



WEG Motion Fleet Management

Applied IoT Solution to leverage the industrial fleet management.



Why WEG Digital Solutions



- Maintenance resource limitations often result in adoption of a 'Run-to-Fail' approach to equipment reliability management
- Manufacturers with this approach to equipment reliability often experience significant reductions in production time and increased operating cost
- **WEG Digital Solutions** offer a cost effective and robust means of developing Predictive and Proactive equipment maintenance programs allowing manufacturers the ability to better prevent unplanned disruptions to production



82%

Had Unplanned Downtime in prior 3 years

4X

Increased Maintenance Cost of Run-to-Fail Model

10%

Potential Production Time Reductions

\$50B

Cost of Unplanned Downtime per Year

Source: [Forbes Technology Council, Unplanned Downtime Costs More Than You Think, February 22, 2022](#)

Why WEG Digital Solutions



Reduction of unscheduled downtime



Optimization of the maintenance routine



Efficiency in predictive maintenance scheduling



Savings with replacement of spare parts

- Cost Effective Single Platform enables Monitoring of multiple assets and plants
- Drive Fleet management view with reports and indicators
- Layout customization for multi-level navigation (geolocation, site, plant, device)
- Easy tracking and identification of Critical and High Priority assets
- Multi-platform alert and notification based on the Operating Thresholds you define
- Comprehensive array of Dashboards and Indicators to enable easy evaluation of operating data
- Statistical and Artificial Intelligence based Predictive capability
- Supports development and execution of Total Cost of Ownership programs

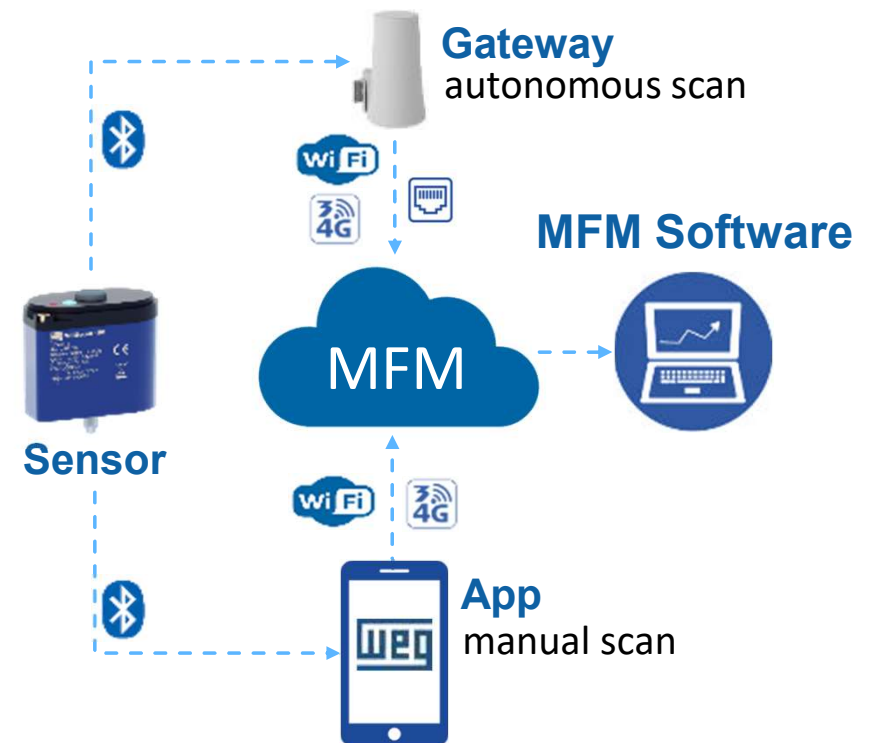


WEG Motion Fleet Management



System Overview

- WEG Sensor able to be mounted on electrotechnical and mechanical equipment – WEG and other manufacturers
- Two Methods to upload the sensor data to WEG's Motion Fleet Management Cloud:
 - Gateway – autonomous scan
 - WEGscan App – manual scan
- Sensor Data Storage – 30 days at the sensor, 1 year in MFM Cloud
- Advanced data visualization using WEGscan App and MFM Software
- Data Exchange and Analytic Solutions provided via WEG EXCHANGE and WEG SPECIALIST Solutions



