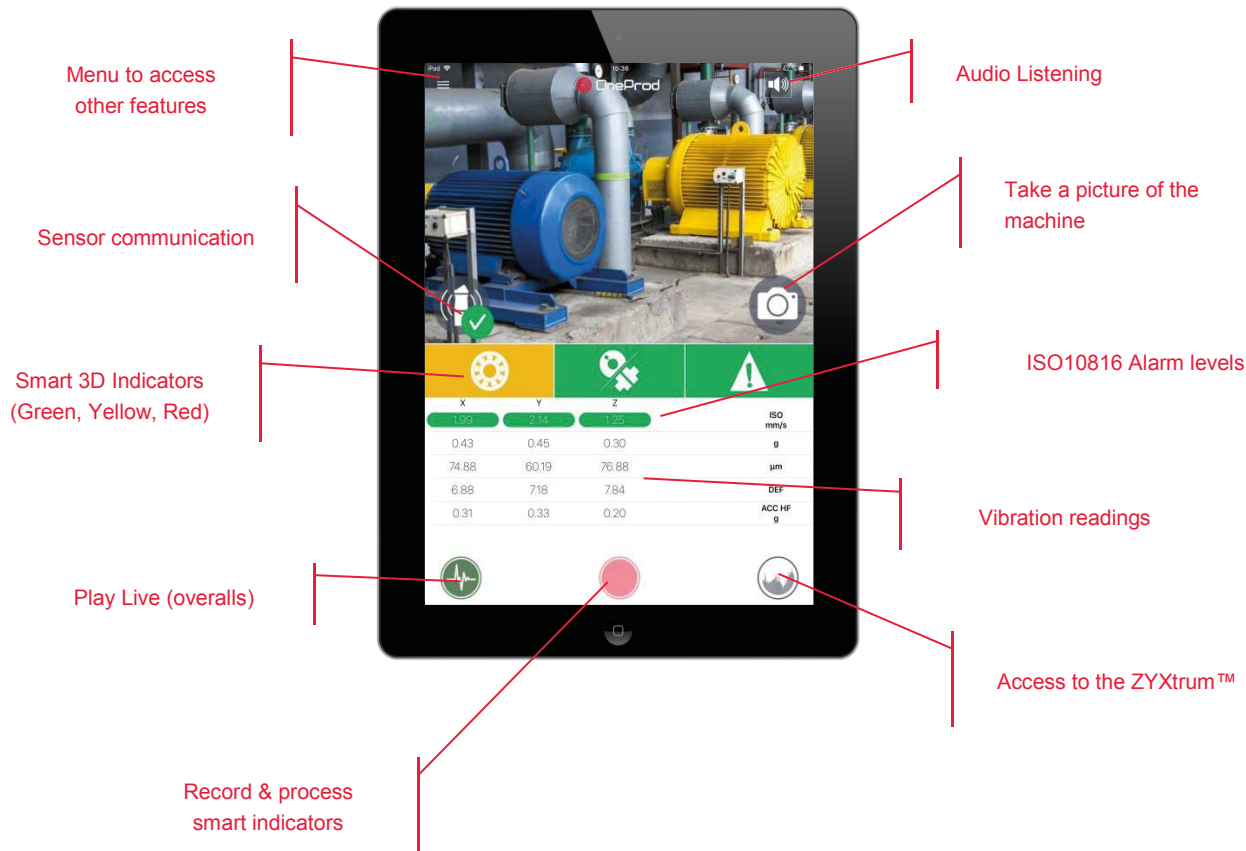
Reporting

Report format.....  
Communication .....

Screenshot available from any screen  
Screenshots can be sent through native functions of the smartphone or tablet (Email, MMS...)



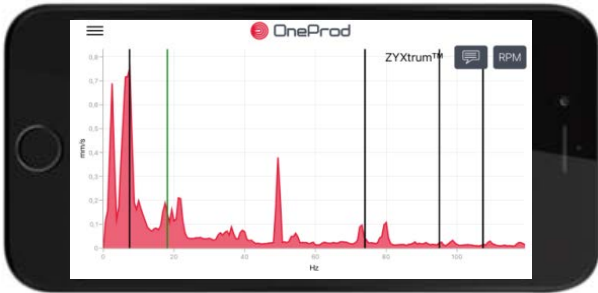
MAIN SCREEN ERGONOMICS



ONEPROD ZYXtrum™: THE TRI-AXIAL FFT DISPLAY

In addition to the vibration reading and smart indicators, the ONEPROD ZYXtrum™ combines the vibration from three directions into a single FFT display. This display accentuates the fault frequencies that can be observed in the signals.

It can then be easy to confirm the presence of a bearing fault with the automatic positioning of frequency markers, but also ease the communication with your experts when they are required.

