

Industrial Motors  
Commercial &  
Appliance Motors  
Automation  
**Digital &  
Systems**  
Energy  
Transmission &  
Distribution  
Coatings

# WEGscan100

Technology  
**driving results**



Driving efficiency and sustainability



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# S U M M A R Y

**WEGscan100**

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**WEGsense**

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**WEGsync®**

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# WEGscan100

Technology driving  
results





# Sensor technology and software for advanced diagnostics

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The **WEGscan100** is an innovative solution for online monitoring of equipment fleets and assets, ensuring operational excellence through predictive analytics.

The **WEGscan100** collects data such as temperature, three-axis vibration, magnetic field, and other relevant asset information. With the development of this sensor, WEG created and patented two innovative technologies: **WEGsense** and **WEGsync**® (page 7).

To enhance industrial maintenance management, the **WEGscan100** integrates with a cloud-based solution — **WEG Motion Fleet Management** — for data storage, advanced analysis by technicians or specialists, and AI-powered autonomous diagnostics. This solution enables the reduction of the fleet's operational cost (Total Cost of Ownership – TCO) through condition monitoring with IoT (Internet of Things) technology.



During the development of the **WEGscan100** sensor, aimed at expanding applications beyond electric motors, four technological design drivers were adopted:



**+energy**

The energy system was optimized for improved battery usage and more sophisticated data acquisition. Now also available with external power supply.



**+flexibility**

Modular and versatile, the new sensor and software can be customized and applied to virtually any type of equipment or asset.



**+robustness**

Compact and resistant, the new WEGscan, with its polyamide housing, withstands industrial challenges, ensuring reliability even under extreme conditions.



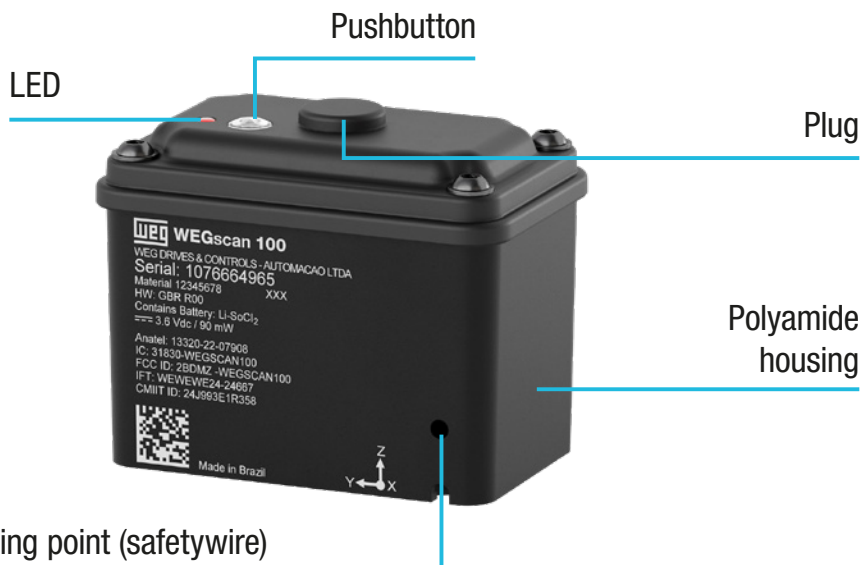
**+sensing**

With **WEGsense** and **WEGsync**® technologies, it is possible to perform earlier and more accurate diagnostics, while simplifying complex analyses.



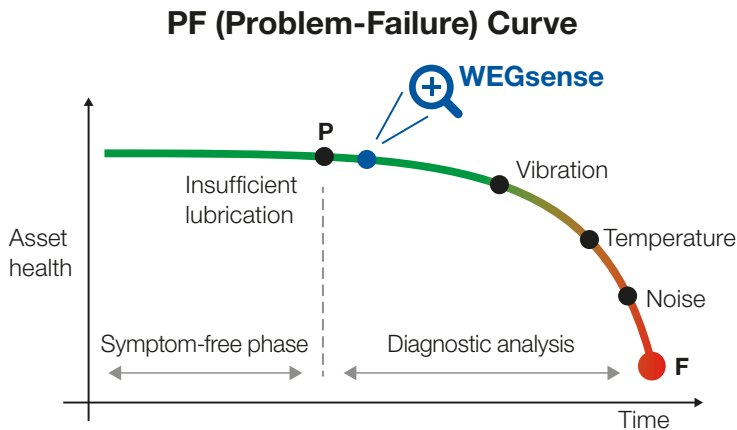
**+connectivity**

Extended range and improved communication enable broader and more functional use of the sensors. Measurements and updates of sensors can be requested via gateway.