WEG Motion Fleet Management Overview



A single solution for the complete monitoring of the industrial fleet

Diagnostics & Integration

Specialist

Advanced diagnostics algorithms for failures and consumption analysis



Exchange

Integration with third party systems and platforms via REST API



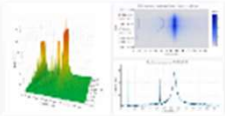
Main Application

Management

Asset monitoring and management. Data storage, maintenance notifications, reports, intuitive dashboard...



Vibration Analysis



Maintenance Module

Parameter Backup



Digital Notify APP

Data Acquisition for Troubleshooting



Asset Timeline

WEGscan & Gateways



Motion Assets



Electric Motor, Gearbox, Pump, Compressor, etc.



VFD, Soft-Starter, Relays etc.



Motors and Generators

WEG Motion Fleet Management Overview



Sensors



WEGscan App and Gateways



WEG Motion Fleet Management V2.0



WEGscan 100 Sensor



Sensor Characteristics

- 3-axis vibration measurement up to 16 g ($\sim 145 \text{ mm/s}^2$ RMS)
- Maximum spectral frequency of 13.3 kHz and 12,288 resolution lines
- Surface temperature measurement -40°C to 135°C (with ventilation)
- Sensor ambient temperature (electronics): -40°C to 80°C
- Power supply with replaceable Lithium-Thionyl Chloride (Li-SOCl₂) battery¹
- Data storage: 1 month in the sensor and 1 year in the MFM software
- Gateway communication: Bluetooth 5 connected mode
- Measurement interval and modes: customizable
- Protection rating: IP66
- Cloud software: WEG Motion Fleet Management with subscription plans
- Advanced functions: WEGsense, WEGsync and WEG Motor Specialist



- Similar functional characteristics as the WEGscan 100 Sensor except uses an external power supply
- Ideal for applications with a high number of daily measurements
- Utilizes external power supply via cable¹ with M8 connector
- Minimum source capacity: 100 mA (maximum consumption 25 mA per sensor)
- Protection rating: IP66

Measurement via Gateway

- Communication with MFM (cloud server) via internet:
 - Wi-Fi
 - 3G/4G Modem/Dongle (LTE)
 - Ethernet cable



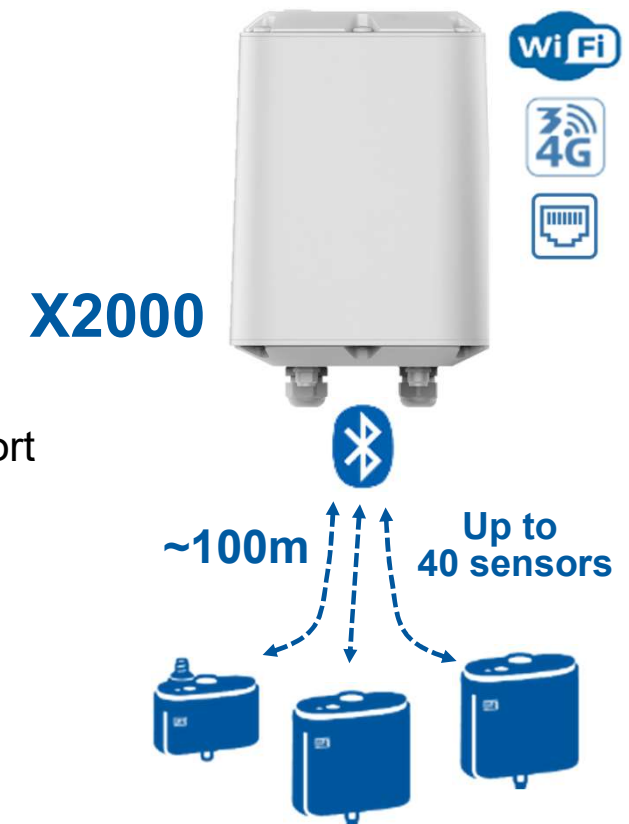
¹ External Power Supply must be purchased separately and is not supplied with the sensor.

