anoprecise

RotationLF

Cost-Effective & Highly Accurate Prediction of Remaining Useful Life of Any Rotating Equipment

Contact us at solutions@nanoprecisesc.com or call us at +1-780-680-2693

1

Sensors for Industrial Internet of Things (IIoT)

2

Wireless vibration, acoustic emission, RPM, temperature & humidity sensor for both early and late stage defects

3

Machine Learning based health updates

Real-time alerts and reports

4

Secure data transmission to Cloud server

5

User-friendly dashboard available on mobile devices

6

1

Sensors for Industrial Internet of Things (IIoT)

- Truly Wireless
- Contains a triaxial vibration, acoustic emission, temperature, RPM & humidity sensor
- Can be adhesive, stud or magnet mounted on rotating equipment
- Sensor installation can be completed in less than 5 minutes
- Battery life of 1-3 years depending on update frequency (4/day to 12/day)
- Vibration & Natural Frequency Testing passed
- Unique Skeleton holder ensures noise down to 0.0001%
- Provides overall equipment utilization factor

2

Wireless Sensor for both early and late stage defects

- Bearing: Inner, Outer, Roller & Cage
- Cavitation
- Machine Imbalance and looseness
- Shaft misalignment or cracking
- Gear teeth problems
- Structural issues

- Patent pending combination of specialized signal processing and neural network methods leads to lowest error rate, fastest convergence rate and more than 99% accuracy in catching faults and predicting time to failure.
- Multi sensor fusion using Deep Learning with specialized neural networks that provides extremely low error rate of the order of $1e^{-20}$.
- Gathers up to 145 features, the most by any vibration analysis software in the world, enabling accurate fault diagnosis and remaining useful life.

3

Machine Learning based health updates

- Combination of specialized neural networks & kernel based extrapolation methods used for predicting remaining useful life with more than 90% accuracy.
- Gathers all kinds of time domain, frequency domain and time frequency domain features
- Specialized neural networks algorithm used for auto-calibration of sensors giving highly consistent and noise free readings

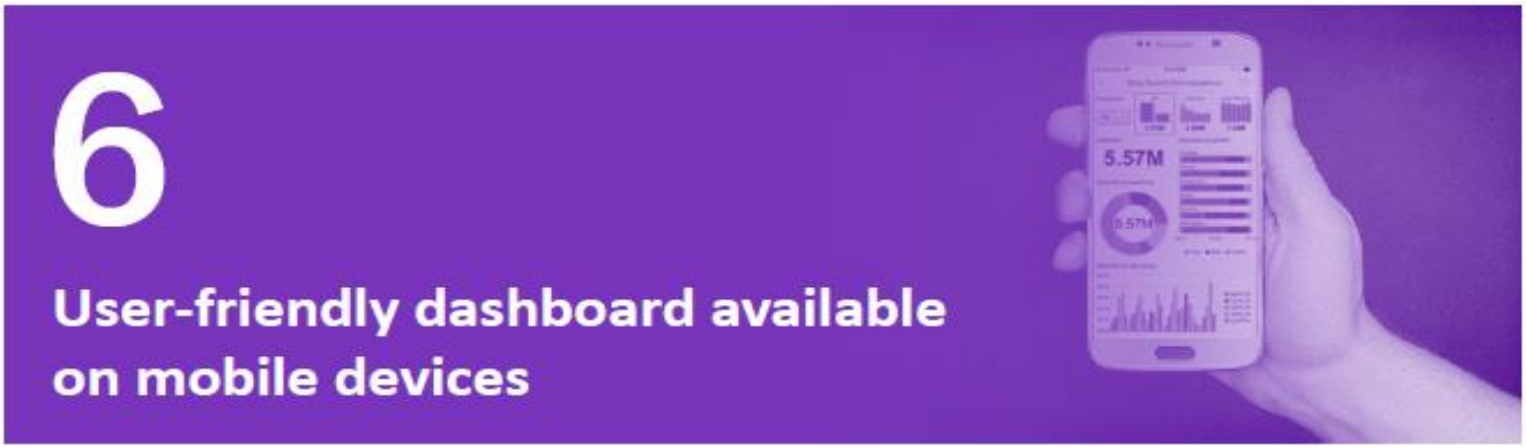
4

Secure data transmission to Cloud server

- Complies with TLS 1.2 Security Protocol
- Compliant with UL 2900-2-2
- Data traffic originates from sensor, no connection from server

- Completely server-less architecture, whole data pipeline encrypted
- Sensor data stored locally with scheduled uploads to cloud server using the most cybersecure platform (certified by UL) available in the world

- Week incipient & Characteristic fault alerts
- Text & Email alert system available



- Approved users stay updated on the health of your equipment from anywhere, at any time.
- Data can be accessed for independent analysis.
- Data, images, drawings, history can be tied to individual sensors and accessed by maintenance personnel on demand.

Certifications

FCC

IC

UL 746C Certified sensor enclosure material

IP68

NEMA250

ASME Class 1 Div. 2 or "Intrinsically Safe"

IECEX Zone 0 (Pending, Sept'19)

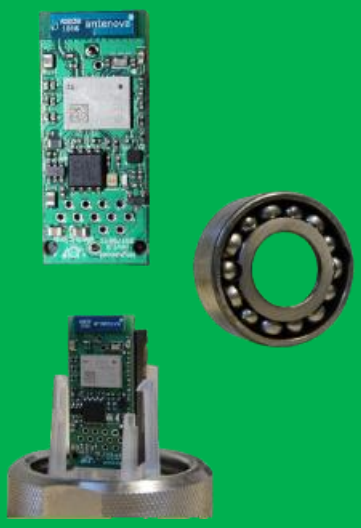
ISO 10816-1 ČSN ISO 10816-1

ISO 10816-3 Přehledný výtah ČSN ISO 10816-3

ISO 10816-7 Přehledný výtah ČSN ISO 10816-7

Hardware Specifications

Power source	1500mAhr 3.0V Battery
Battery life	> 1 year
Onboard storage capacity	Flash storage capacity of 4MB
Accelerometer	MEMS based sensor
Operating Temperature Range	Rated for -40 to 75C (sensor hardware) Rated for -50 to 115C (sensor mounting location)
Sensor Dimensions	8.8 cm (Length) 5.0 cm (Diameter)
Protocol	Security protocol – TLS 1.2, UL 2900-2-2
Connectivity Protocol	Wi-Fi based at 2.4GHz
Enterprise-grade Security	Completely encrypted data pipeline
Sampling Rate	Rated up to 10kHz
Measurement Range	Vibration sensor: Range : +-2g, +-4g, +-8g, +-16g, +-24g, +-40g Sensitivity: upto 0.001g Sampling rate: 8000 samples/sec in (Z) 5000 samples/sec in (X) 5000 samples/sec in (Y) Acoustic Emission sensor: Ultrasonic Range: 100hZ to 80kHz (flat response) Magnitude: Upto 118DB
Consumption	Ultra-low-power mode consumption down to 2 µA
Testing	Vibration & natural Frequency testing passed
Sensor	Vibration, Acoustic Emission, Temperature & Humidity
Noise Reduction	Unique skeleton holder ensures zero noise
Design	Upper gore vent ensures explosion proof design



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