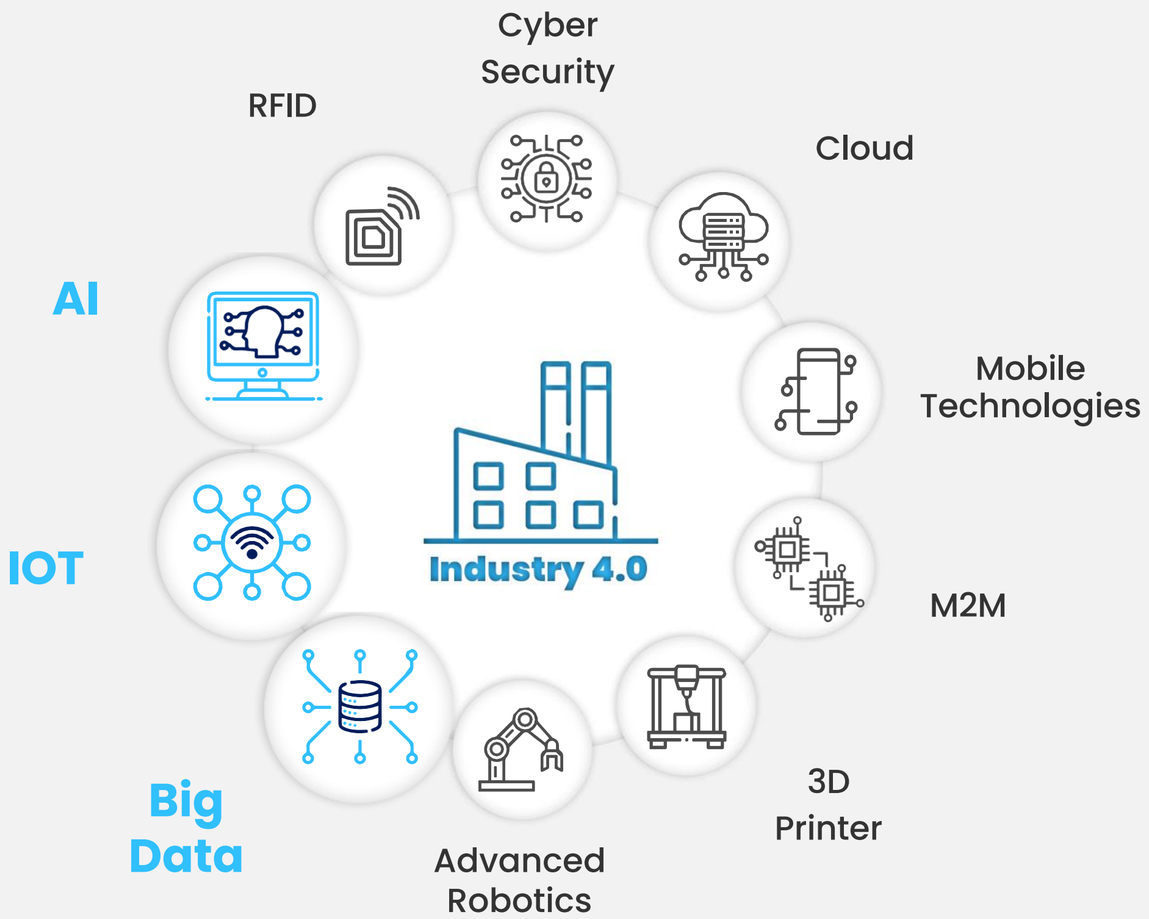
Fizix

Let Your Machines **Talk to You**

ver. 3.1

Fizix and Digitalization: Powering the Future of Smart Machines



Fizix at a Glance

18+
Different Sectors

%98
Customer Success

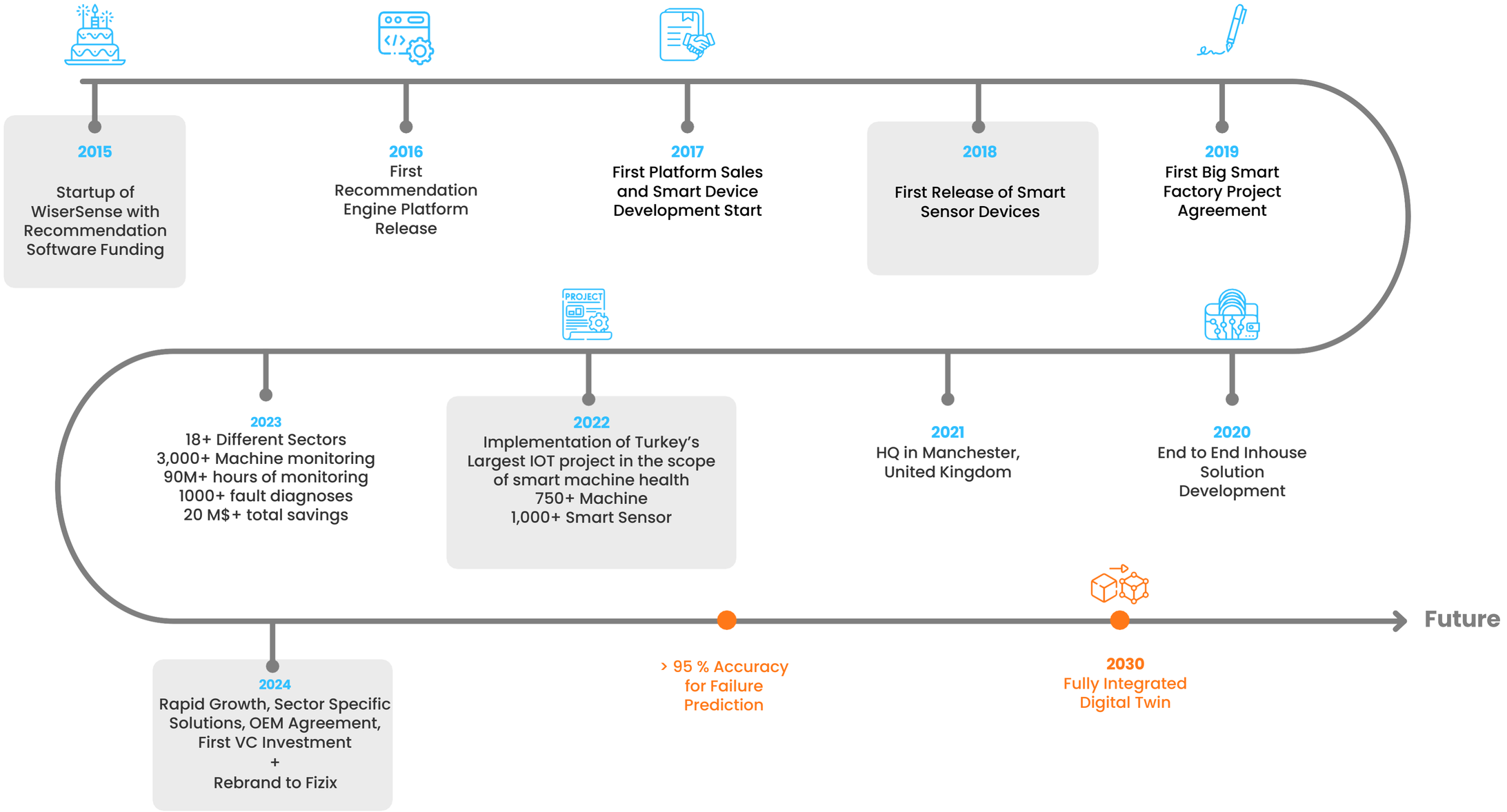
40+
Personnel

3.000+
Machine Monitoring

90 M+
Hours Monitoring

20 M USD+
Savings

Fizix Journey – A Timeline of Innovation

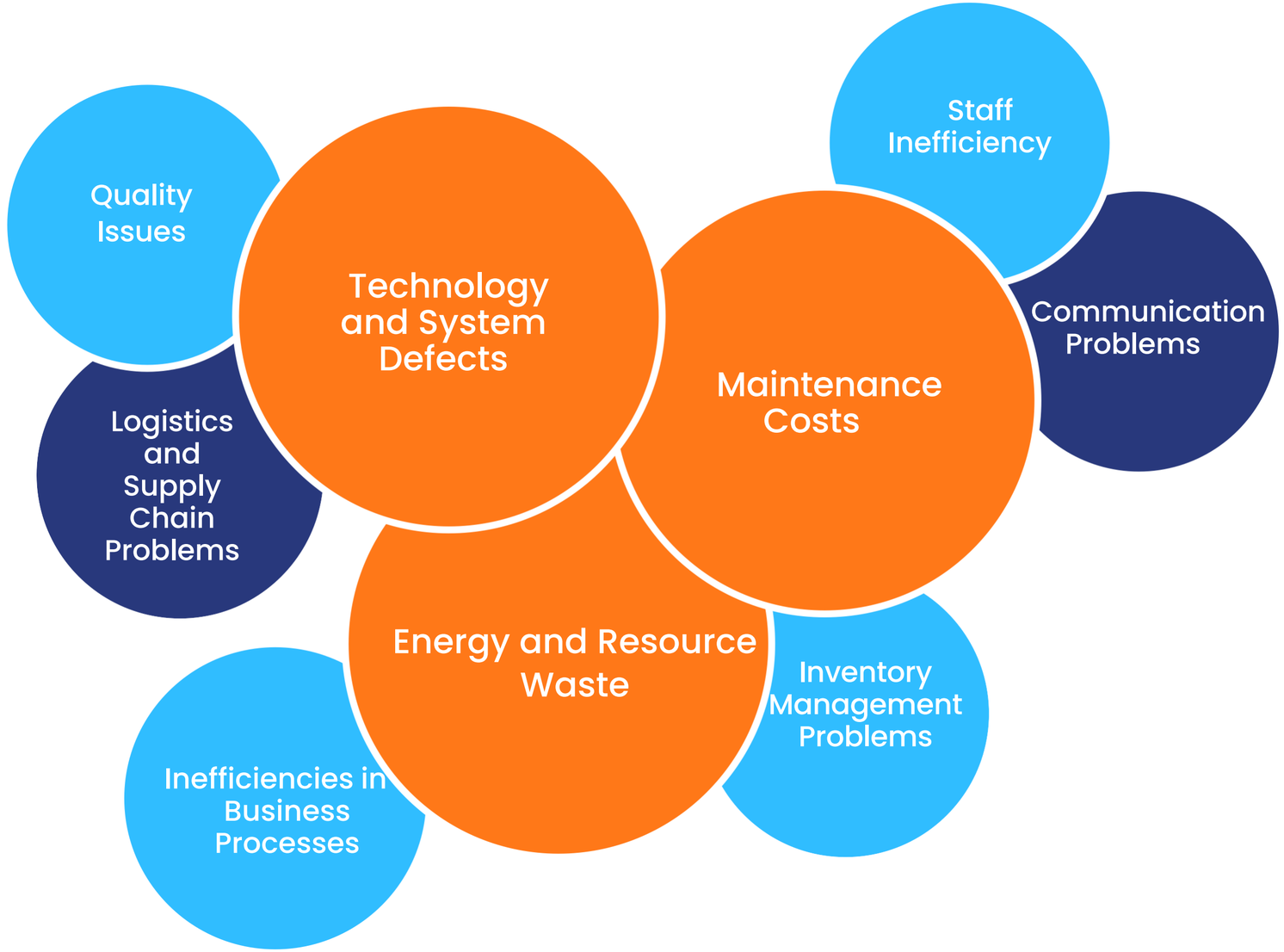


Fizix

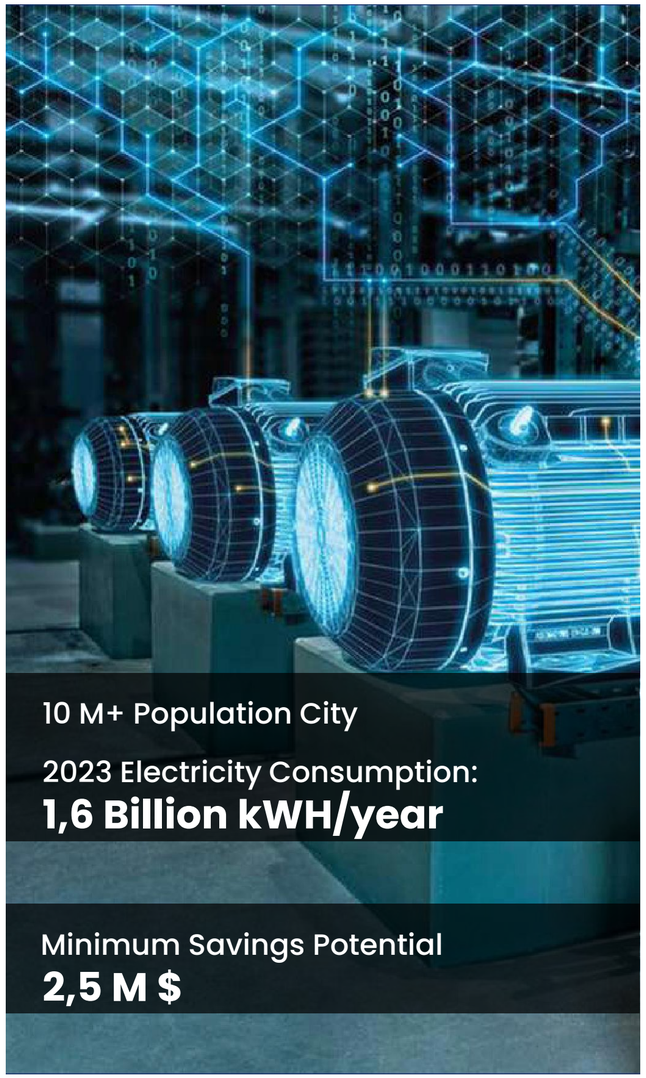
Achievements

Target

Blind Spots in Businesses



Blind Spot Cost in Businesses



Machine Health Monitoring Benefits

Reduction in Maintenance Costs
Up to 35%

Reduction in Poor Quality Cost
Up to 20%

Reduction in Downtime
Up to 50%

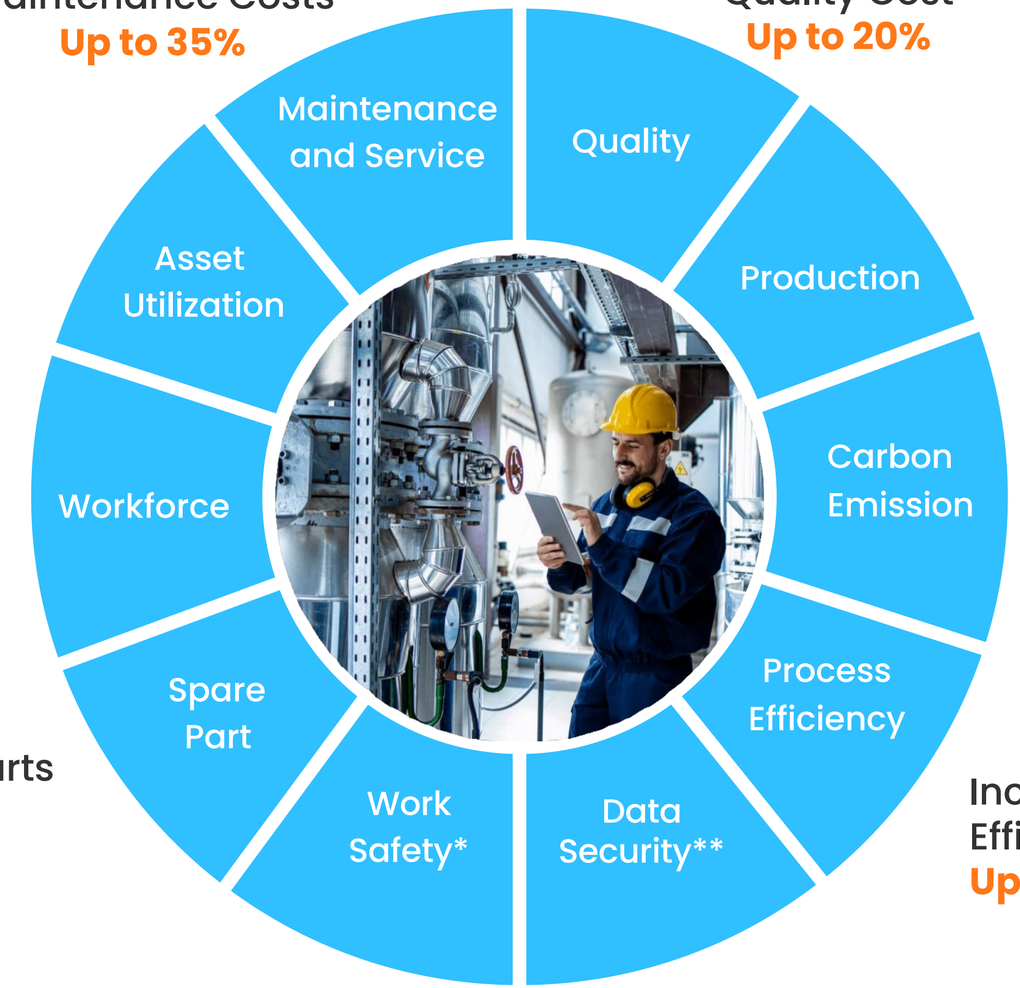
Increase in Production
Up to 25%

Maintenance Personnel Availability Increase
