FROST & SULLIVAN

NANOPRECISE SCI CORP

2022
NEW
PRODUCT
INNOVATION

NORTH AMERICAN
AI-BASED PREDICTIVE
MAINTENANCE INDUSTRY

Best Practices Criteria for World-Class Performance

Frost & Sullivan applies a rigorous analytical process to evaluate multiple nominees for each award category before determining the final award recipient. The process involves a detailed evaluation of best practices criteria across two dimensions for each nominated company. Nanoprecise Sci Corp excels in many of the criteria in the AI-based predictive maintenance space.

AWARD CRITERIA

New Product Attributes	Customer Impact
Match to Needs	Price/Performance Value
Reliability	Customer Purchase Experience
Quality	Customer Ownership Experience
Positioning	Customer Service Experience
Design	Brand Equity

Reshaping Predictive Maintenance with IoT + AI Technology

Founded in 2017 and headquartered in Edmonton, Canada, Nanoprecise Sci Corp (Nanoprecise) provides customized IIoT & artificial intelligence (AI)-based predictive maintenance solutions for the industrial asset management industry. The company has offices serving clients in India, Canada, United States (US), Japan, and the EU. The asset management industry faces the dual challenge of ensuring unplanned downtime to be less than 1% of its total run time, while also making sure that most of the equipment uptime is achieved with machines running at optimal efficiency level. By effectively monitoring and analyzing the vibration, acoustic, magnetic flux and temperature data, Nanoprecise helps to avoid machine downtime altogether and also enhance the overall performance and lifespan, hence reducing the associated emissions.

"Frost & Sullivan recognizes Nanoprecise for its visionary solutions and its continued success in addressing key challenges that customers face across various industries wrt to unplanned downtime & machine efficiency Its successful use cases demonstrate the company's sought-after partnership position and flexible options of MachineDoctor™ & NrgMonitor™ to meet customer needs."

- Steven Lopez,
Best Practices Research Analyst

As companies move toward Industrial Internet of Things (IIoT), Nanoprecise's IIoT & AI enabled predictive maintenance & condition monitoring solutions allow customers to reduce false positives to less than 5% & false negatives to less than 1% and provide seamless accessibility through an intuitive and open user interface. Frost & Sullivan recognizes

the robust solutions the company brings to the asset management & condition monitoring space and the predictive maintenance market, positioning its customers to succeed during the Industry 4.0 (fourth industrial revolution) led digital transformation.

In 2021, Nanoprecise achieved 300% growth of new orders and maintains a strong leading position with continued partnerships and product offerings.[1] The company continues to pave the way as a leader in the predictive maintenance & condition monitoring domain by offering its unique & scalable hardware and unique AI powered software platform that brings benefits to customers such as downtime prevention, increased productivity, reduced emissions leading to decreased costs and reduced time spent providing physical maintenance.

Meeting Clients' Needs through Reliable and Quality Design

Nanoprecise's corporate culture revolves around using purpose to drive innovation. Its product roadmap, i.e., planning, development, and implementation strategies, incorporates customer feedback, ensuring its offerings align with customers' dynamic needs. Unexpected industrial equipment downtime drives demand for predictive maintenance solutions. Nanoprecise reports that the average cost of unplanned downtime loses companies around $532,000 per hour. In addition, many Internet of Things (IoT) projects get stuck in pilot purgatory due to data inaccuracy, data insufficiency and incorrect feature correlation leading to delayed scaleup implementation.The company's solutions take condition monitoring of rotating machinery one step further compared to other solutions on the market that only signal vibration-related problems and mechanical faults (gears and bearings) of standard production equipment. Its IIoT based hardware called , MachineDoctor™, and AI powered software called RotationLF^{TM} offers customers end-to-end integration capabilities for all assets from shopfloor to enterprise-level asset management systems with maximum reliability. MachineDoctor^{TM} is a truly plug-and-play 6-in-1 wireless sensor module designed to detect parameters such as vibration in 3 axes, acoustic emission, temperature fluctuations (99% accuracy in direct measurements), humidity, speed and magnetic flux.[2] MachineDoctor has opowerful microprocessors that enable AI based edge processing and analytics to help detect anomalies and 24/7 monitoring using wireless connectivity that includes WiFi, 3G/4G/5G, long-term evolution (LTE) telecommunication, Narrowband-IoT, and Category-M1 all in real-time with low battery consumption. Given these various connectivity offerings, Nanoprecise provides customers with below MachineDoctor™ options:

- **MachineDoctor™ - Wifi**: Transmits data to the cloud using wireless routers.
- **MachineDoctor™ - LTE**: Provides flexibility using its built-in ESim that delivers coverage to over 175 countries across more than 350 network service providers.[3]
- **MachineDoctor™ - Infinity**: This unique design collects energy from a machine's vibration with automatic self-charging functions, resulting in endless battery life.

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[1] https://www.livemint.com/brand-post/nanoprecise-sci-corp-achieves-300-growth-in-2021-11641475946727.html (Accessed October 2022)

[2] https://nanoprecise.io/products/machinedoctor/ (Accessed October 2022)

[3] Ibid.