WEGsense

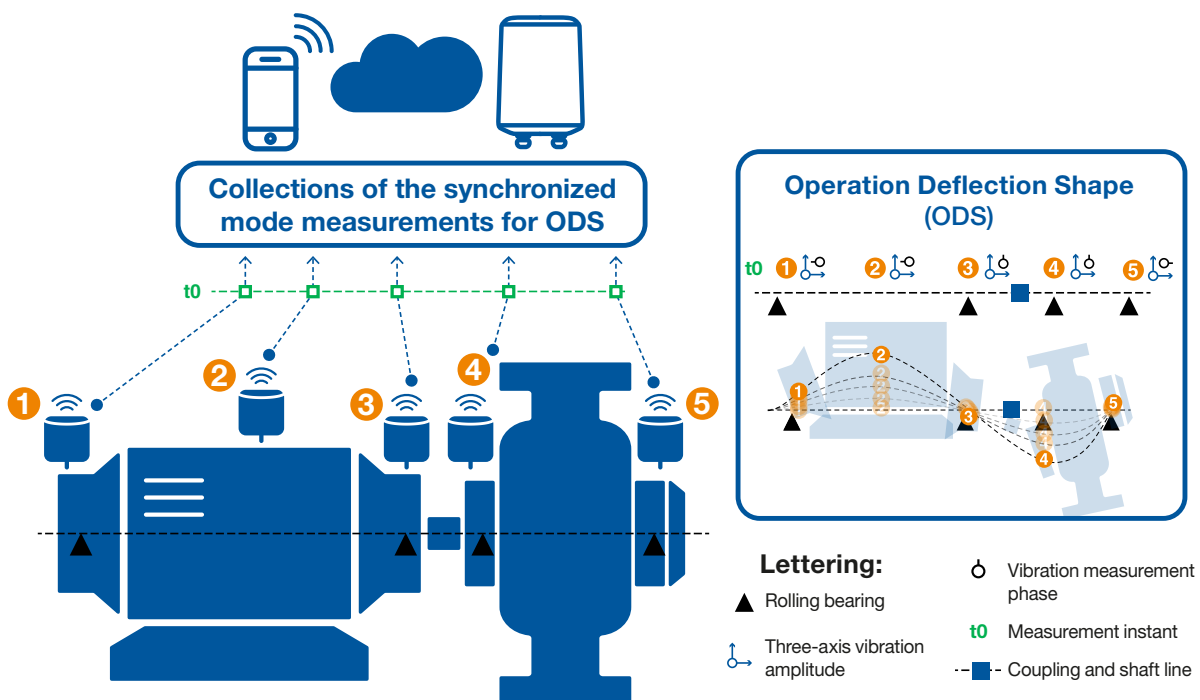
# Technology for detecting and diagnosing incipient mechanical failures



The **WEGsense** technology combines sensor measurements with state-of-the-art technology and WEG advanced algorithms for **EARLY** detection of failures in the monitored asset, such as degradation of bearing lubrication even before the health of the bearing is impaired.

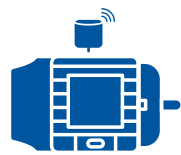
WEGsync®

**WEGsync®** technology combines synchronized vibration measurement with multiple sensors and advanced WEG algorithms for **structural deformation and phase analysis** of monitored assets. With **WEGsync®**, it is possible to qualitatively assess structural weaknesses of the application (via ODS), such as: regions of highest deformation in the asset, coupling, clearance, and fastening issues, verification of rotor unbalance planes, among others.

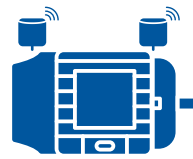


# Flexibility in asset monitoring

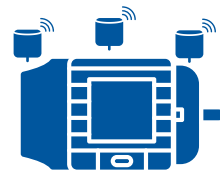
With **WEGscan100**, electric motors can be equipped in different ways, with one, two or three sensor configurations, as shown below:



1- sensor option



2- sensor option



3- sensor option

**Features**

Bearing vibration measurement



Load and energy consumption estimation



Winding temperature estimation



WEGsense for early detection of bearing failures



# WEG Motion Fleet Management

## Online monitoring and intelligent management of equipment and asset fleets



**WEG Motion Fleet Management** is the ideal solution to monitor and maximize the availability of equipment and asset fleets. Based on cloud computing technology, asset monitoring can be accessed anytime and anywhere. The solution is structured in three layers: Management, Specialist, and Exchange—respectively designed for data visualization and management, advanced analysis supported by Artificial Intelligence, and integration with external systems.

To keep pace with the technological advancements introduced by **WEGscan100**, **WEG Motion Fleet Management** has also received numerous enhancements, further expanding its potential for online monitoring and asset management.