Up to 50%

Reduction in Carbon Emission***
134,4 kg/day

Decrease in Spare Parts Stock
Up to 50%

Increase in Efficiency
Up to 5%

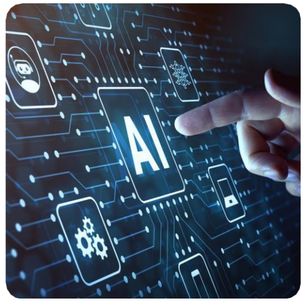


* Thanks to our solutions, occupational health and safety concerns arising from harsh working conditions in industrial facilities are alleviated.
** Our intelligent software provides full protection in terms of access, encryption, and security issues that may arise in data sharing.
*** Calculation for a 200 kWh motor. For details, please email hello@fizix.ai

Fizix

Fizix Key Capabilities and Advantages

You can monitor the health status of your machines from the moment you first logged in.

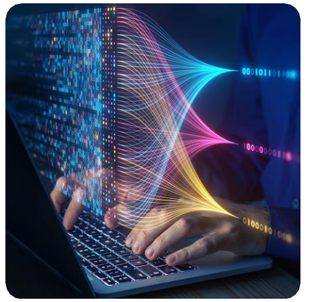


Automatic and data driven fault detection

Experience with 3,000+ diagnosed machines, 90 M+ hours of machine monitoring time.