X2000 Bluetooth to Ethernet Gateway



Consolidate Communications with Multiple Sensors using the X2000 Gateway

- Supports up to 40 Sensors per Gateway
- Range: 100 meters in an industrial environment¹
- Powered via PoE (power over ethernet) or provided power adapter
- Connectivity to the Internet via:
 - Wi-Fi
 - 3G/4G Modem/Dongle (LTE)
 - Ethernet cable
- Available Communication protocol is Message Queuing Telemetry Transport (MQTT) with Transport Layer Security (TLS)
- Communication protocol with sensors is Bluetooth 5
- Configured via Motion Fleet Management



¹ Distance between sensors and Gateway may vary based upon variations in installation and facility. See manual for installation details and considerations.

WEGscan Mobile App

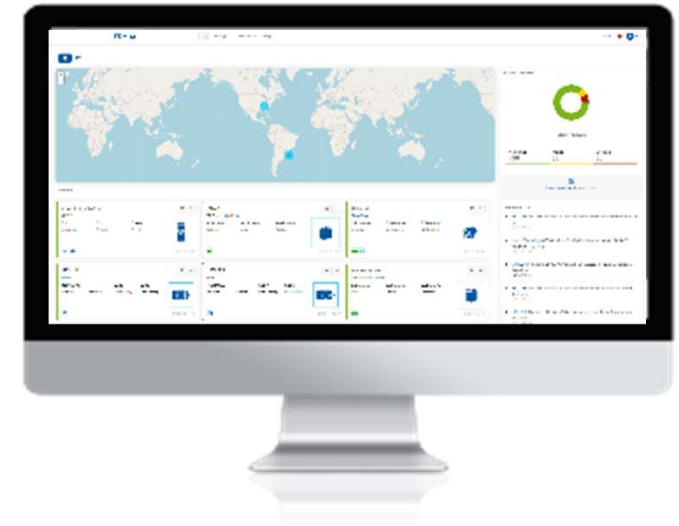


App Features

- Sensor and gateway configuration
- Data collection using Bluetooth® & Upload to MFM
- Performs the sensor reading (manual scan)
- Visualization of instantaneous data
- FFT measurement and visualization



Motion Fleet Management



WEGscan
Motor monitoring
WEG Equipamentos Elétricos S/A
★★★★★ 4.6 • 11 Ratings
Free



Motion Fleet Management Software Overview



Motion Fleet Management Overview



WEG MFM

Manage Modules Help

EN Will



- Range of Assets Monitored in a Single Environment
- Cloud Data storage for 1 year (live access)
- Ability to prioritize Critical and High Priority Assets

Assets overview



Total: 478 Assets

Healthies
409

Alerts
33

Criticals
36



Plant health and status data

Favorites

CFW11_BTG02A10

CFW11

0 V

Voltage (V)