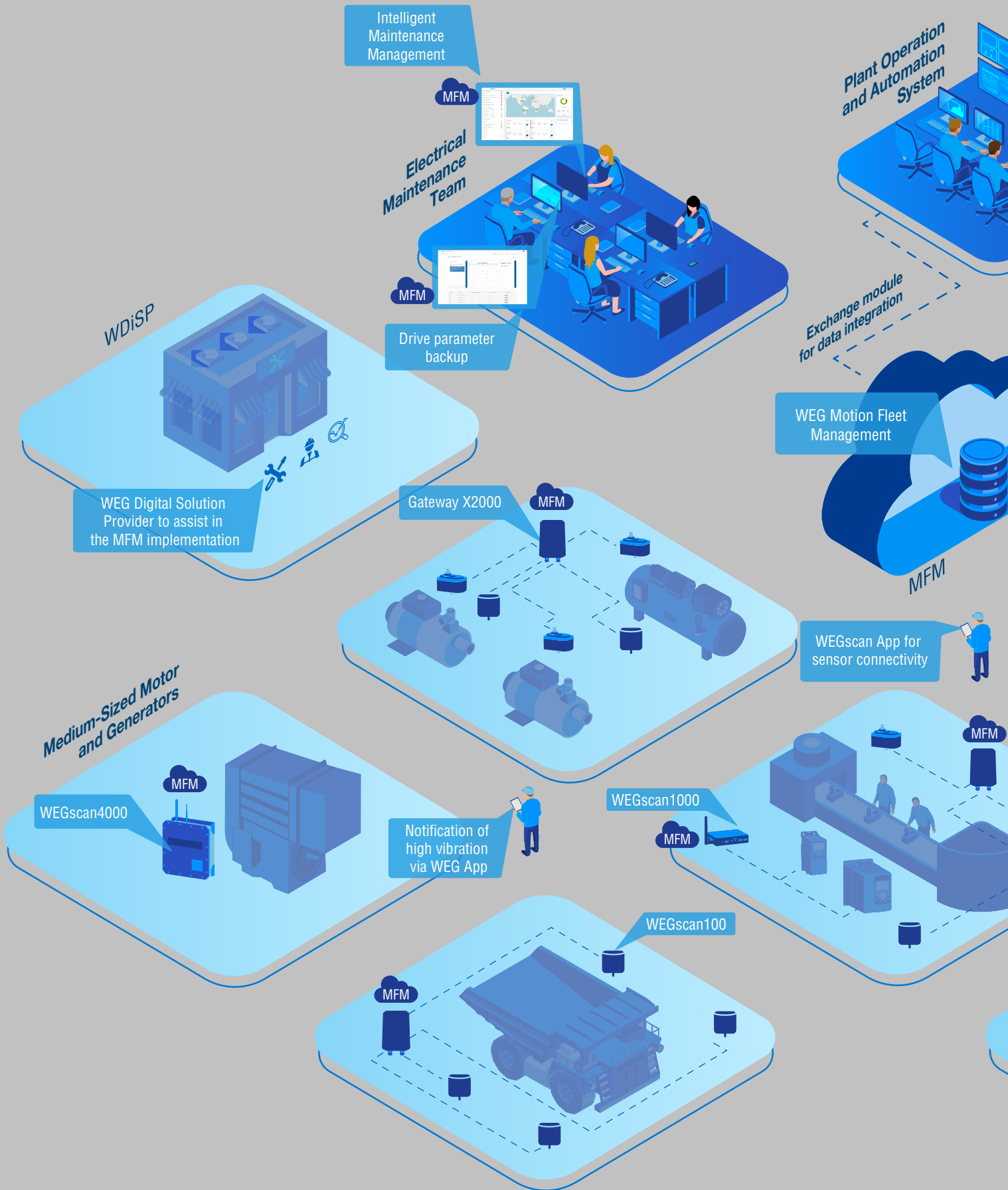
With **WEG Motion Fleet Management**, it is possible to understand the operational condition of equipment and assets in general, applied across any type of industry or installation. Through periodic data collection and advanced processing—both at the edge and in the cloud—valuable insights are generated. This enables the implementation of predictive maintenance plans, based on the operational condition of the fleet (condition-based maintenance). This approach reduces unplanned downtime, optimizes repair actions, and accelerates decision-making for operations and maintenance teams. The final result is increased availability and reduced Total Cost of Ownership (TCO) of the drive fleet.

Some key features of **WEG Motion Fleet Management** include:

- Advanced vibration signals analysis module<sup>1)</sup>
- Asset criticality prioritization dashboard
- Asset trees for hierarchy organization
- Advanced alert settings, by trend and spectral band
- Maintenance module with features and integration with CMMS software<sup>2)</sup>
- WEG Digital Notify app
- **Exchange** module for data integration