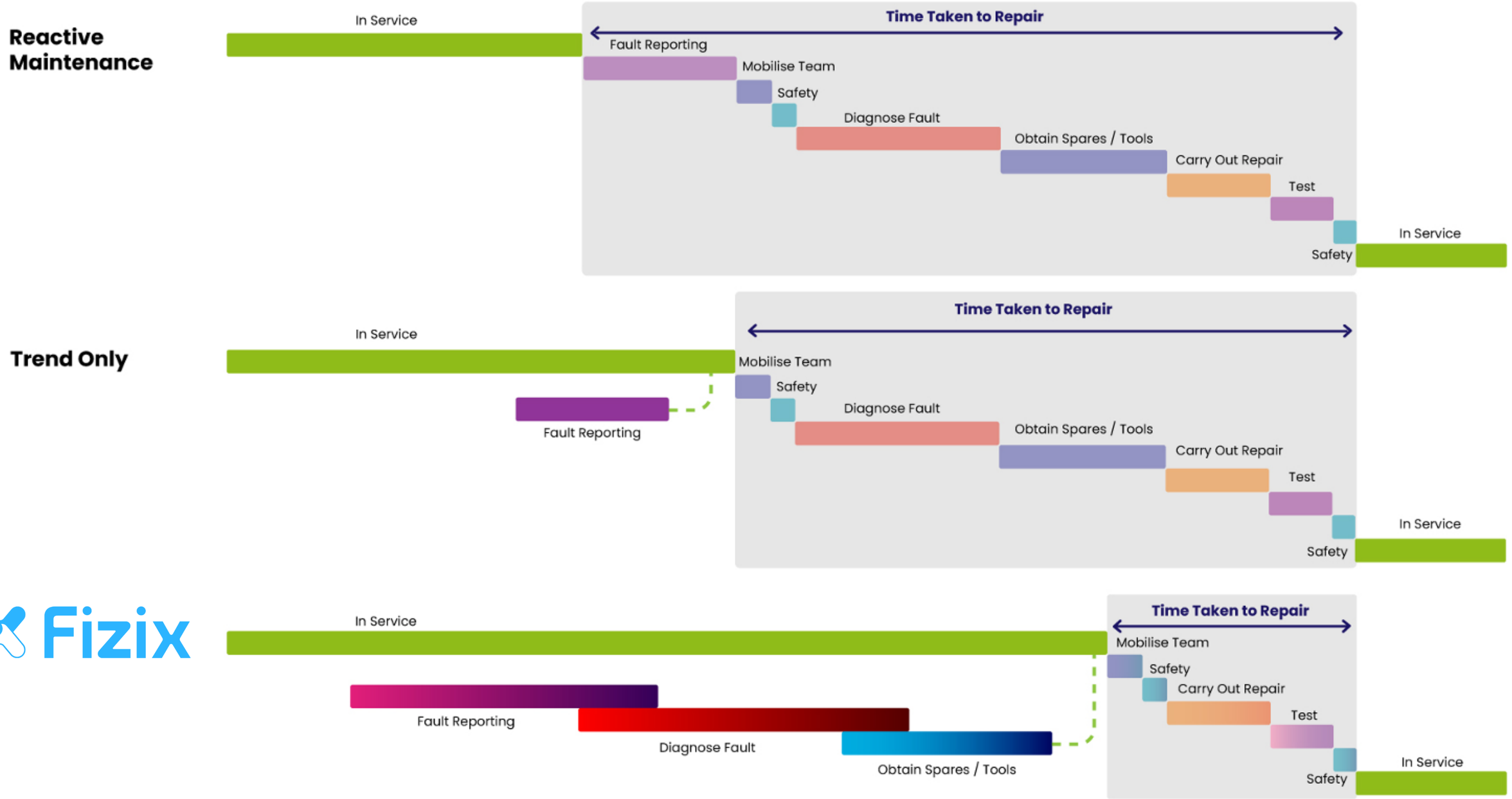
Automated reports and instant notifications anytime, anywhere, any device

Receive suggestions, feedback, and explanations from experts and AI



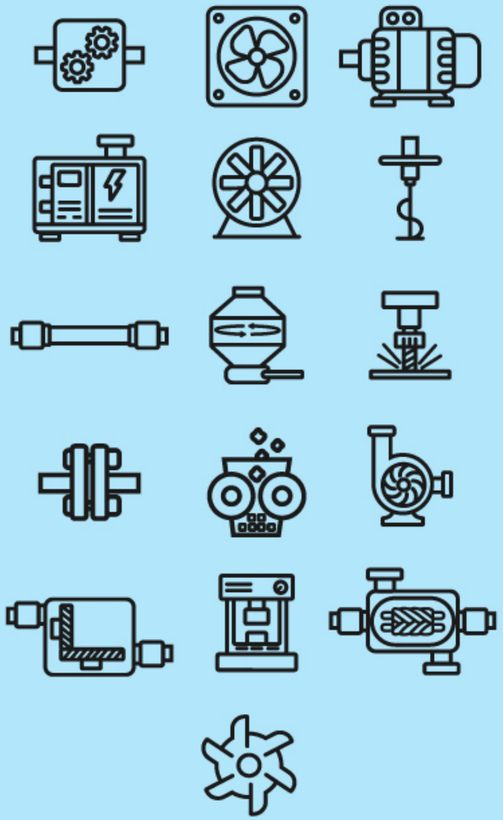
Detect many possible faults at an early stage

Value on Repair and Service Time



Fizix vs Trend Monitoring

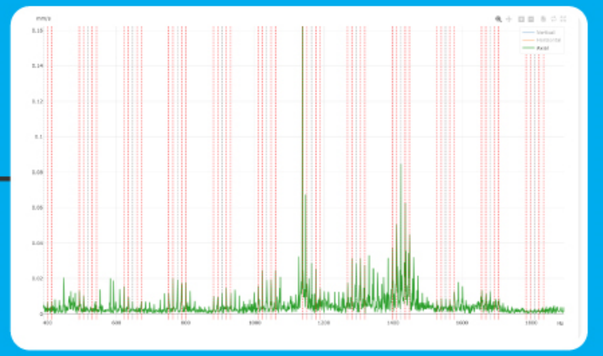
Standard Solutions



Fizix Solutions

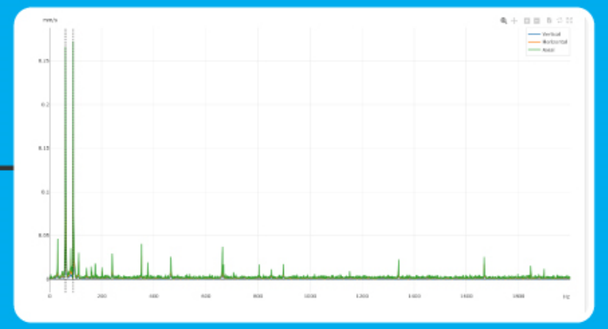
Beyond simple trend monitoring by providing indepth analiysis for more accurate diagnosis

