

# Machine Doctor<sup>TM</sup>



## Prediction with Precision

Secure your Assets with World's first 6 in one Wireless Sensor



 **SERVIGE**

*Nanoprecise*   
Prediction with Precision

# 1

Wireless sensors  
(Cellular + Bluetooth +  
Wifi) for Industrial  
Internet of Things (IIoT)

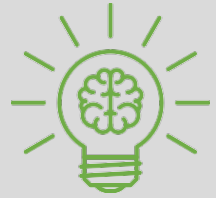


# 2

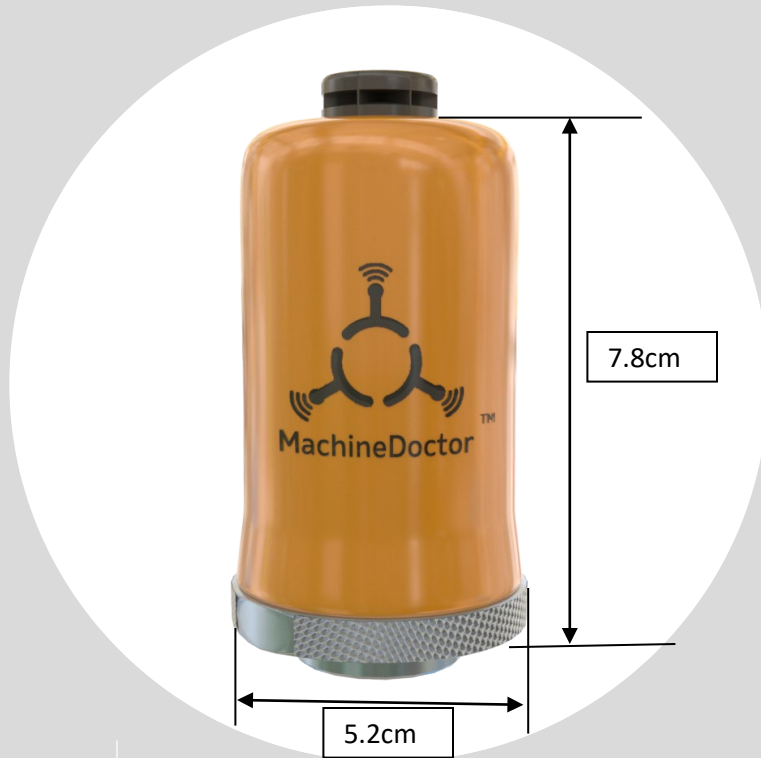
6-in-1 sensor measures  
Vibration, acoustic  
emission, RPM,  
temperature, magnetic flux  
& humidity



# 3



Machine Learning  
based health  
updates



Real-time alerts and  
reports



Secure data transmission to  
Cloud server



User-friendly  
dashboard available  
on iOS, Android, web  
API

# 4

# 5

# 6

# Meet the Hardware that Scales

Secure your Assets with World's first 6 in one Wireless Sensor



## World's first 6-in-1 sensor

Measures Vibrations, Acoustic Emissions, Surface Temperature, Humidity, Instantaneous RPM & Magnetic Flux.



## Better & Faster Connectivity

Internet connectivity through multiple communication protocols to suit wide variety of applications.



## Ease of Installation

Sensor is installed and connected to internet within 5 minutes.



## Ease of use

Alerts & Notifications Remaining Useful Life Prediction & real time machine health Summary.



## Easier Scalability

The hardware is easily scalable to connect all machines across plants and gives an overview of all machine health.

# PLUG PLAY PEACE



Machine Doctor measures 6 parameters in one i.e Vibration 3D, Acoustic Emission, Surface Temp, Humidity, True RPM & Magnetic Flux. It allows for a simple plug & play, hassle-free deployment, without worrying about any extra IT infrastructure.

## Machine Doctor is available in 4 variants:

1. Machine Doctor-WiFi uses Wi-Fi routers to take data to the cloud for analysis.
2. Machine Doctor-LTE offers the flexibility to connect to the internet via built-in E-Sim
3. Machine Doctor-LoRa+LTE works on Low-Power Long Range LoRa Technology
4. Machine Doctor-Infinity harvests energy from the machine's vibration & self charges automatically providing infinite battery life.



Vibration 3D



Acoustic Emission



Magnetic Flux



Humidity



True RPM





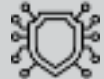




Temperature



# Automated End-to-end Solution

Nanoprecise solutions strive to create 360 degree integrated systems that can predict the remaining useful life of any asset & empower users with right data across any industry. We implement cutting edge technology to bring accurate prognostic and diagnostic solutions that can predict the remaining useful life of any asset with up to 99% accuracy.

 <p><b>Connectivity</b></p> <p>Various connectivity Options ESim / Cellular / Wifi 2.4/5ghz / NbloT / 4G / LTE</p>	 <p><b>Power</b></p> <p>Battery Powered sensor with 19000maH battery option. Simple plug play and forget</p>	 <p><b>Edge Processing</b></p> <p>Edge Processing- Smart Sensors processing data at edge, notifying about abnormalities in advance</p>
 <p><b>Real-time Alerts &amp; Reports</b></p> <p>NanoAI alarms sent via sms and emails along with prescriptive analytics to take actions</p>	 <p><b>Cybersecurity</b></p> <p>Cybersecurity- AES 256 - UL 2900-2-2 Advance Cyber security equivalent to Bank Grade Encryption</p>	 <p><b>User-friendly Dashboard</b></p> <p>Empowering User with right data at right time. Dashboard available on web &amp; Android / IOS</p>



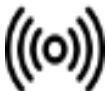


**MachineDoctor™** + **RotationLF™**

## Enhance the Life of your Machines

Our automated AI based predictive maintenance solutions facilitate early detection of even small changes in machine operations well before they impact production or cause downtime.