0 A

Current

0 RPM

Speed



3/8/23, 9:00 AM

FanV2

WEGscan 100 - Motor

0.14 mm/s

Horizontal

0.11 mm/s

Axial

0.07 mm/s

Vertical



3/8/23, 9:00 AM

HFSL1EF

Motor Scan

1.92 mm/s

Vib. Axial

3.16 mm/s

Vib. Radial-Y

3.84 mm/s

Vib. Radial-X



3/8/23, 10:00 AM

HFSL1IR

Motor

NORMAL

Motor line

Application

6207

Front Bearing

6206

Rear Bearing



3/8/23, 10:40 AM

HFSL2ER

Motor

NORMAL

Motor line

Application

6207

Front Bearing

6206

Rear Bearing



3/8/23, 10:40 AM

Wagner WS100

WEGscan 100 - Motor

0.05 mm/s

Axial

0.06 mm/s

Vertical

0.05 mm/s

Horizontal



3/8/23, 9:55 AM

Recent tasks

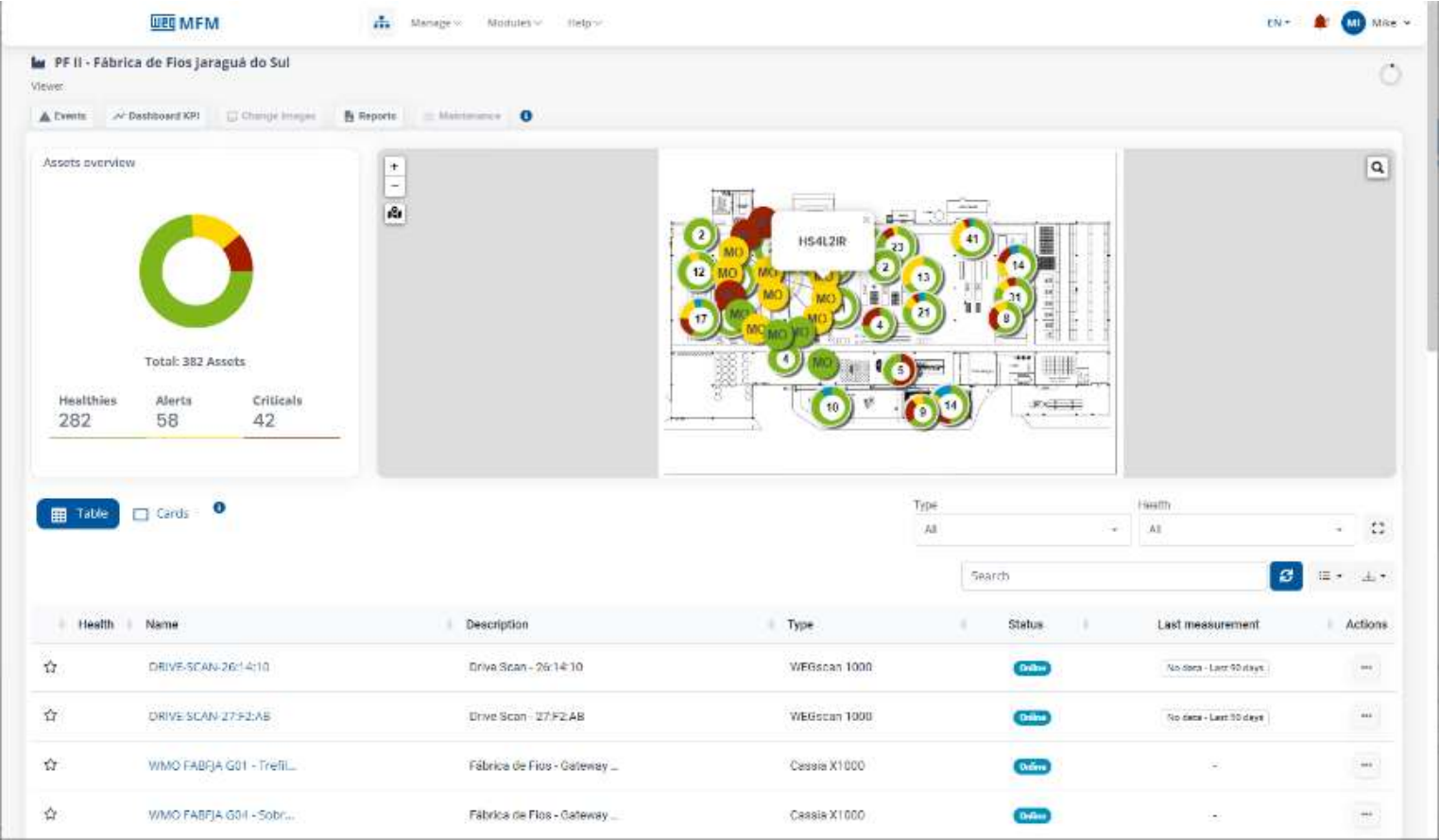
- **HF7L1EF** The limit of 0.343 in/s has been exceeded: Axial vibration = 0.346 in/s
3/8/23, 9:00 AM
- **Motor Teste Digital** The limit of 0.100 g has been exceeded: Radial-X vibration = 0.339 g
3/8/23, 7:11 AM
- **SM1L2IRP** The limit of 0.350 in/s has been exceeded: Radial-X vibration = 0.443 in/s
3/8/23, 7:00 AM
- **HF7L1EF** The limit of 0.409 in/s has been exceeded: Radial-Y vibration = 0.421 in/s
3/8/23, 2:00 AM
- **HFSL3RF** The limit of 0.346 in/s has been exceeded: Radial-X vibration = 0.351 in/s
3/8/23, 1:00 AM