AI



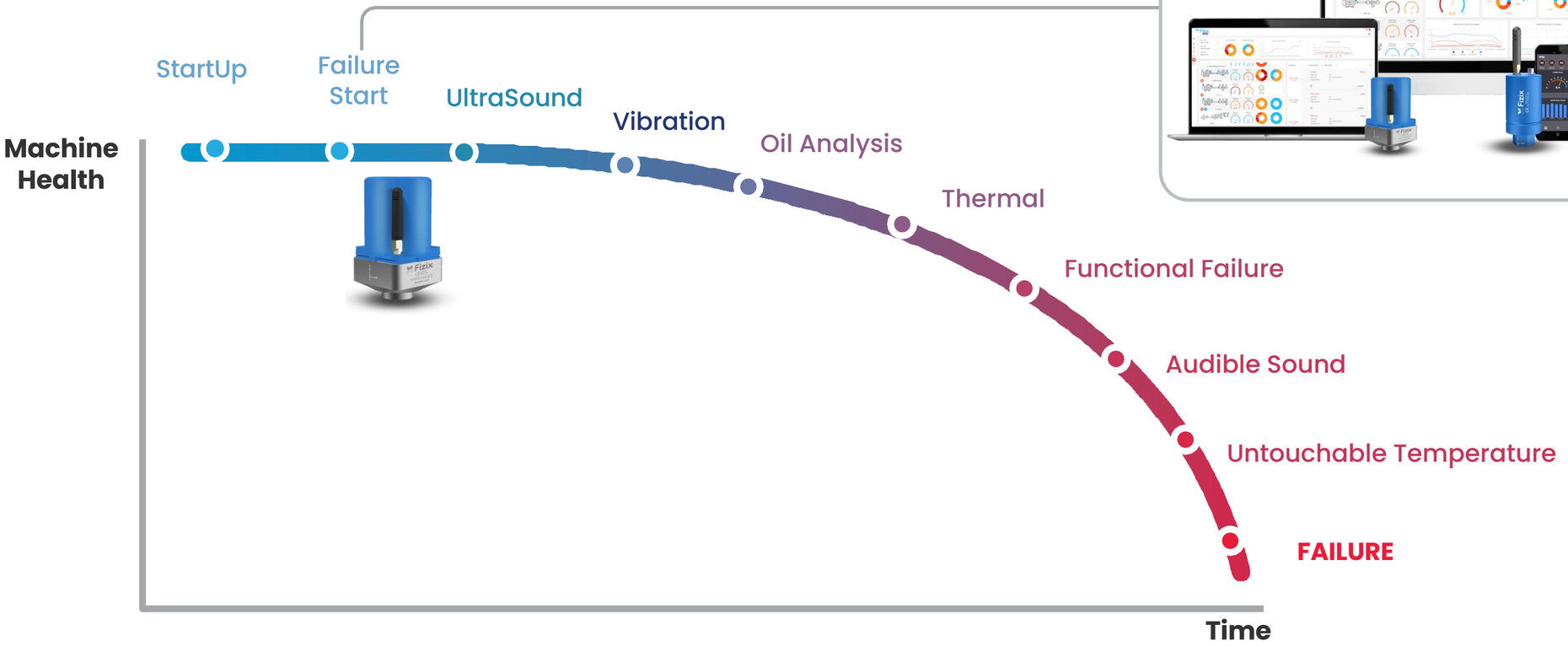
Bearing Fault

AI

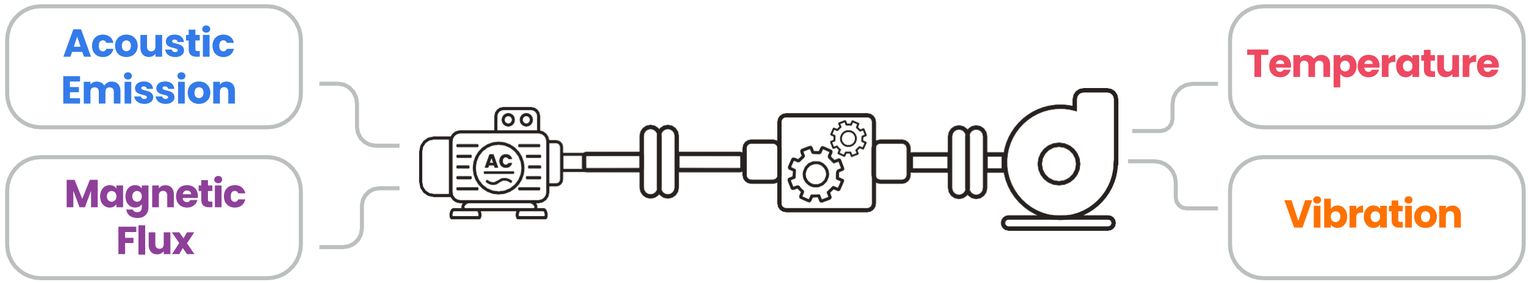


Misalignment

How Do Machines Communicate with Us?



How Do Machines Communicate with Us?



Fizix

How Does Fizix Understand the Language of Machines?

Smart Platform

Smart Multi-Sensor Devices

Fizix Smart Multi-Sensor Device Solutions

OMax

- Battery Powered
- Wireless Communication
- Long Battery Life

OPro

- Cable Powered
- Wireless Communication

Vibration

- 3 Axial Vibration
- 26,6 kHz
- Continuous Failure Monitoring
- Unbalance, Looseness, Misalignment, Bearing/Gear problems, Cavitation, etc.

Acoustic Emission

- 80 kHz
- Early Stage Lubrication, Bearing and Gear Problems

Magnetic Flux

- 32 kHz
- Motor Specific Failures
- Broken Motor Bar Problem, Eccentricity, Short-Circuit, Load Problem, Winding Problem

Temperature

- Surface Temperature

RPM

- RPM Prediction from Onboard Sensors

OOne

- 3 Axial Vibration
- Temperature

OGap

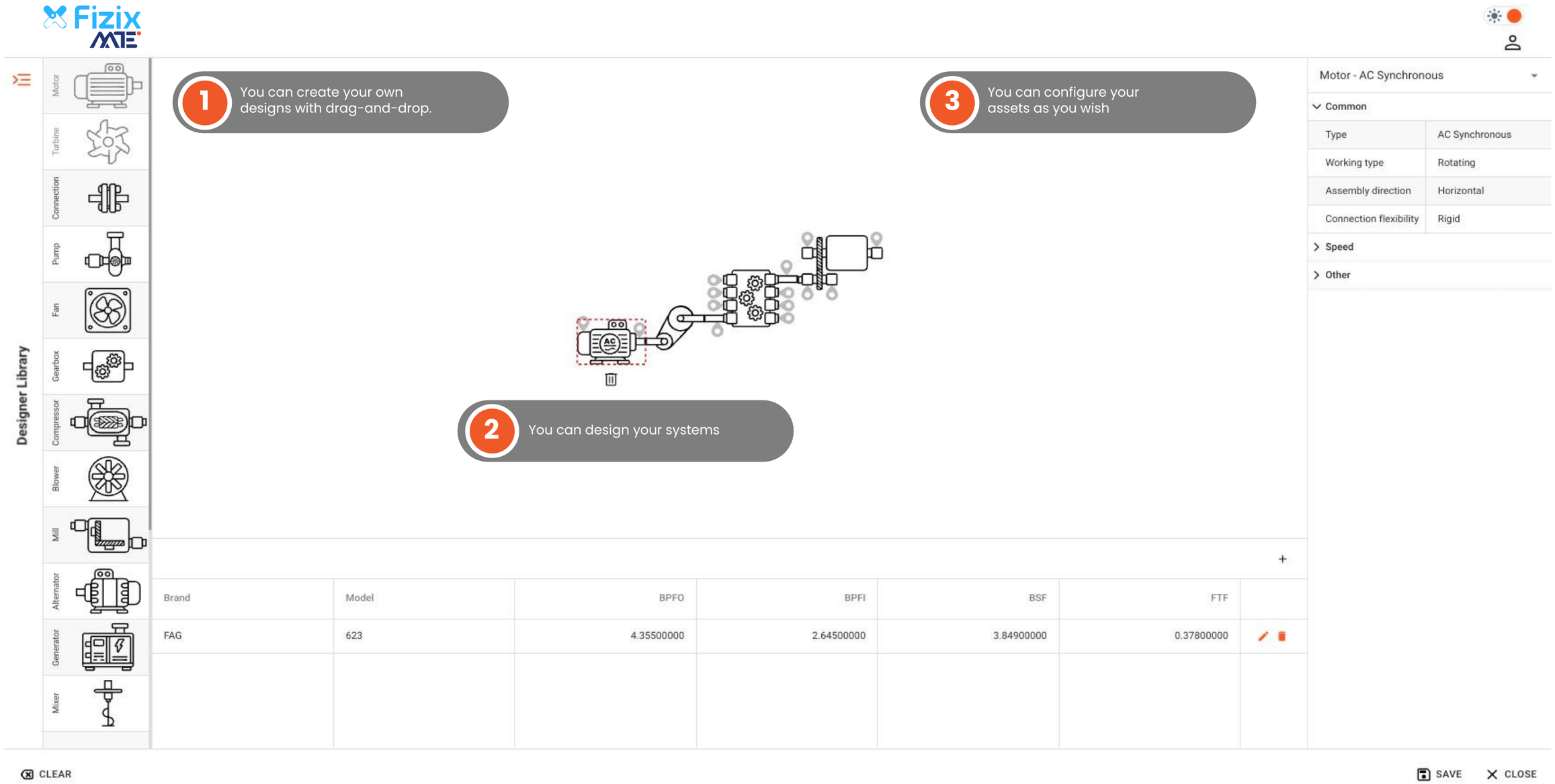
- Proximity Sensors
- Slow Speed Machine Monitoring

++++

- Many More

Fizix MATE: Perceptive Software

Mate Machine Designer: Customization and Flexibility



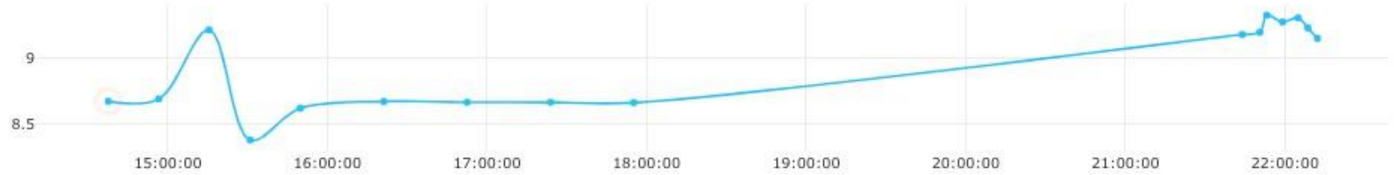

2-Fan 2B
Alarm Distribution
33.3%
50%
16.7%
Diagnoses
Looseness
Misalignment
Graph type
Health score
Date interval
Last 6 months
Date resolution
Daily
Health score
Dec 31, 2023
Jan 14, 2024
Jan 28, 2024
Feb 11, 2024
Feb 25, 2024
Mar 10, 2024
Mar 24, 2024
VRMS Alarm
There has been a significant increase in vibration level in terms of velocity
Recommendation:
- When there is no increase in vibration level in terms of acceleration but an increase in this level, it indicates an increase in low-frequency vibration. Imbalance, misalignment, and looseness conditions should be checked. If not corrected, it can lead to increased energy consumption and damage to associated equipment. Detailed data analysis should be conducted with expert personnel.
CLOSE
Alarms
All Alarms
All Alarms
Last 1 year
Apr 17, 2024, 13:00:00
RMS Alarm
Monitor
Start Value: 0.33
Start Date: Apr 17, 2024, 13:00:00
Acknowledged By:
Acknowledged Date: May 05, 2024, 19:52:55
Apr 14, 2024, 10:00:00
VRMS Alarm
Danger
Start Value: 0.73
Start Date: Apr 14, 2024, 10:00:00
End Value: 0.33
End Date: Apr 17, 2024, 10:00:00
Apr 13, 2024, 10:00:00
RMS Alarm
Warning
Start Value: 0.63
Start Date: Apr 13, 2024, 10:00:00
End Value: 0.73


2-Fan 2B
Alarm Distribution
33.3%
50%
16.7%
Diagnoses
Looseness
Misalignment
Graph type
Health score
Date interval
Last 6 months
Date resolution
Daily
Health score
Dec 31, 2023
Jan 14, 2024
Jan 28, 2024
Feb 11, 2024
Feb 25, 2024
Mar 10, 2024
Mar 24, 2024
Rotational Looseness
It can be defined as any looseness in a rotating machine component. This form of mechanical slack is caused by excessive clearance between rotating or stationary components, such as bearings.
Expert Description:
28/06/2024 (Installation) - M DE hot temperature and noticed low air flow. Possible loose impeller and/or material blocking air path on MOTOR COOLING FAN - Check cooling fan status / clean and secure if loose. Recommend fins to be cleared of material preventing air circulation.
CLOSE
Diagnoses
All Diagnoses
All Diagnoses
Last 1 year
Misalignment
Specialist:
WiserSense
May 17, 2024, 09:10:39
DISABLE
Looseness
Specialist:
Passive Info:
May 17, 2024, 09:10:30
Misalignment
Specialist:
Passive Info:
Mar 31, 2024, 14:36:48

2-Fan 2B

Date: Jan 01, 2024

Graph type: Vibration RMS



Max Kurtosis	-0.41
Maximum CF	2.93
Maximum P2P	0.36

Jan 01, 2024, 12:00:00

Data type: Spectrum &...