Our IoT driven Predictive maintenance solution helps to reduce downtime, monitor, collect, exchange and analyze data from machines to enhance manufacturing processes.

# Multiple Connectivity & Power Options

Sensor	Connectivity	Battery Life*
		
Machine Doctor – Wi-Fi	Communication Protocol: 802.11 b/g/n/e/i	2-5 years
Machine Doctor - LTE	LTE/ CAT M1/ Wi-Fi/ Bluetooth 5.0	3-8 Years
Machine Doctor – LoRa + LTE	LTE/CAT M1/4G/2G/ NbloT	5-8 Years
Machine Doctor – Infinity	LTE/ CAT M1/ Wi-Fi/ Bluetooth 5.0	>15 years

## Round-the-Clock Monitoring



**Advanced  
Anomaly  
Detection**



**Real Time  
Monitoring  
without  
Full Time  
Connectivity**



**Storage**



**Advanced  
customised  
sampling  
strategies**

\* Battery life may vary based on numerous factors, for a specific details please contact us

# Machine Health Diagnostics

MachineDoctor is easy to configure, enables smoother movement, and synchronizes with our IOS and Android applications. It feeds directly into our Analysis Software RotationLF.



Insights



Diagnosis



Action



## Benefits



Reduced Unplanned Downtime



Maximizes Asset Life



Optimizes Maintenance Budgets and Resources



Offers Insights and not mere Alerts



Reduced hazardous area exposure for your team with automated data collection.



Dedicated DIY App for self configuration without having dependency on the OEM

# Applications



Motor

Pump

Gearbox

Compressor

Engines

Fans

Ball Mills

Centrifuges

Mobile Equip.

and More!

## Industries that we Serve

Steel/Metal



Mining



Chemical



Infrastructure & Facilities



Pharmaceutical



Oil & Gas



Forest,  
Paper & Pulp



Cement





## Specifications

Parameters	Machine Doctor WiFi	Machine Doctor LTE	Machine Doctor Lora+LTE	Machine Doctor Infinity
Power Source	1500 mAH 3.0 V Battery	19,000 mAH 3.6 V Battery	19,000 mAH 3.6 V Battery	Vibration based energy harvesting; Operating Frequency - 30Hz, 60Hz, 85Hz, 110Hz, and 120 Hz
Connectivity Protocol	Wi-Fi: 2.4 Ghz	Cellular: CAT-M1 , LTE-M: 12, 2G (GSM1800/900), W,i-Fi: 2.4 Ghz & 5 GHz, Bluetooth: 5.0	Cellular: CAT-M1 , LTE-M: 12, 2G (GSM1800/900), W,i-Fi: 2.4 Ghz & 5 GHz, Bluetooth: 5.0	Cellular: CAT-M1 , LTE-M: 12, 2G (GSM1800/900), Wi-Fi: 2.4 GHz & 5 GHz
Dimensions	7.8 cm (3 inch) Length and 5.2 cm (2 inch) Diameter	10 cm (3.93") Length and 7.2 cm (2.83") Diameter	10 cm (3.93") Length and 7.2 cm (2.83") Diameter	10 cm (3.93") Length and 7.2 cm (2.83") Diameter
Onboard storage capacity	4MB (avg 500kB/day, 4x VIB TWF/day) Up to 3 days			
Accelerometer	MEMS based sensor			
Operating Temperature Range	Non-Hazardous Area Ambient operating Temp: -40 to 125°C Hazardous Area Ambient operating Temp: -40 to 55°C			
Enterprise-grade Security	AES256 Encryption; Completely encrypted data pipeline			
Measurement Range	<b>Vibration sensor:</b> <ul style="list-style-type: none"> <li>• Range: ±40g</li> <li>• Sensitivity: 0.031 mg/LSB</li> </ul> <b>Acoustic Emission sensor</b> <ul style="list-style-type: none"> <li>• Ultrasonic Range: 50Hz to 80kHz</li> <li>• Sensitivity: 26dB FS +/-1 dB</li> </ul> <b>RPM</b> <ul style="list-style-type: none"> <li>• Accuracy:99% (10-5000RPM)</li> </ul> <b>Temperature</b> <ul style="list-style-type: none"> <li>• IR Resolution: 0.1°C / 0.18°F</li> <li>• Range: -40°C to 120°C / -40°F to 250°F</li> </ul> <b>Magnetic Flux</b> <ul style="list-style-type: none"> <li>• Range: Adjustable +/-2 Gauss to +/-200 Gauss</li> <li>• Sensitivity: 0.0002 Gauss to 0.02 Gauss</li> <li>• Sampling Rate: 113 kHz</li> </ul> <b>Humidity</b> <ul style="list-style-type: none"> <li>• Range (Relative Humidity ): ± 3.5% RH, 20 to +80% RH</li> <li>• Accuracy (LSB): 0.004% RH/LSB</li> </ul>			
Consumption	Ultra-low-power mode consumption down to 8µA (Wifi) or 16µA ( Cellular)			
Testing	Vibration & natural Frequency testing passed (5000g)			
Noise Reduction	Unique skeleton holder ensures zero noise			
Certifications	FCC/ISED/CE/UKCA - LoRA+LTE Sensor FCC/IC - Wi-Fi, LTE & Infinity Sensors IECEX Class 1 Div 1 & ATEX Zone 0* - Wi-Fi Sensor IECEX Class 1 Div 2 & ATEX Zone 1* - Lora+LTE, Infinity, LTE Sensors IP68, ASME Class 1 Div 2, UL746C and UL94V0			

### Certifications:



\*In progress

# SERVIGE

Distribuidor nacional de *Nanoprecise*  
Prediction with Precision