Motion Fleet Management Overview

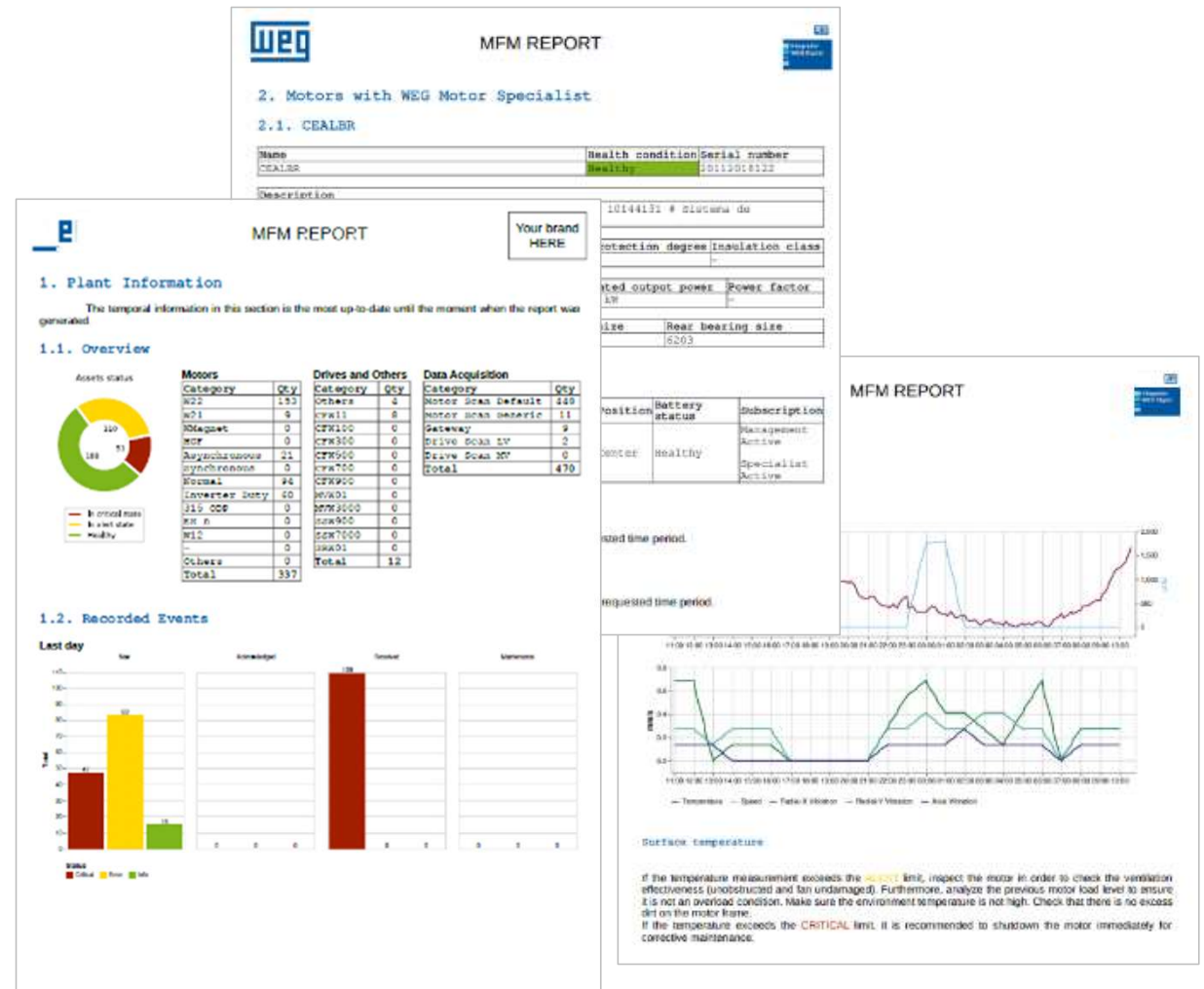


Asset Status & Condition (On/Off, Healthy, Alert and Critical)