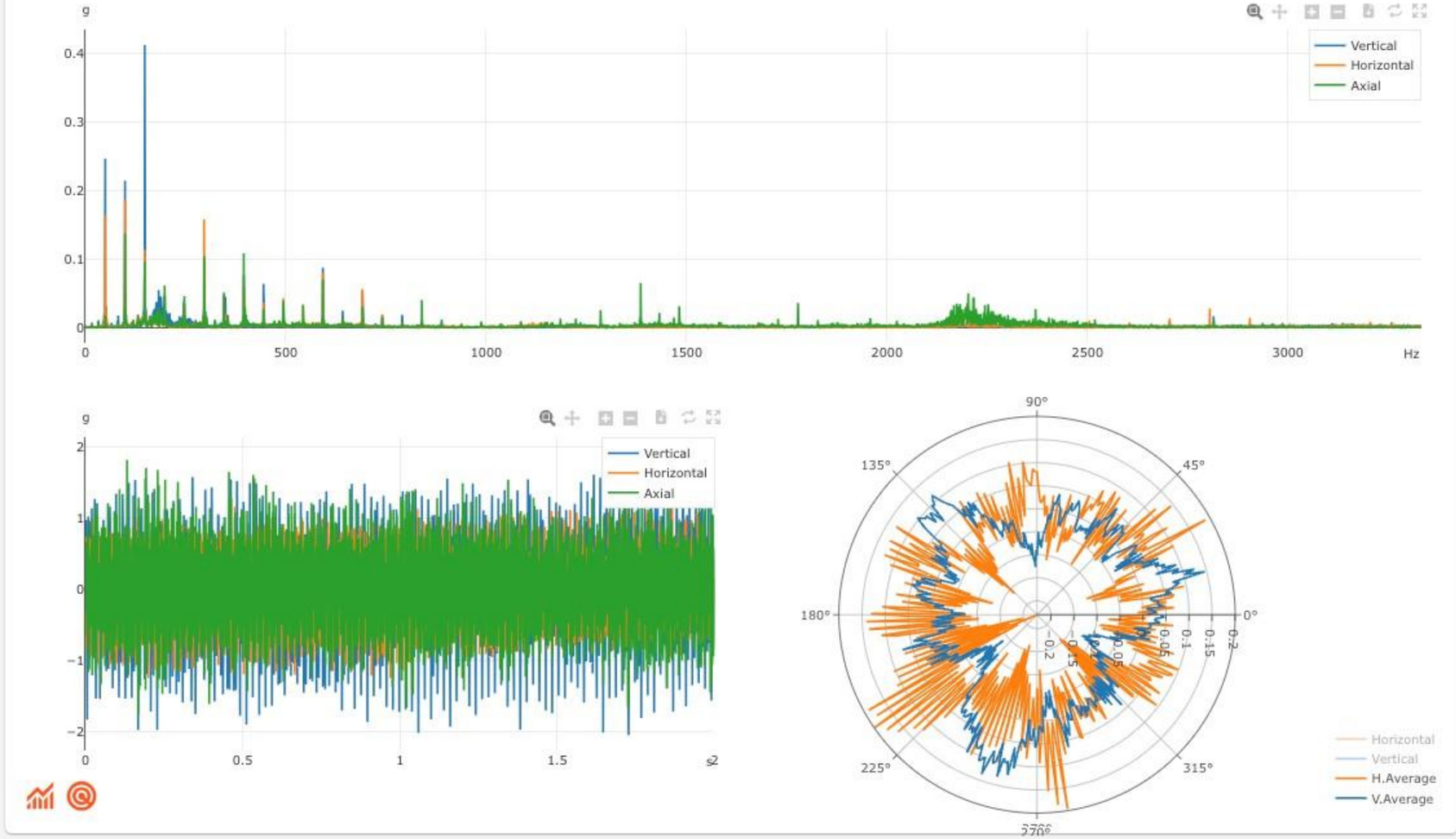
Time axis: Frequency

Calculated RPM: 1816.4062

Inspection On/Off

Components of Selected Asset

- FAG (6403)
  - Bearing Pass Frequency Outer
  - Bearing Pass Frequency Inner
  - Ball Spin Frequency



Code / AI	Expert Diagnosis	Expert Confidence
Unbalance	---	
Misalignment	---	
Looseness	---	
Belt Chain	---	
Cavitation	---	
Electrical	---	
Rotational Looseness	---	
Gear	---	
Oil	---	
Resonance	---	

2-Fan 2B

Date
Mar 13, 2024

Graph type
Vibration RMS

- Acoustic RMS
- Acoustic crest factor
- Magnetic RMS
- Magnetic crest factor
- Health score
- Vibration RMS
- Vibration VRMS
- Vibration crest factor

Max Kurtosis	-0....
Maximum CF	2.93
Maximum P2P	0.18

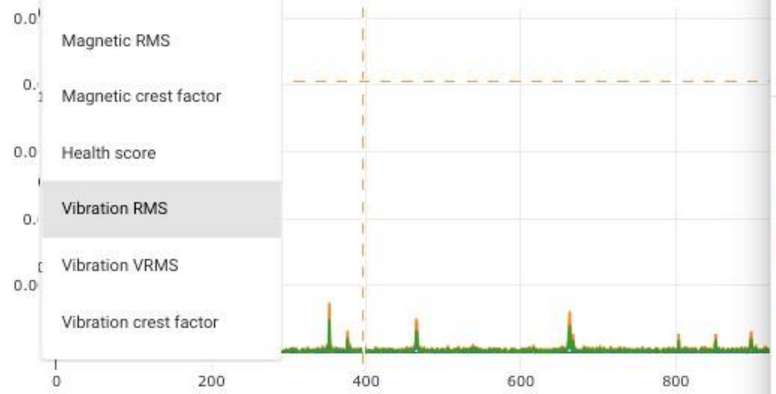
Mar 13, 2024, 12:00:00

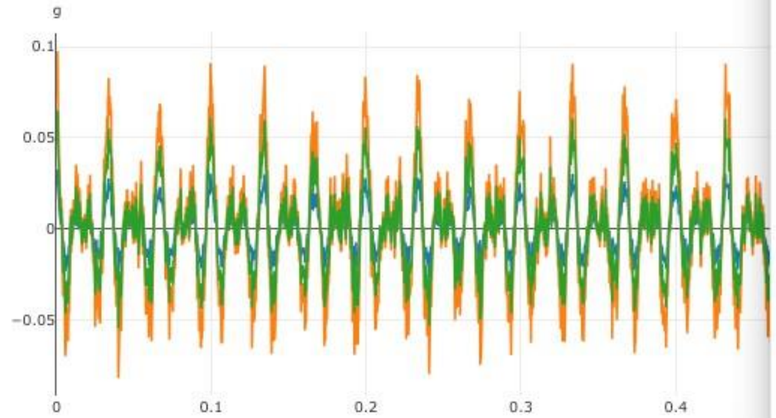
Data type: Spectrum &...
Time axis: Frequency

Calculated RPM: 1816.4062
Inspection On/Off

Components of Selected Asset

- FAG (6403)
  - Bearing Pass Frequency Outer
  - Bearing Pass Frequency Inner
  - Ball Spin Frequency