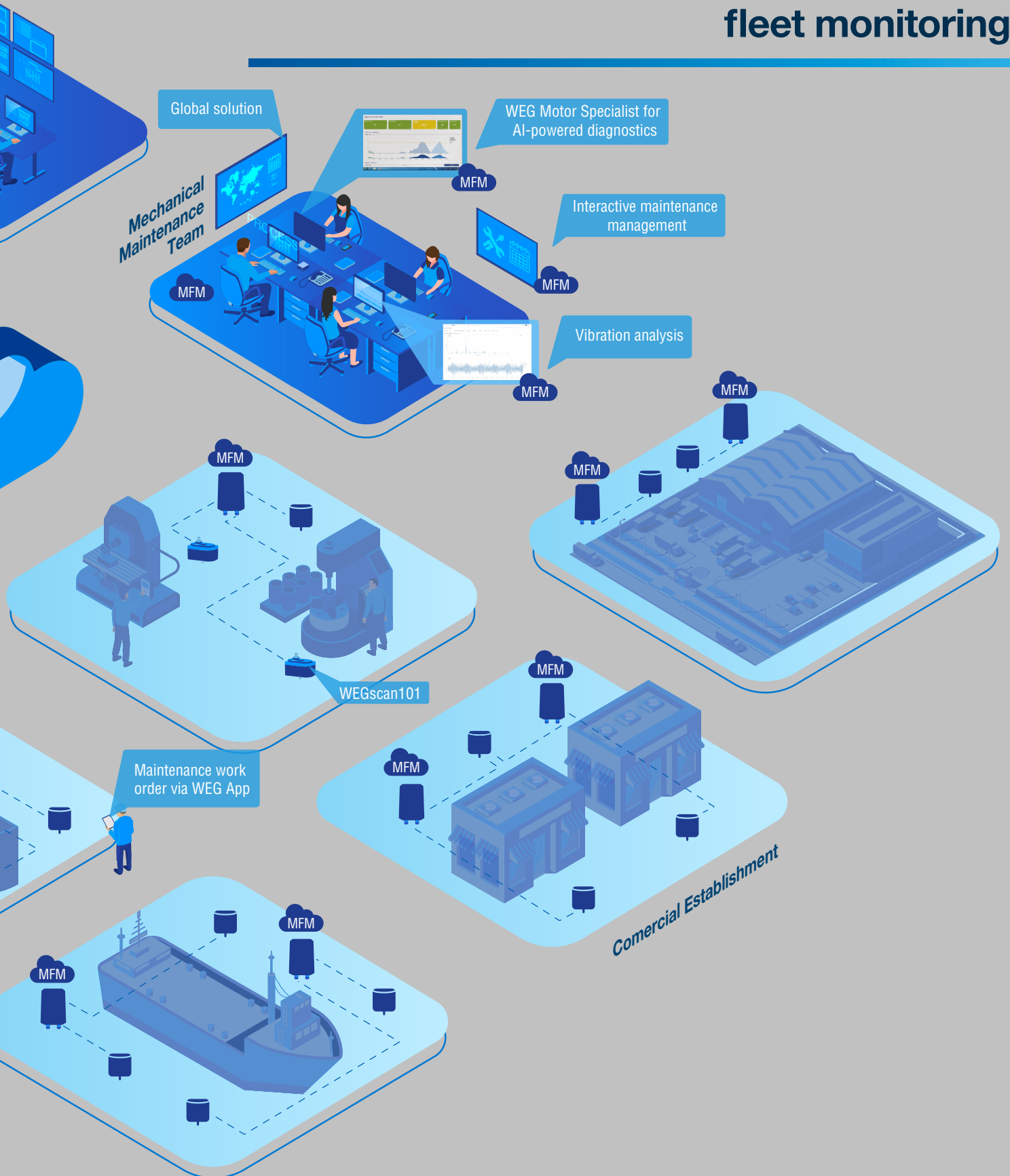
Notes: 1) Applicable standard for vibration analysis: ISO 20816.  
2) CMMS - Computerized Maintenance Management System.





# WEG Motion Fleet Management

## A single solution for complete industrial fleet monitoring



**WEG Motion Fleet Management** is a modular solution, with a flexible structure based on layers, which meets the customers' needs. With this solution, it is possible to monitor Motion assets online: low and medium voltage drives, motors and generators, as well as gearboxes, gearmotors, compressors, pumps, fans/exhausters, bearings, conveyors and many other machines and assets.

For such monitoring, data is collected (digitalization) and sent to the cloud by the WEGscan & Gateway layer. Data is stored and viewed in a holistic and specific way through the numerous resources available in the MFM Management layer. The upper layer offers advanced modules, such as the Specialist, which employs autonomous algorithms for failure diagnosis and energy consumption analysis, and the **Exchange**, for data integration with systems outside the MFM.

**WEG Motion Fleet Management - A single solution for complete industrial fleet monitoring**

**Diagnostics and Integration**

**Specialist**  
Advanced algorithms for failure diagnosis and energy analysis



**fleet**

**Virtual assistant**



**AI insights for bearing failures**




**Exchange**  
Integration with third party systems and platforms via REST API



**fleet**

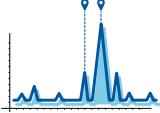
**Main Application**

**Management**  
Intelligent management and monitoring of the fleet. Data storage, maintenance notifications, reports, intuitive dashboard.




**fleet**


**Software**




Vibration analysis



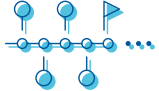
Digital Notify APP




Parameter backup




Maintenance module




History and document management



Data acquisition for diagnostics



Asset tree



WEGscan APP

**WEGscan & Gateway**



WEG Motor Scan
WEGscan 100
WEGscan 101
WEGscan 200
BT500
X2000
WEGscan 1000
WEGscan 4000

**Hardware**

**Motion Assets**



Equipment and assets in general
Inverters, soft-starters, relays, etc.
Motors and generators