-  Asset (Motor):
Healthy and ON
-  Asset (Motor):
Healthy and OFF
-  Asset (Motor):
ALERT and ON
-  Asset (Motor):
CRITICAL and ON



- Extensive range of Dashboard and Reporting Options
- Varies by asset and based on user selections
- Customer specific branding is available



Motion Fleet Management Overview



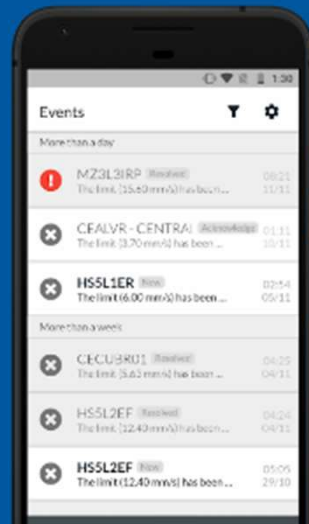
WEG Digital Notify App - Available for iOS and Android



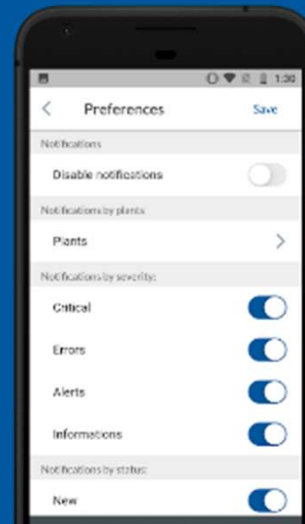
WEG Digital Notify ⁴⁺
WEG Equipamentos Elétricos S/A
Designed for iPhone
Free

WEG “Digital Notify”
App allows you to get
notifications for
assets registered in
MFM