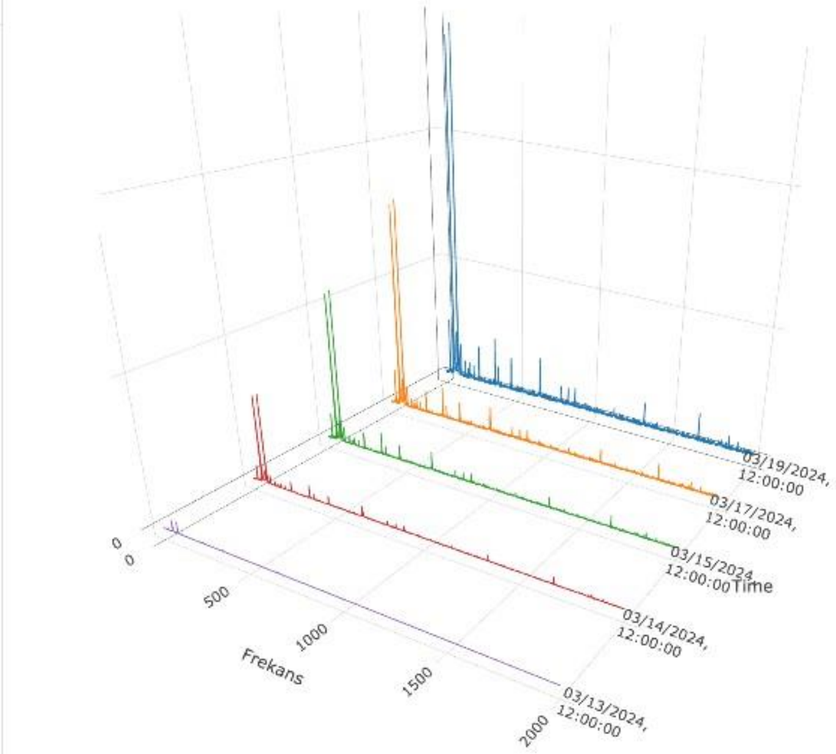




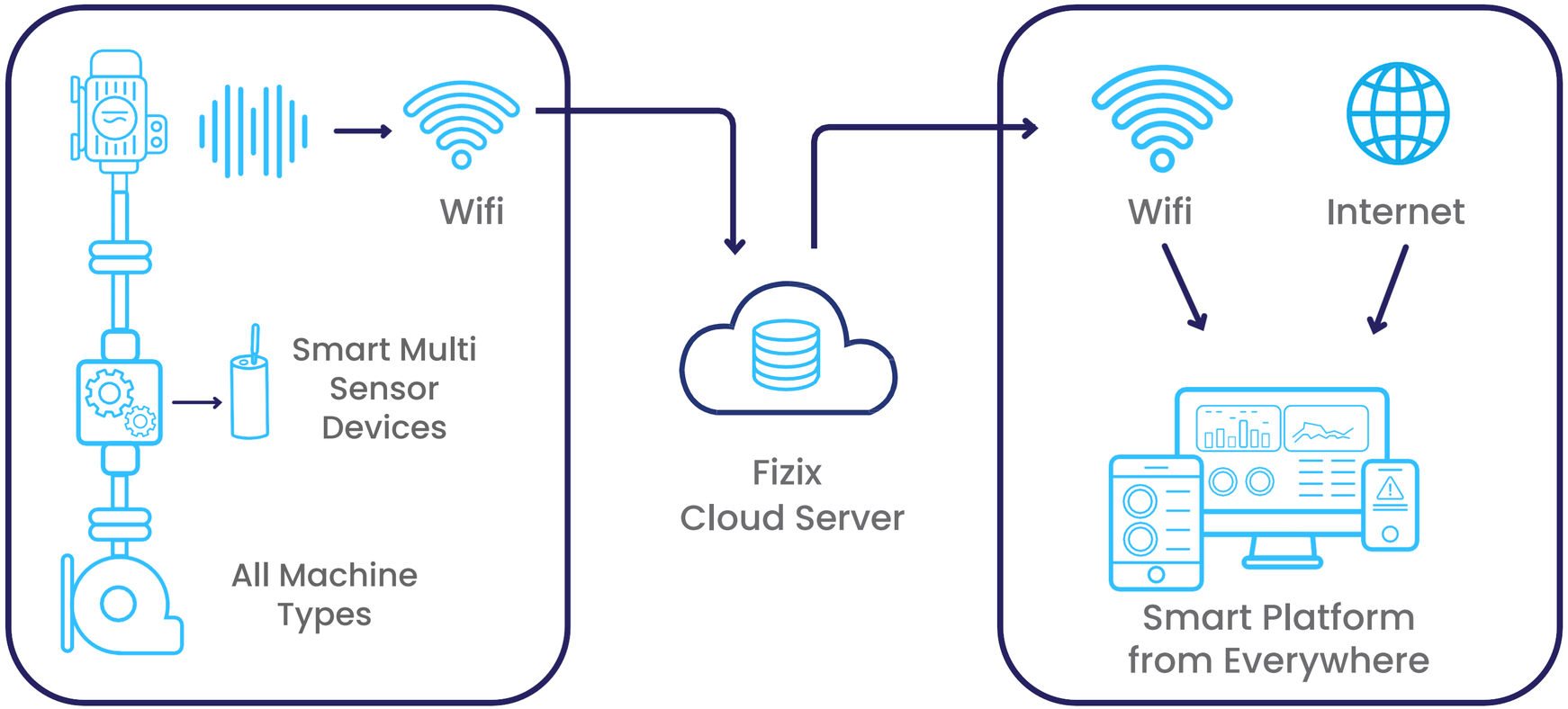
Vibration RMS

Vertical Axis

- 03/19/2024, 12:00:...
- 03/17/2024, 12:00:...
- 03/15/2024, 12:00:...
- 03/14/2024, 12:00:...
- 03/13/2024, 12:00:...