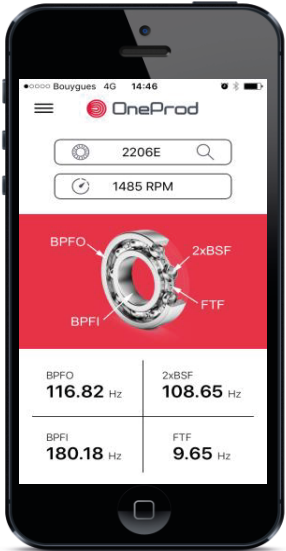


Example of bearing defect: one of the bearing fault frequency matches with a peak on the ZYXtrum™

|                                   |  |
|-----------------------------------|--|
| ZYXtrum™                          | FTTs measured in X, Y and Z are combined into single display                       |
| Resolution                        | 3200 lines   |
| Frequency range                   | 2 Hz to 2000 Hz  |
| Scale                             | Linear or Logarithmic  |
| Zoom                              | Touchscreen zoom capabilities  |
| Cursor                            | Single cursor with frequency, amplitude, and direction of the max value (X,Y or Z) |
| Bearing fault frequencies display | Markers on the ZYXtrum™  |
| Rotation speed adjustment         | Real rotation speed automatically setup from the ZYXtrum™                          |

BEARING FREQUENCY CALCULATOR

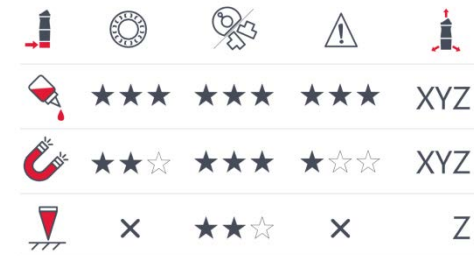
|                               |  |
|-------------------------------|--|
| Bearing references            | 30.000+ bearing references   |
| Search tool                   | Based on the OEM and/or bearing reference                                |
| Fault frequencies calculation | Automatic calculation of bearing fault frequencies: BPFO, BPFI, FTF, BSF |
| Rotation speed input          | Manual input or set up from the ZYXtrum™                                 |
| Fault frequency display       | Values, markers on the ZYXtrum™  |



PACKAGING & DELIVERABLES

- Each Bearing Defender is delivered in the following package:
- 1 Tri-axial 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

- Optional accessories (not included):
- Rugged Android smartphone or tablet
  - Cementing studs with glue for best measurement performances



Content of the Bearing Defender package



**Compatibility**  
iOS 9.3 or sup  
Android 4.4.2 or sup  
Smartphone & Tablets  
Universal app (icon-based)



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WIRELESS SENSOR SPECIFICATIONS

Hardware type

Reference ..... CAC1008000

Metrology

Three axial measurements ..... Synchronous acquisition in X, Y and Z directions  
Sampling frequency ..... 51.2 kHz on all axes (Fmax 20kHz)  
Sensing element ..... Piezoelectric / Annular shear mode  
Sensing element internal sensitivity, 24°C..... 100mV/g (numerically converted)  
Sensitivity adjustment ..... Factory-calibrated and adjusted  
Full scale..... 80 g  
Signal-to-Noise ratio..... > 80dB  
Amplitude non-linearity..... 1% max  
Frequency response after triaxial mechanical assembly:  
• ± 3 dB (Z)..... 0.4 Hz – 15 kHz  
• ± 3 dB (XY) ..... 0.4 Hz – 6 kHz  
Full bandwidth..... 20 kHz on all axes  
Accuracy ..... +/- 5% @ 120 Hz, 1g  
Transverse response sensitivity (120Hz, 1g)..... < 5% (< -26dB)  
Electrical noise, nominal:  
• Broadband 0 Hz–5 kHz ..... < 5 mg  
• > 1 Hz ..... < 20µg/√Hz  
• Peak velocity (after 1 integration on the time signal) ... < 0.13 mm/s

Physical

Dimensions ..... Ø42 x H116 mm  
Weight ..... 373g  
Mounting ..... M6 threaded hole  
Housing material ..... Stainless steel

Environmental

Operating temperature range ..... -20°C to 60°C  
Resistance to shocks ..... 5,000 g peak  
Resistance to continuous vibration ..... 500 g peak  
Protection..... IP65

Battery

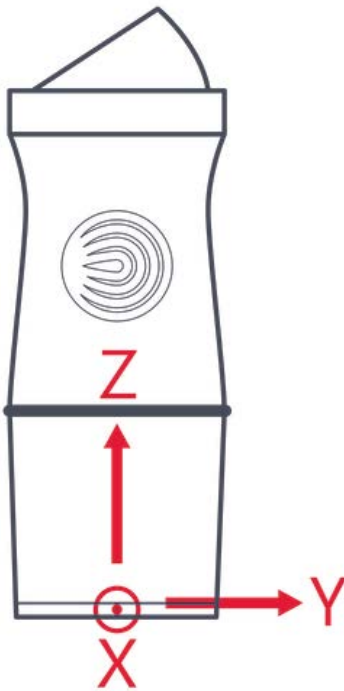
Type ..... Li-Ion  
Operating lifetime..... 8 hours  
Rechargeable ..... By USB (power supply adapter in standard delivery)  
Charging time..... ~8 hours with the standard 500 mA charge current.  
Automatic stand-by ..... After 10 min if no connection has been established

Communication

Wireless protocol ..... Wi-Fi Point to point  
Typical wireless range..... Up to 25 meters line of sight depending on the environment.  
Wi-Fi communication channel ..... User setting: 1, 6, 11  
Sync protocol ..... Proprietary  
Standard mobile systems compatibility..... iOS (9.3 or sup.), Android (4.4.2 or sup.)