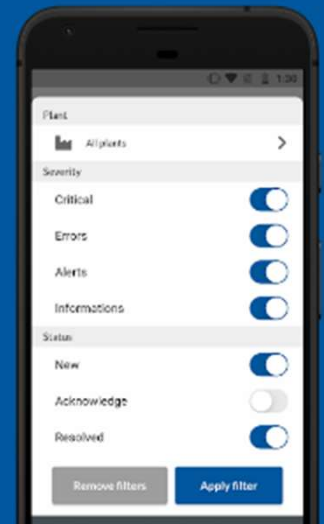
Manage your
WEG Digital
events



Receive the most
important
notifications



Filter your
plant events





Specialist Software Overview

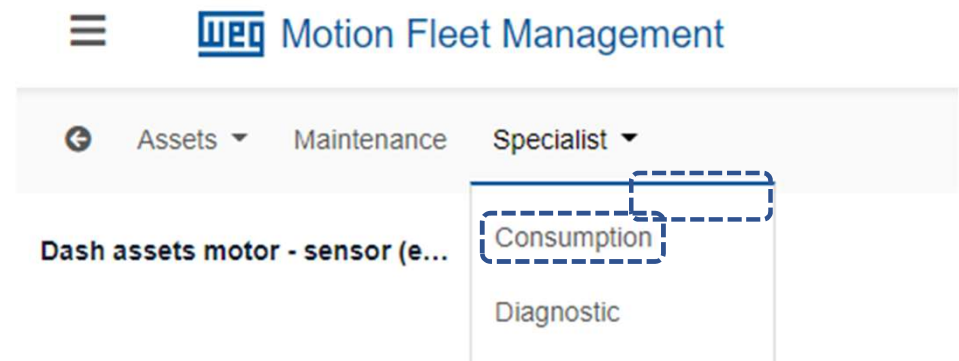


WEG Specialist

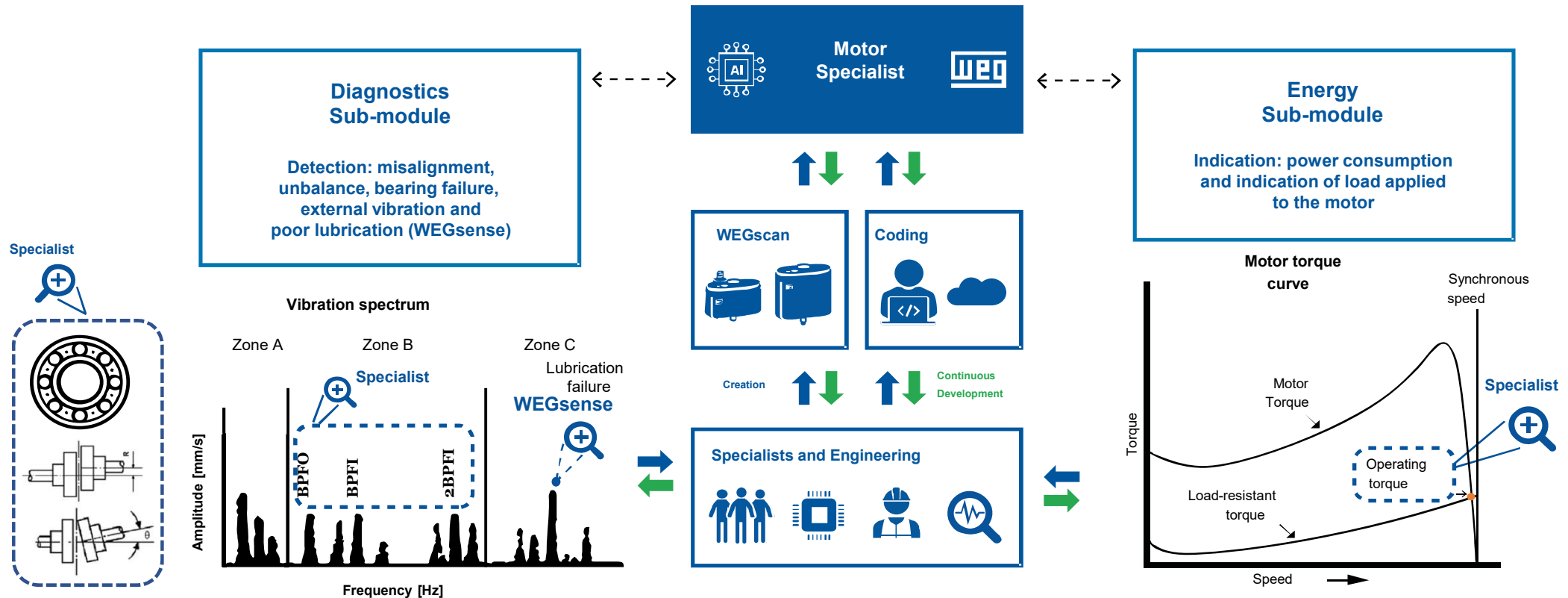


Consumption Module

- Energy consumption in kWh
- Estimated operational energy cost
- Calculates estimated load (w/o VFD)