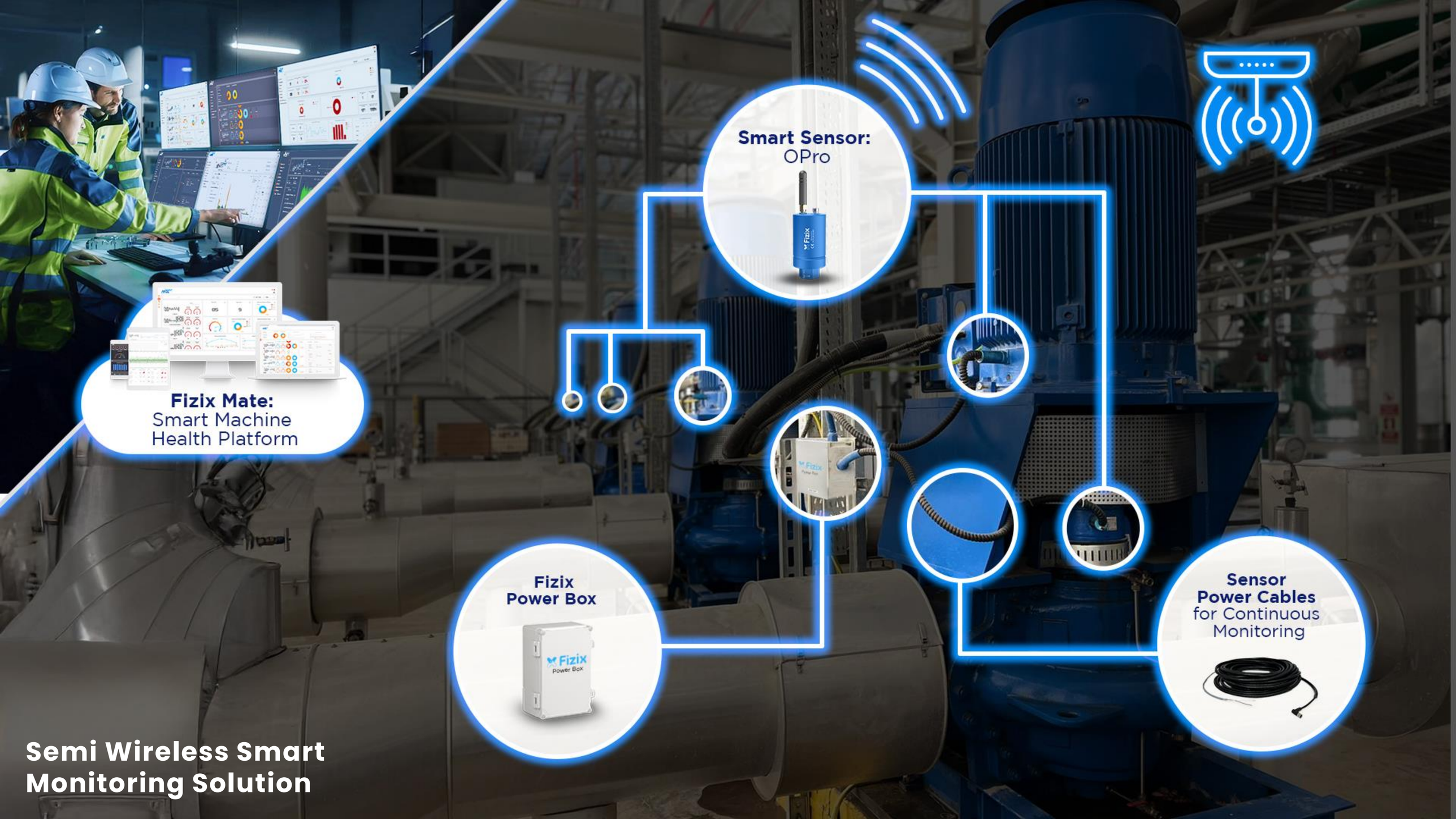


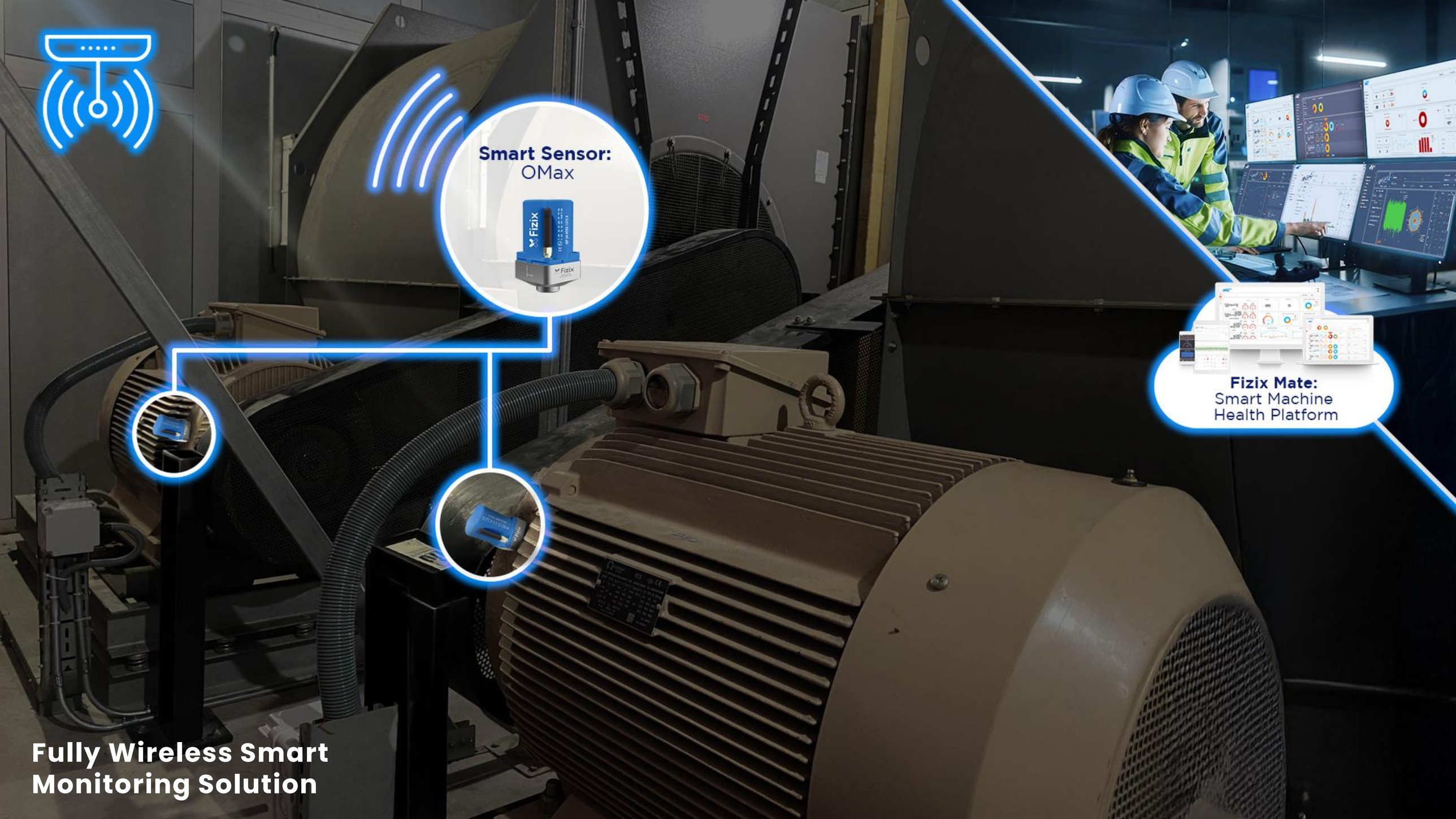
End-to-End Solution From Facility to Cloud



Smart Devices at Facility:
- Multi-Sensors
- Turn-key and Fast Integration
- Wireless Communication

Home-Work:
- Expert and AI Support
- Web-Based Interface
- Monitor, Analysis, Predict


Smart Sensor:
OPro
Fizix Mate:
Smart Machine
Health Platform
Fizix
Power Box
Sensor
Power Cables
for Continuous
Monitoring
Semi Wireless Smart
Monitoring Solution

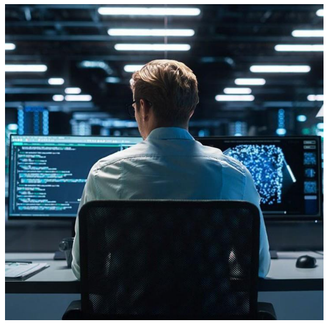

Smart Sensor:
OMax
Fizix Mate:
Smart Machine
Health Platform
Fully Wireless Smart
Monitoring Solution

How is **Solution Integration ?**

* For a facility with 100 machines:

1 Day

Facility Discovery



2 Days

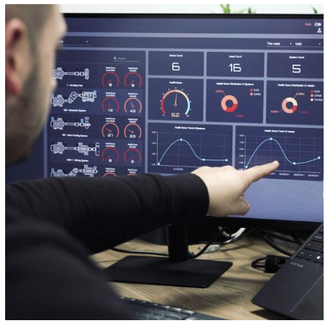
Network and Power Infrastructure

1 Week

Device Integration and Start-Up

2 Days

Platform Training



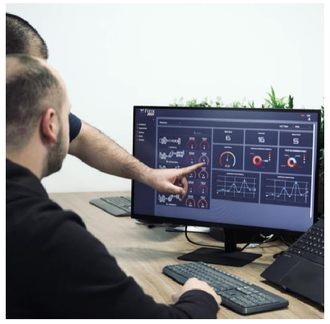
Instantly

Start monitoring

Expert Services

Failure analysis from ISO CAT 2-3-4 certified experts

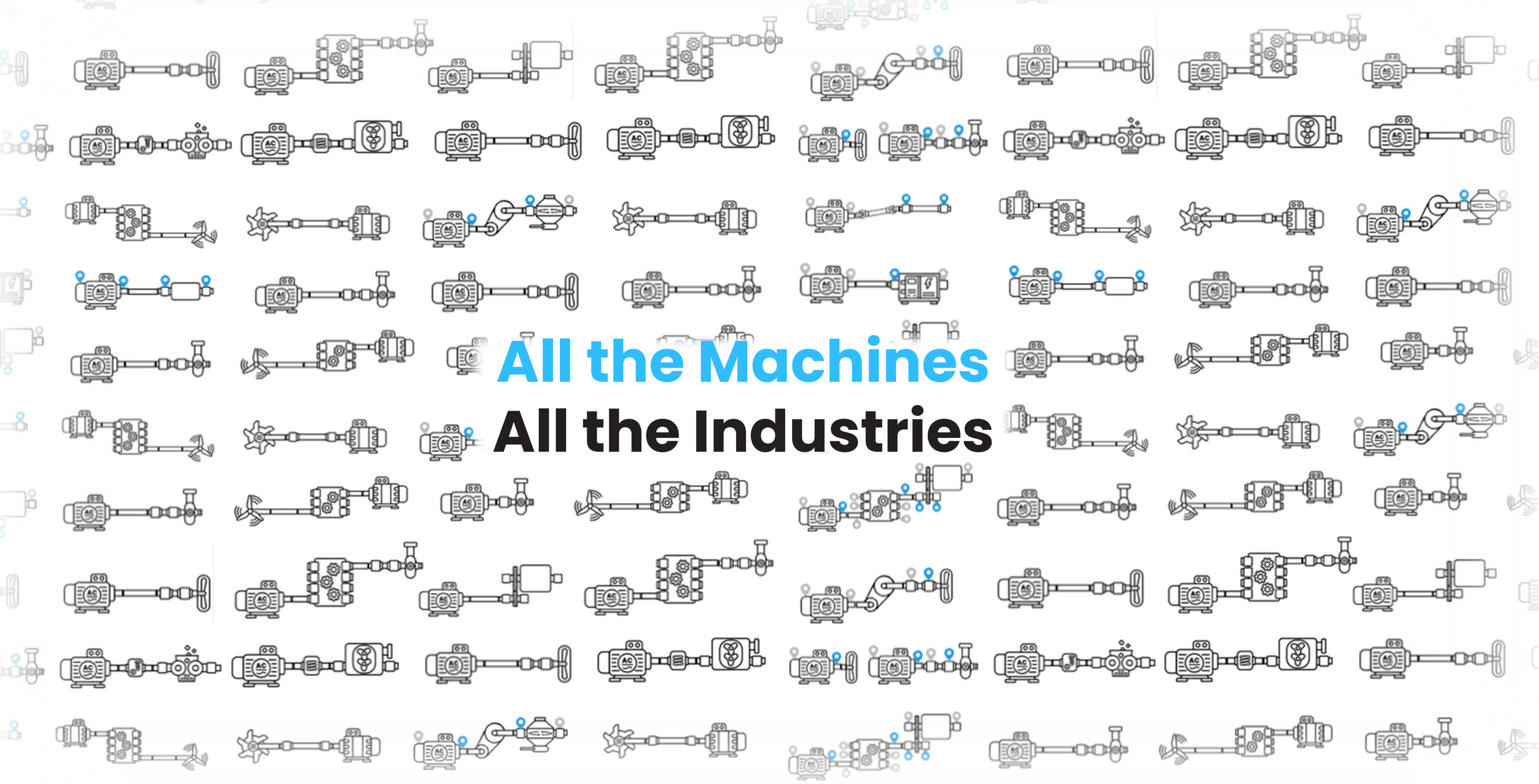
On-Site Device Configuration



24 Hour Help Desk

Periodic Trainings from Experts

Field support by expert authorized service providers



All the Machines
All the Industries

Fizix

Connectivity and Integration Capabilities

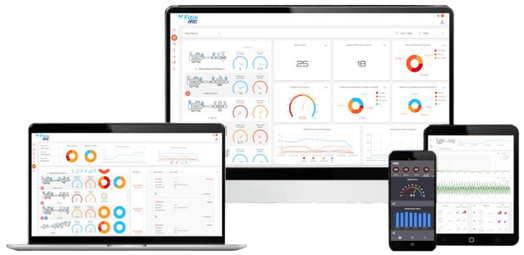
Communication with Any Protocol

OPC UA

Modbus MQTT

Service from Any Cloud Provider

aws Microsoft Azure



Any Alert/Alarm System

REST API SMS

Information/Data Exchange with Any Third-Party Software

SAP IBM Watson™

AVEVA iba thingworx

Fizix Case Study

Industry

Iron-Steel Industry

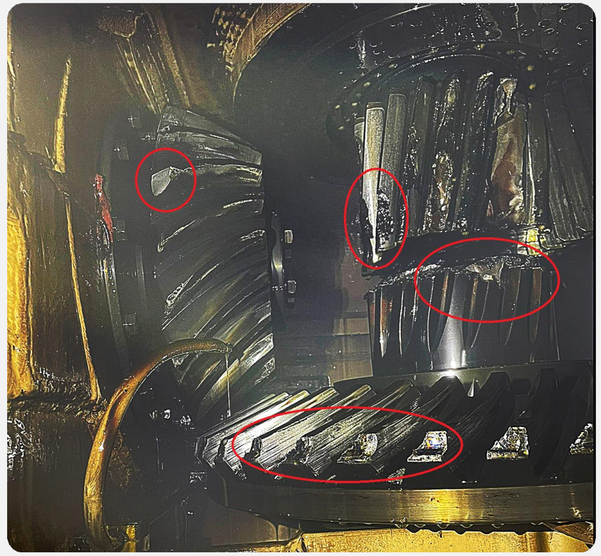
Machine

Motor and Gearbox of the
Coal Grinding Mill.