Patented technology

Patent Number..... US 9,921,136



Sometimes, it just isn't possible to cater for your own condition monitoring using staff on site, however there may be many reasons for that. It could be something as simple as cost, complexity, lack of skill or knowledge.

Whatever your circumstances, there is a condition monitoring package to help keep your equipment in top operating condition.

Vibtek Reliability Engineering has an enormous amount of experience in the reliability of plant manufacturing equipment, maritime, offshore Oil & Gas and is also available to work with you - to keep your business operating.

INTEGRATED APPROACH

We will work with your maintenance team and, using Vibtek's reliability tools, processes and experience, make sure that our program improves reliability, availability, safety, energy optimisation and ultimately your company's bottom line!

We are able to provide a fully outsourced integrated condition monitoring service, train and equip your personnel and provide a tailor-made approach to suit your needs and budget.

Vibtek provide customers with a program that will be integrated into your maintenance operations where advice and reporting is fast, clear and practical and root cause analysis will be completed to eradicate persistent or critical faults; with investigation undertaken if necessary.

VIBRATION ANALYSIS  
FOR ROTATING EQUIPMENT

Vibration can be an indication of a developing fault condition and if left unchecked can cause impairment in other equipment and structures. Early detection of vibration is essential in order to avoid critical damage, expensive repair, unplanned downtime and possible health and safety hazards.

Vibration Analysis is a predictive maintenance method which allows early problem detection in rotating machinery such as gearboxes, fans, shafts, motors, compressors, pumps, mixers, dryers and in fact, almost any type of rotating machinery.

On rotating equipment, vibration monitoring can be used early to detect a wide range of defects and failure. An example of these might be: bearing problems, misalignment, unbalance, mounting soft foot, mechanical looseness, resonance, and many more. It will also enable you to take maintenance action before a failure in service brings your plant to a halt.

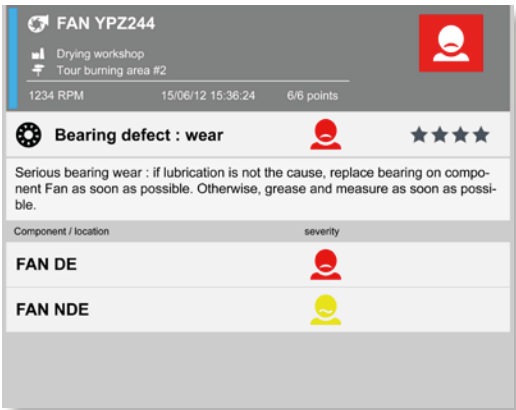
Vibtek's team of engineers provide UK-wide coverage of customer sites using only the most advanced wireless OneProd data collectors to capture vibration readings. These include; plant machinery with on the spot auto diagnosis & auto reporting, quickening up the defect identification process and allowing for faster repairs of assets, in comparison to waiting a number of weeks for an analysis report in by which time your equipment has failed



This data is uploaded to the Vibtek server, where our team of engineering experts analyse and report on thousands of vibration readings every year. Our team of engineers are certified ISO Cat 2 & 3 vibration analysts.

VIBTEK'S VIBRATION ANALYSIS SERVICES INCLUDE:

- Site visits for expert data collection & analysis
- Supply of OneProd Condition Monitoring Products and accessories
- Consultation on practical wireless remote monitoring solutions
- Design & Installation of hard-wired monitoring systems



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# ONSITE FIELD BALANCING

Imbalance in rotating machinery causes excessive vibration - leading to unacceptable noise, looseness, substantially reduced support bearing & structure life and, if left unchecked - inevitable catastrophic failure in service. Vibtek's Onsite Field Balancing Service identifies the root cause of excessive machinery vibration so that problems can be addressed before your plant lets you down..

Using sophisticated Vibration Analysis technology to confirm imbalance (or identify other sources of root problems), our specialist Condition Monitoring Engineers will calculate the addition or subtraction of balance weights to the rotating machinery to reduce unbalance to within manufacturers' guidelines and ISO10816-3 and ISO1940/1 tolerance.



## INTEGRATED APPROACH

Vibtek's Onsite Balancing Service can be used to increase the reliability of the following plant:

- Fans
- Pump Impellers
- Paper Machinery rolls, print rolls
- Parts of process plant machine
- Centrifuge Drums
- Flywheels

Vibtek's Balancing Report provides a full, detailed explanation of findings, measurements and corrective actions taken - with confirmation of machine compliance within operating tolerances.



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[www.vibtek.co.uk](http://www.vibtek.co.uk)