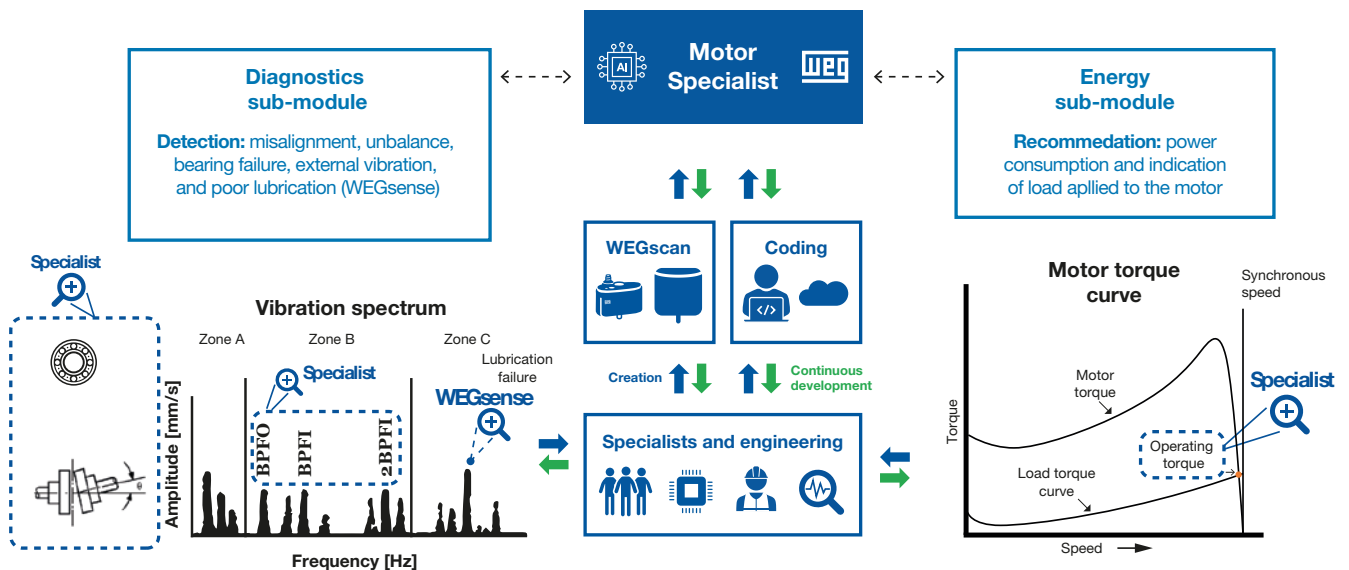
# WEG Motor Specialist

## Smartly driven motors

**WEG Motor Specialist** is a solution available in the **WEG Motion Fleet Management** for advanced analysis of data collected by the **WEGscan100**, which features WEG expertise in vibration analysis and energy consumption for electric motors from any manufacturer.









Created by WEG specialists and validated in the company's laboratories and manufacturing plants, the **WEG Specialist** modules apply Machine Learning and Artificial Intelligence algorithms to the collected data. There are two autonomous sub-modules, minimizing the need for a specialized professional's analysis. With this tool, the user will receive a notification with early failure diagnostics to carry out the maintenance planning accurately.

To activate a Specialist subscription, the respective **WEGscan100** must have an active subscription for the **Management**. **WEGscan100** is supplied with a subscription to the **Management** and **Specialist** for 1 year.



*Note: functionality available for induction motors from any manufacturer. For the proper operation of the WEG Motor Specialist function, the sensor must be installed according to the technical directions in the manuals, in addition to setting the motor data in the MFM.*

# Complete monitoring

-  Vibration analysis module
-  Operation time
-  Sophisticated operation
-  Temperature
-  Automatic collection
-  Maintenance management
-  Advanced alerts
-  Fleet report

**WEG MOTOR SPECIALIST**

-  Diagnostics
-  Energy
-  +Energy
-  +Flexibility
-  +Sensing
-  +Connectivity



**SH3L1EF**  
The limit (6.20 mm/s) has been exceeded.  
Radial Vibration - Y = 6.31 mm/s  
09/21/2022 07:22

**Compressors 5**  
Filter Cleaning - Low  
Status: Open  
Due Date: 10/24/2022

**Tower 4**  
Bearing Replacement - High  
Status: Open  
Due Date: 10/12/2022

**Smartphone Data:**

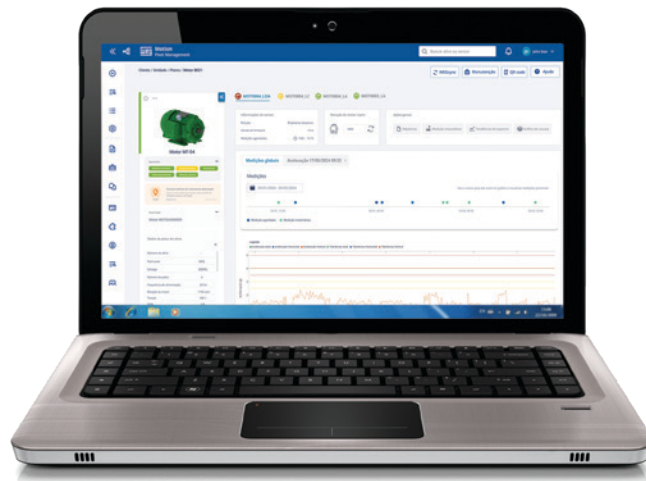
- Carga: 76%
- Pressão: 34,3 bar
- Temperatura: 36,7
- Tempo de operação: 80h
- Velocidade: 893 rpm
- Vibração axial: 16,87 mm/s
- Vibração radial X: 2,54 mm/s
- Vibração radial Y: 7,32 mm/s

# Technology for advanced data analysis and intelligent equipment and asset management

Knowing that equipment or an asset is experiencing problems is often not sufficient to plan corrective actions, schedule maintenance, or determine whether an emergency production line shutdown is necessary. To assist in addressing these types of issues, WEG developed IoT technologies for condition monitoring of equipment and assets, making it possible to assess the severity and origin of faults. Such technology is enabled by the **WEG Motion Fleet Management** solution, and by the **WEGscan** sensors.