Monitoring

Parameters monitored with Opro:
3-axial Vibration, Acoustic Emission, Magnetic Flux, Temperature.

Problem and Prediction Stage



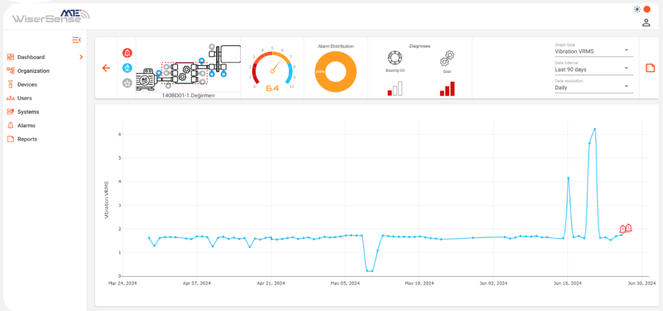
Problem Experienced in the Gearbox:
- Tooth breakage,
- Bearing failure, Plant shutdown

Possible Outcomes if the Problem Had Occurred.

- Replacement of all gears and bearings.
- Production loss during the downtime.

Possible Lost: 420.000 USD

Gains Achieved Due to the Problem Not Occurring



- Continuous monitoring for 14 months.
- Immediate notification of issues.
- Prevention of 2 unplanned shutdowns.
- Savings of 840,000 USD.

Fizix Case Study

Industry

Cement Industry

Machine

Rotary Kiln ID Fan

Monitoring

Parameters monitored with Opro:
3-axial Vibration, Acoustic Emission, Magnetic Flux, Temperature.

Problem and Prediction Stage

Problem Experienced in the Fan Bearing:

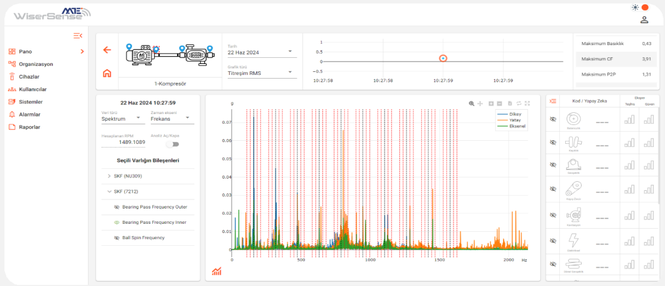
- Detection of bearing damage.
- Alerting the maintenance unit
- Bearing replacement during appropriate downtime

Possible Outcomes if the Problem Had Occurred.

- Replacement of equipment due to bearing damage.
- Production losses due to unplanned plant shutdown

Possible Lost: 120.000 USD

Gains Achieved Due to the Problem Not Occurring



- Continuous monitoring for 18 months.
- Daily energy savings of 20 USD.
- Production loss savings of 50,000 USD (5 hours).
- Total savings of 252,000 USD

References

Iron and Steel Industry

İSDEMİR
ERDEMİR
DİLER DEMİR ÇELİK
KARDEMİR
HABAŞ
YEŞİLYURT DEMİR ÇELİK
OKAN
AssanAlüminyum
SARITAŞ

Chemical / Plastic / Paper Industry

SASA POLYESTER SAN. A.Ş.
Henkel
AKSA
ISKO
Ravago
İzokan PLASTİK
MESAN SHOP DESIGN
İGSAŞ
SÜPER FİLM AMBALAJ SAN. VE TİC. A.Ş.
segezha group
Tezkim
KWS
KAZAN SODA ELEKTRİK
Ball
modern KARTON

Cement Industry

Limak
OYAK ÇİMENTO
VOTORANTİM cimentos
AssanAlüminyum

Consumer Goods/ Pharmaceutical Industry

Coca-Cola
SUNAR MISIR
RECORDATI

Automotive Industry

KORDSA
BORUSAN
TIRSAN
erkunt
AKO abdulkadir özcan
ELDOR CORPORATION
MAXION WHEELS
Ege Fren
AEMOT ELECTRIC

Mining Industry

ETİ KROM A.Ş.
Dimin
Çayeli Bakır İşletmeleri A.Ş.
GÜBRETAŞ
ÖKSÜT MADENCİLİK
esan

Industrial and Consumer Products Sector

FRANKE
TEPE BETOPAN
AEMOT ELECTRIC
[yataş] GROUP
SARMAK KOMPRESÖR · MÜHENDİSLİK
VitrA

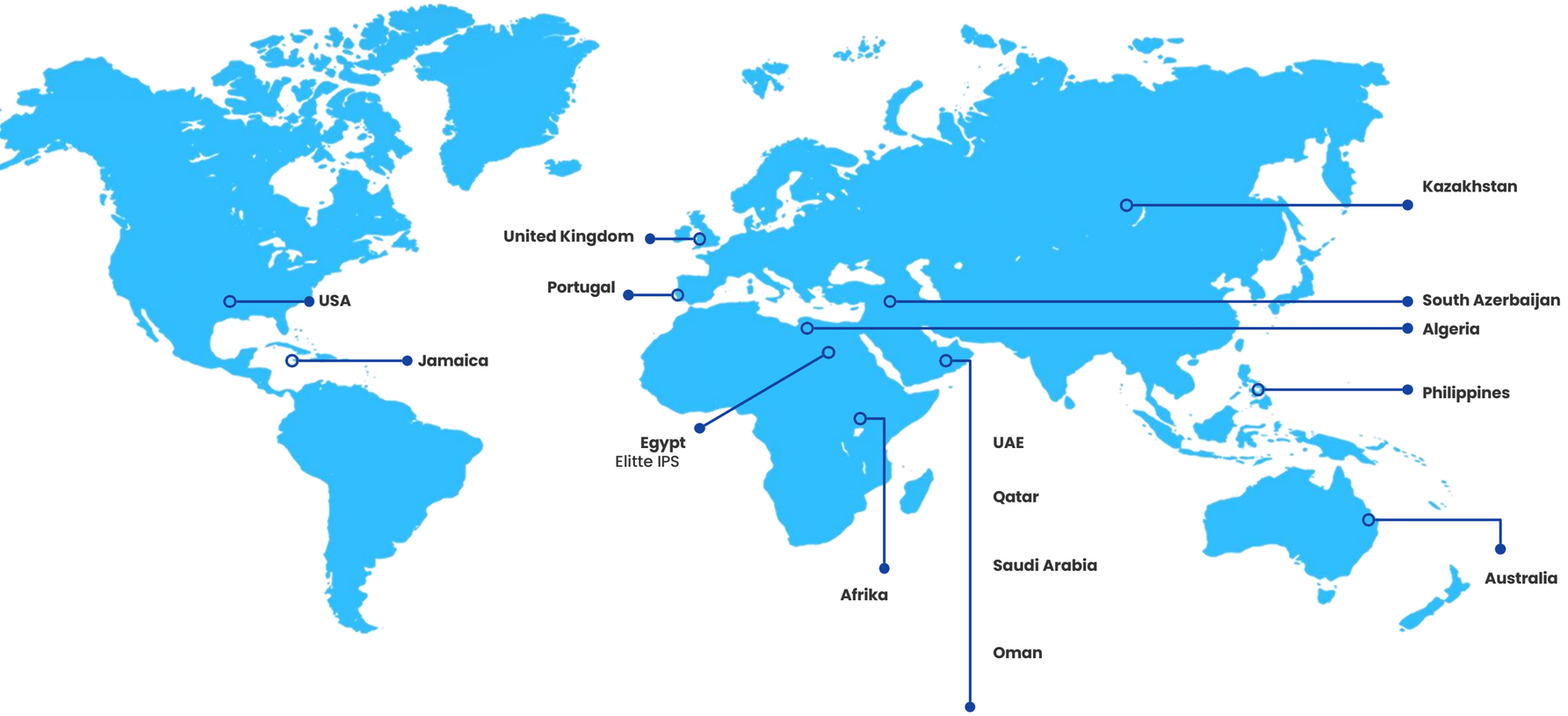
Maritime / Port Management Industry

SENSE*IN*
AssanPort

Defence Industry Energy Sector

TEI TUSAŞ MOTOR SANAYİİ A.Ş. TUSAŞ ENGINE INDUSTRIES, INC.
YENİKÖYKEMERKÖY
H29
EVAS

Global Partners



Solution Partners

Azure

CISCO

TELTONIKA

Strategic Collaborations

Castrol

KoçDigital

Allianz

ZES Technic

Türk Telekom

Thank You

Fizix

Manchester, UK

fizix.ai

Fizix

@fizix.official

Top 3 Expected Benefits from Fizix

- Increased Reliability
- Better Decisions
- Decreased Costs