WEG Specialist



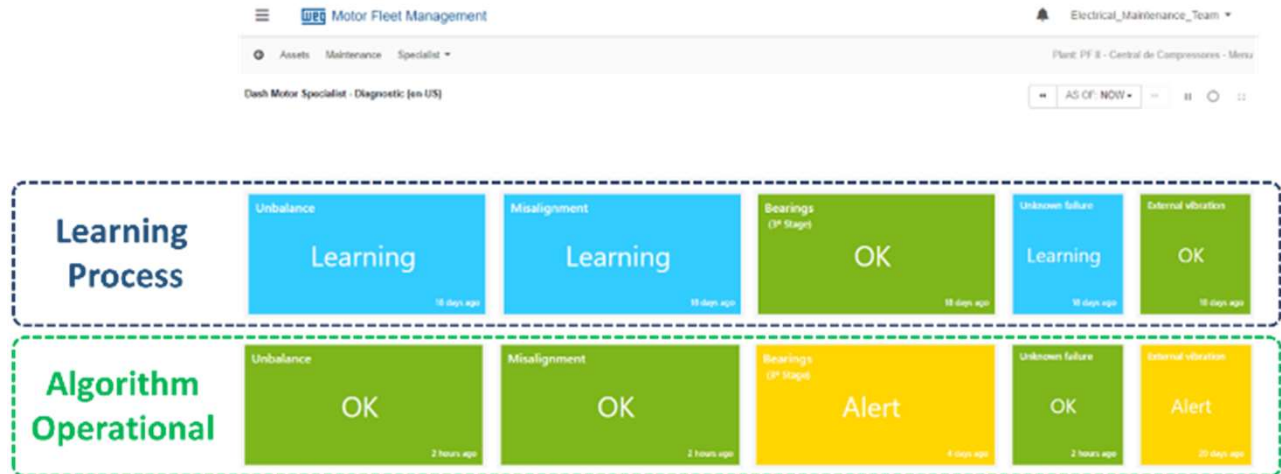
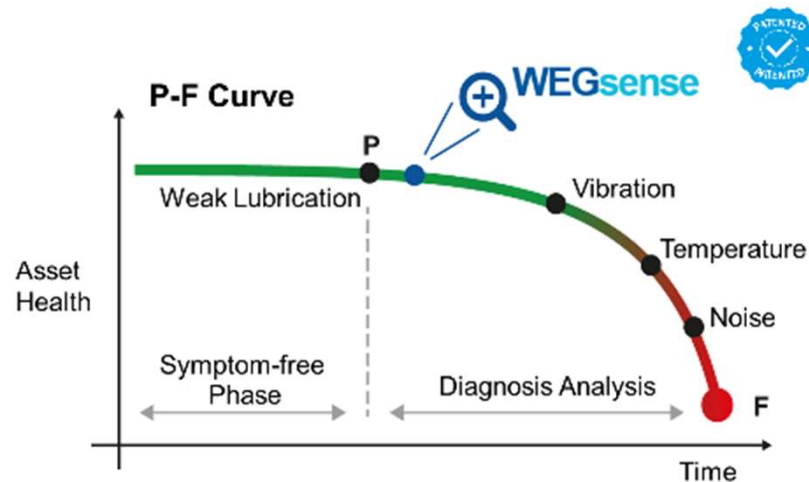
- WEG Specialist incorporates two functional sub-modules: Diagnostics and Energy Monitoring
- Each module applies Machine Learning and Artificial Intelligence algorithms to the data collected from the connected Sensors

WEG Specialist



Utilizes WEGsense Technology

- WEGsense combines sensor measurements with advanced analysis algorithms developed by WEG to warn of conditions that indicate potential for future equipment failures – “Predicting” the need for action to prevent un-planned equipment down-time.





Exchange Software Overview



WEG Exchange



Data exchange between MFM and Third Party using REST API

- Making possible the data storage at customer's database
- Integration with third-party systems and applications such as SCADA, CMMS (Computerized Maintenance management System), ERP (Enterprise resource Planning), and others
- Subscription plans according to the customer's needs



Customer or
Third-party system



Data Request

Data

Send Data



WEG Digital Solutions Software Summary



Complete Solution to Enable Predictive and Proactive equipment maintenance programs

- ***Motion Fleet Management*** – Foundational Asset Monitoring and Management
 - First year included with WEG Sensor purchase, Subsequent years require paid subscription
- ***Specialist*** – Advanced Diagnostic and Consumption Analysis
 - Option solution, available with paid annually or through multi-year subscription, per sensor
- ***Exchange*** – Complete Information Sharing Solution
 - Option solution that enables information transfer across variety of non-WEG plant and infrastructure platforms via REST API
 - Available with paid annually or through multi-year subscription





Thank you for your
time and attention.

Transforming energy in solutions. www.weg.net

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