In a productive environment with difficult deadlines to meet and aggressive goals, knowing the operating condition of the equipment to answer the questions “how severe is this failure?”, “how long has this failure existed?” and “should we act now?” is crucial. It was to answer these and other kinds of questions that the **vibration signal analysis module** and the **WEG Specialist** module were created: the former for human analysis, and the latter for autonomous analysis by means of algorithms with Machine Learning and Artificial Intelligence.



# Vibration signal analysis module

The WEG solution is designed to provide more than just an alert. For this reason, the module for vibration signal analysis is available in the Management layer of the MFM and has numerous tools for exploration and advanced analysis of the signals collected by the WEG IoT sensors. While high vibration levels may indicate early problems, further analysis can determine the cause of the problem, such as:

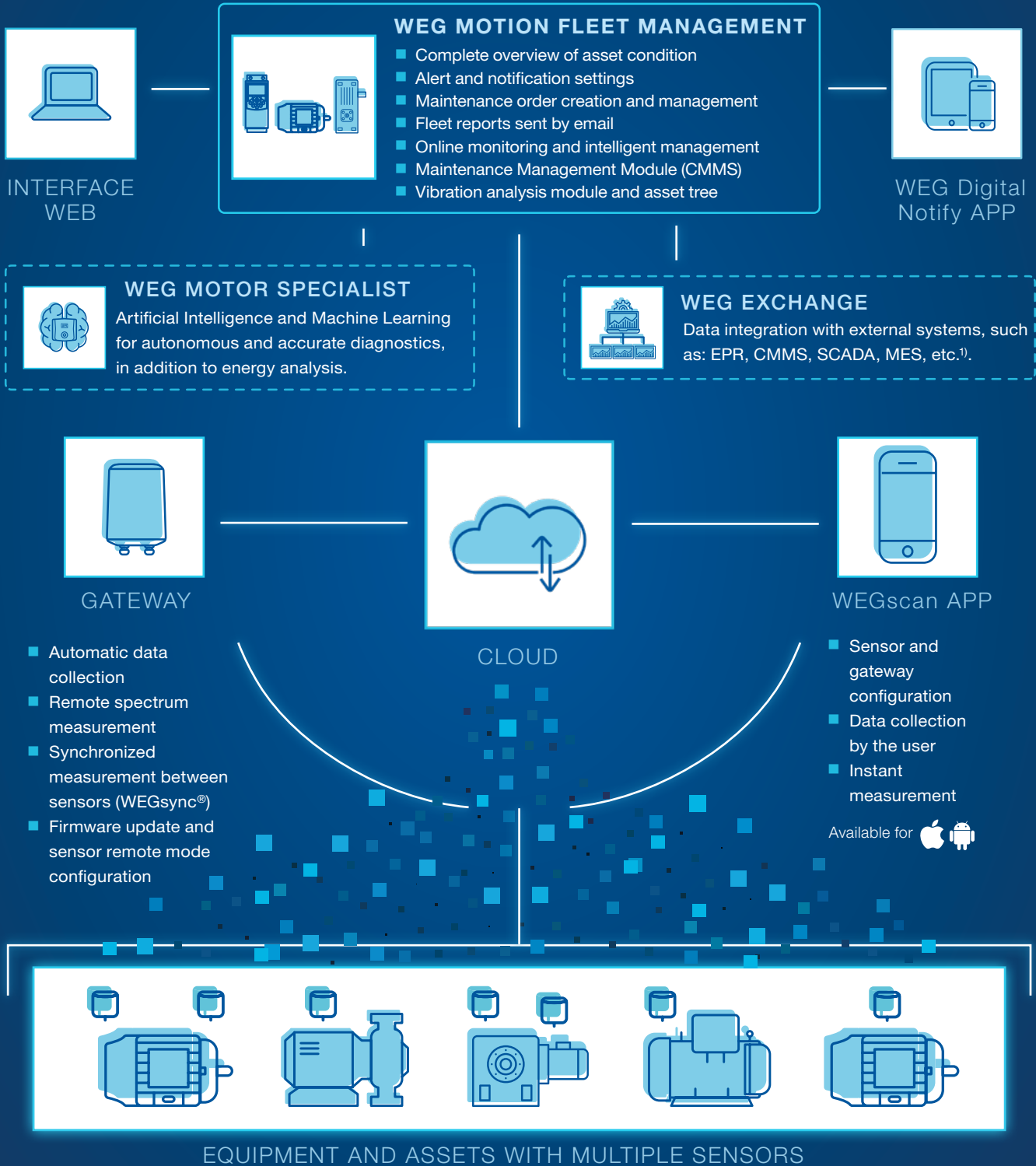
- Lubrication failure
- Bearing failure
- Misalignment
- External vibration
- Imbalance
- Broken bars
- Runout
- Gear backlash
- Defective or worn out gears
- Cavitation
- Lack of rigidity
- Eccentricity
- Friction (dragging)
- Defective belts

