

SensorPiN

Flexible IoT System for Industry

What is the SensorPiN?

- ➔ Hardware and software solution for the digitization of machines and the simple application of artificial intelligence and IoT in industry
- ➔ Integrable solution including applicable sensors for machines and production processes with a small industrial PC (RaspberryPI or Nvidia Jetson)



Illustration
Version 1.0

Why using the SensorPiN? – Your Advantages

- ➔ Digitization of machines and production processes with simple sensors and without complex interfaces to existing systems and without process changes
- ➔ Monitoring of the machine status by the SensorPiN and visualization by using a graphic UI
- ➔ Detection of anomalies in machine or production data streams
- ➔ Generation of process know-how for the application of complex AI algorithms for predictive maintenance and machine optimization

Success Stories and Experiences



Various industrial companies

machine digitization, anomaly detection, predictive maintenance of machines, AI-based machine optimization



(International) universities

Research partnership with Aalen University in Baden-Württemberg (DE) and the Institute for Telecommunications in Riga (LV)

Contact

E-Mail: nicolas.dolle@p-a-systems.com

Mobile: +49 15750115111

SensorPiN

Realized use cases from industrial practice

Use-Case	Use-Case Beschreibung
Anomaly Detection	AI-based detection of inequalities and deviations (anomalies) in the machine data stream, applied also in energy and power plant environment – avoid system failures and other incidents
Quality Prediction	Predicting the quality of parts in aluminum die-casting by analyzing the sensor deflections that occur with each shot (>90% Accuracy in quality prediction)
Machine Optimization	Optimization of machine processes and machine elements through vibration data analysis in the special machine area (avoid deadline exceeding for the final date of machine delivery)
Predictive Maintenance Automotive	Implementation of predictive maintenance for screwdrivers in the automotive industry - thanks to the AI application, the screwdrivers can now be replaced three weeks before the failure (>80% efficiency increase and cost reduction in maintenance process due to downtime avoidance)
Predictive Maintenance Battery Production	Implementation of predictive maintenance in battery production using the example of vibration analysis in bearing wheels (reduce downtimes for approx. +50%)
Data Stream Prediction	Concrete prediction of data streams (90% accuracy) using AI and statistics in the field of high-speed presses – avoid system failures and other incidents

Contact persons



Nicolas Dolle, M. Eng.
Managing Partner



Dipl.-W.Ing. Alexej Wergunow
Managing Partner



Christian Wilhelm, M. Sc.
Lead AI & Data Scientist



Benedikt Grimmeisen, M. Sc.
Architect & Data Scientist



20+ Employees
AI-Engineers,
Software Engineers,
Project Manager &
Professors

Example images from practical application



*Gyroscope sensor
with industrial
modeling clay*



*Data visualization
directly on the
machine*

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Subscription Model and Prices



The basic version of the SensorPiN consists of the software (system layer, MQTT broker, database, visualization) and is supplied with a RaspberryPI and two gyroscope sensors (hardware). These sensors record vibrations in the XYZ direction and have an integrated temperature sensor.

Category and Description	Details and Pricing
Monthly Basic Services	Normal Subscription
Hardware	Raspberry PI 4, 8GB RAM; 64 GB Disc and 2 MPU 6050 sensors
Software	P-A-Systems SensorPI architecture with secure remote access
Monthly Pricing Basis Version (Data Acquisition and Visualization)	1 st month for free, afterwards 479,00 €
Minimale Vertragslaufzeit	Monthly cancellable
Sensors included (Gyroscopes incl. Temperature Measurement)	2
Setup training course (online video training via Zoom or Teams) - 2 hours support included - setup can be done by customer itself (setup and travel costs can be saved) [one-time]	For free
Setup costs (online meeting, box connection, sensor application) excl. travel expenses [one-time]	For free
Travel expenses [€ / hour]	Based on Time and Material 90,00 €
Date of delivery	Agreed individually
Optional Monthly Services	
Optional: Monthly remote support services per SensorPI device on demand (Reaction time: Max. 8 hours; Intervention time: Max. 36 hours)	1 st month for free, afterwards 239,00 €
Optional: Monthly price Extra Screen, Mouse and Keyboard delivery (Mukesh 15,6 Inch LCD Monitor or similar, Logitech MK540 keyboard + mouse set or similar)	29,00 €
Optional: Monthly price Smart Report: Monthly PDF Report Data Analytics for 2 sensors (includes: Data preparation, application of different algorithms, anomaly detection, and analysis report with visualization as PDF)	1 st month for free, afterwards 349,00 €
Advantage Package: Overall Setup (Monthly Basic Services, Optional Services; excl. On Demand Services)	1st month for free, afterwards 1.096,00 € (-100,00 € for advantage package) 996,00 €
Optional On Demand Services	
Remote support services on demand (Reaction time: Max. 8 hours; Intervention time: Max. 48 hours) - expenses based T&M [€ / hour]	105,50 €
Optional: Additional sensors possible?	Yes, On request, Individual price
Optional: Other Hardware Possible? (Nvidia Jetson for complex processes)	Yes, On request, Individual price
Optional: Advanced Pattern Recognition and Advanced Artificial Intelligence (AI) and Machine Learning (ML) analytics (Predictive Maintenance, Quality Prediction, Stream Prediction) - expenses based T&M [€ / hour]	195,00 €
Optional: Connection to existing interfaces (p. ex. PLC with OPC-UA, or Siemens S7 200-300) - expenses based T&M [€ / hour]	195,00 €

Further Conditions:

- The test month begins with the receipt of the SensorPiN by post or with the attachment of the SensorPiN by PAS and ends 30 days after this date. If there is no cancellation and no return before the end of the 30 days, the regular monthly invoice for the entire setup package will be issued
- **Attention: Companies that start their test month in 2021 will receive an additional one (+30 days more)!**
- When ordering several SensorPiN devices, the monthly amount is reduced by € 50.00 per device with each additional device (this scale can be applied up to 10 times)

Important: The SensorPiN uses open-source software. A list of the software used can be made available on request.
All prices shown here refer to one SensorPiN software and hardware device excl. VAT