In this module, it is possible to explore data both spectrally (FFT - Fast Fourier Transform), and in the time domain using numerous features, such as:

- Tool in the concept of multiple tabs to organize and simplify the analyses.
- Global RMS vibration trend charts, with time window and multipoint alert configuration.
- Spectrum (displacement, speed and acceleration) and waveform in the time domain charts.
- Functions: envelope, autocorrelation and band, high and low-pass filters.
- Alarm by vibration spectrum band, for speed and acceleration.
- Cursors for analysis: harmonic sidebands (in dB), difference between cursors (Delta), peak-to-peak (pk-pk) etc.
- Fast and instantaneous full spectrum vibration measurement.
- Bearing database for diagnosis support.
- Cascade chart with indicative magnitude of alarms.



# WEG Motion Fleet Management structure



Note: 1) Automation system (SCADA), enterprise resource planning (ERP), computerized maintenance management system (CMMS), manufacturing execution and control systems (MES) or any other proprietary software.



## WEGscan100 data sheet

General features	
Housing material	Polyamide
Encapsulation	Epoxy resin
Mass	186 g (6,56 oz)
Dimensions (Height x Width x Depth)	53.6 x 70 x 45 mm (2.11 x 2.75 x 1.77 in)
Protection rating	IP66 and IP67
Color	Black
Mounting	With screw or glued
Electronics temperature	-40 °C to 110 °C (-40 °F to 230 °F) <sup>1)</sup>
Visual indication (LED)	Red
Accelerometer	Triaxial MEMs
Impact limit	IK07
Air relative humidity	Up to 95% – non-condensing
Compliance	ANATEL, CE, FCC, ISED, UKCA, MTC, SUBTEL, RCM, ICASA, IMDA, CRC, IFT and NOMT
Certifications for explosive atmosphere <sup>2)</sup>	
ATEX	UL 25 ATEX 3421X I M1 Ex ia I Ma II 1 G Ex ia IIC T4 Ga -40 °C ≤ Ta ≤ 80 °C (-40 °F ≤ Tamb ≤ 176 °F)
INMETRO	UL-BR 25.1138X Ex ia I Ma Ex ia IIC T4 G -40 °C ≤ Ta ≤ 80 °C (-40 °F ≤ Tamb ≤ 176 °F)
IECEX	IECEX ULBR 25.0004X Ex ia I Ma Ex ia IIC T4 Ga -40 °C ≤ Ta ≤ 80 °C (-40 °F ≤ Tamb ≤ 176 °F)
NEC501 (E520639)	INTRINSICALLY SAFE EQUIPMENT
	Cl I, Div 1, Gr A, B, C, D, T4
	Cl II, Div 1, Gr E, F & G
CEC18 (E520639)	-40 C ≤ Ta ≤ 80 °C (-40 °F ≤ Tamb ≤ 176 °F)
	Cl I, Zn 0, AEx ia IIC T4 Ga
	-40 C ≤ Ta ≤ 80 °C (-40 °F ≤ Tamb ≤ 176 °F)
UKCA	UL25UKEX3022X
MASC	MASC MS/25-8464X
Data storage	
Sensor storage	1 month
Cloud storage (MFM)	1 year <sup>3)</sup>
Battery	
Material	Primary cell of Lithium Thionyl Chloride (Li-SOCl <sub>2</sub> )
Rated capacity	1,65 Ah (2x)
Rated voltage	3,6 V
Life expectancy	3 years <sup>4)</sup>
Suggested battery	Xeno – XLP-055F
Communication module	
Frequency range	2,400-2,480 MHz
Range (maximum)	~100 m (~330 ft) <sup>5)</sup>
Bluetooth <sup>®</sup>	BLE version 5.1
Maximum output power	6 dBm
APP communication	Android and iOS
Measurements	
Vibration	3 axes
	Maximum frequency: 13.3 kHz
	Maximum amplitude: ±16 g
	Resolution: 12,288 lines
Surface temperature	Ventilated motors -40 °C to 135 °C (-40 °F to 275 °F)
	Unventilated applications -40 °C to 110 °C (-40 °F to 230 °F)
Load and speed estimation	< 10% (error)

Notes: 1) In classified environments (Explosive Atmosphere), the ambient temperature cannot exceed 80 °C (176 °F).

2) WEGscan100 with certification for classified areas: lead time on request.

3) The standard is one year. Longer time, upon request.

4) Estimated value, considering 24 measurements per monitoring day, 2 daily spectral measurements, and operating temperature between 20 °C (68 °F) and 60 °C (140 °F).

5) Reference in open field. Bluetooth<sup>®</sup> communication distance may vary with the presence of obstacles.

# WEGscan100 & MFM data sheet

## Available software features

### Management layer

- 3-axis vibration
- Surface temperature
- Running time
- Power supply frequency
- Speed (rpm)
- Relevant functionalities of the MFM Software
  - Intuitive dashboards for management insight and technical analysis
  - Equipment, asset and plant operation reports
  - Asset trees for hierarchy organization
  - Customizable advanced alert by trend and spectral band
  - Maintenance module, with CMMS functionalities<sup>3)</sup>
  - WEG Digital Notify app
  - Exchange module for data integration
- Advanced vibration signal analysis module<sup>4)</sup>
  - Vibration trend charts
  - Spectrum (displacement, speed and acceleration) charts
  - Waveform in the time domain charts
  - Envelope functions and autocorrelation
  - Band, high-, low-pass filters
  - Alarm by spectrum band
  - Analysis cursors with metrics
  - Remote vibration measurement with spectrum
  - Cascade chart with alarm indication

### WEG Motor Specialist

- Energy sub-module
  - Load (%)<sup>1)</sup>
  - Energy consumption (kWh)<sup>1)</sup>
- Diagnostics sub-module
  - Unbalance<sup>1)2)</sup>
  - Misalignment<sup>1)2)</sup>
  - Rolling bearings<sup>1)2)</sup>
  - Lubrication (WEGsense)<sup>1)2)</sup>
  - External vibration<sup>1)2)</sup>

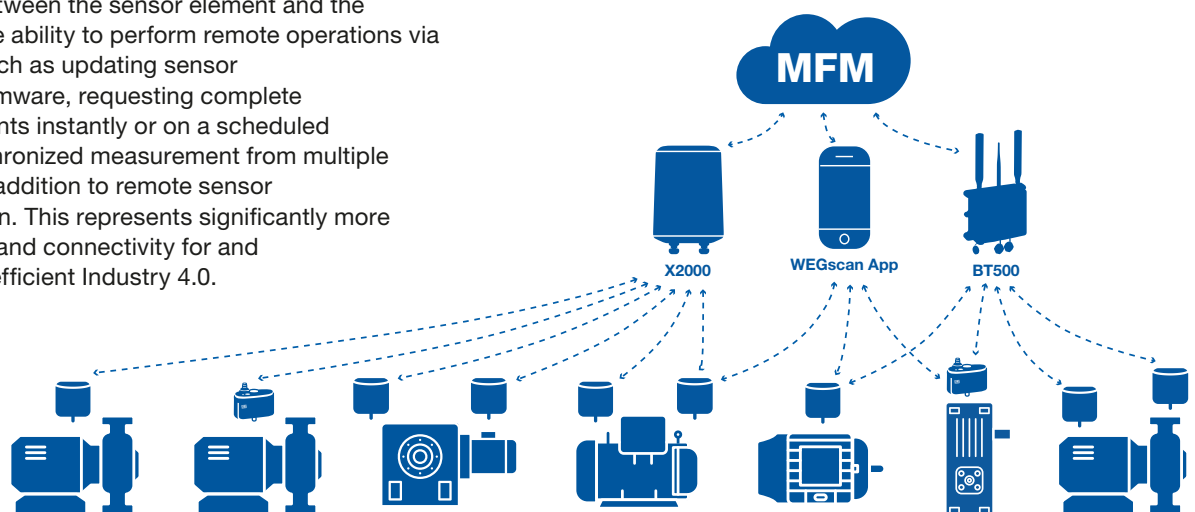
Notes: 1) Resource available for direct-online starter or soft-starter.  
 2) Resource available for frequency inverter drive.  
 3) Computerized maintenance management system.  
 4) Applicable standard for vibration analysis: ISO 20816.

## X2000 and BT500 gateways

# Complete monitoring

The WEG X2000 and BT500 Gateways send real-time information from the **WEGscan100** sensor to the cloud via Wi-Fi, Ethernet cable or 3G/4G network, allowing remote online monitoring of the drive fleet in a safe and rapid way.

Some differences of the new technology employed between the WEG Gateway and the **WEGscan100** include: greater distance between the sensor element and the gateway, the ability to perform remote operations via gateway, such as updating sensor software/firmware, requesting complete measurements instantly or on a scheduled basis, synchronized measurement from multiple sensors, in addition to remote sensor configuration. This represents significantly more technology and connectivity for and even more efficient Industry 4.0.







# Global presence

is essential, as much as understanding your needs.



## Global Presence

With more than 49,000 employees worldwide, WEG is one of the largest electric motors, electronic equipments and systems manufacturers. We are constantly expanding our portfolio of products and services with expertise and market knowledge. We create integrated and customized solutions ranging from innovative products to complete after-sales service.

WEG's know-how guarantees our **WEGscan100** are the right choice for your application and business, assuring safety, efficiency and reliability.



**Availability** is to have a global support network



**Partnership** is to create solutions that suits your needs



**Competitive edge** is to unite technology and innovation



# Learn More

High performance and reliable products to improve your production process.



Excellence is to provide a whole solution in industrial automation that improves our customers productivity.

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 [youtube.com/wegvideos](https://youtube.com/wegvideos)

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Cod: 50161095 | Rev: 00 | Date (m/y): 11/2025.

The values shown are subject to change without prior notice.  
The information contained is reference values.