Nanoprecise's claim to fame is that its MachineDoctor™ is the world's first and only IIoT based hardware for condition monitoring of machines that measures 6 parameters with 1 sensor (vibration, acoustic, speed, magnetic flux, temp and humidity) and can send it to internet using normally available cellular technology 3G/4G/5G with e-sim in a cybersecure compliant way and is certified to hazardous area standards such as C1D2, ATEX & IECEx Zone 0, IP68, FCC/ISED/CE/UKCA & RED. Its AI powered software RotationLF™ uses sophisticated signal processing algorithms such as CEEMDAN and sophisticated neural nets such as Wavelet Neural nets. CEEMDAN is undoubtedly the most advanced signal processing algorithm discovered so far when it comes to signal processing of machine vibration or acoustic waveform data. Wavelet Neural Nets have been proven to be much more accurate as compared to typical ANN or Radial Basis Function. It provides customers with do-it-yourself configuration, allowing them to seamlessly deploy sensors without support. Use cases demonstrating the company's success include the following:

- **The Gulf of Mexico**: Nanoprecise worked with an offshore production platform utilizing MachineDoctor™ & RotationLF™ to aid in remote platform monitoring and enabling communication through private cellular networks. Utilizing the offshore network Tampnet, Nanoprecise helped monitor and identify faults in machinery in offshore platforms.
- **Middle Eastern Well Production Continuity Savings:** Using MachineDoctor™, anomaly notifications on acoustic emission & vibration data were captured and sent to end users. The customer (a major Oil & Gas operator) trialed on 30 sucker rod pumps (SRPs) that require monitoring and now customers across Oil & Gas are planning to expland it to hundreds of such (SRPs) in the world.
- **Metal Mining:** MachineDoctor™ helped one of the largest aluminum and copper manufacturing companies in India prevent a catastrophic failure. Nanoprecise installed its sensors on assets that saved the company over 48 hours in downtime, prevented $26,000 in maintenance expenses, and recorded $1.5 million in cost savings by eliminating production losses.

Frost & Sullivan recognizes Nanoprecise for its visionary solutions and its continued success in addressing key challenges that customers face across various industries. Its successful use cases demonstrate the company's sought-after partnership position and flexible options of MachineDoctor™ to meet customer needs.

Building Trust through a Customer-centric Approach

Nanoprecise serves clients across various industry verticals, including manufacturing, transportation, oil and gas, utilities, mining, forestry, heavy equipment, heating, ventilation, pharma, air conditioning, and infrastructure. Moreover, the company provides exceptional 24/7 customer service through its dedicated team of client success experts that support customers with their needs and provide them with peace of mind throughout their onboarding journey. Furthermore, it offers clients essential resources, including blogs, podcasts, and webinars, as well as 30-minute product demos, enabling clients to stay on top of the latest insights in predictive maintenance. Nanoprecise uses client feedback, combined with industry trend monitoring, to guide its product roadmap and continuously evolve its solutions to maintain its innovative edge.

"We have selected Nanoprecise after a competitive evaluation of several offerings on the market. The decision to go with Nanoprecise was based on hardware, quality of the AI and analytics, technical support, competitive pricing, and the ability to integrate with our broader vision. We're excited to be scaling up with Nanoprecise to implement [its] technology across all of our refineries and expand further to our logistics assets."

- **Billy Bain, Senior Director, Business Transformation**

To achieve customer satisfaction, the company believes in focusing on its core values, which include being responsive to market demands, ensuring low positive rate and absolutely zero false negative rate, accountability for quality and success, strong teamwork, building trust amongst its customers, and increasing innovation best practices.

"As a proven company in the predictive maintenance space, Nanoprecise showcases expertise and its ability to incorporate IIoT & AI technology into its solutions. Its customer testimonials highlight its performance and overall client satisfaction, enabling the company to experience substantial growth in the future and increase its customer lifetime value."

- Steven Lopez,
Best Practices Research Analyst

Positioned for Growth

Serving as a testament to the company's high client satisfaction rate, Nanoprecise acquires many of its customers through word-of-mouth accolades, trade shows, and strategic partnerships fueled by its exceptional operational strategies, user's budget friendly business model, customer service, and technological performance by strictly adhering to their comprehensive KPIs or SLAs that matter to most customers. The company's customers perceive the brand positively and exhibit high brand loyalty.

"The steam turbine applications are extremely critical to us; there is no backup for the same if it goes down. Nanoprecise's solution helped us identify a major bearing fault much in advance, which helped us plan for the maintenance of that equipment effectively without having a production loss."

- **Head of Reliability, Large Refinery, US**

"The conveyor system and gearbox associated are critical assets for us and failure of such equipment can have a major impact on our operations. With Nanoprecise's AI-based round-the-clock monitoring, we feel secure as it helps us detect faults in advance."

- **Large Mining Customer, North America**

For its next venture, the company has set its sights on new product enhancements and market expansion. In 2022, Nanoprecise became the top shortlisted company of Maruti Suzuki India Limited (MSIL) among hundreds of startups that applied for MSIL's program , helping the company to extend its proof-of-concept and increase solution scalability, which will promote further growth and cement its industry-leading position.[4]

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[4] https://www.prnewswire.com/news-releases/nanoprecise-sci-corp-wins-maruti-suzuki-cohort-5-of-the-mail-programme-301518840.html
(Accessed October 2022)

Launched in 2022, Nanoprecise's new and purpose-built NrgMonitor set it apart from its competitors, with superior design, reliability, and quality as its central pillars. NrgMonitor is an AI-based platform designed to manage energy efficiency and equipment health. This solution enables manufacturers and operators to track energy consumption patterns & identify any increase in energy consumption due to faulty condition of the machine and notify the same to customer to reduce carbon dioxide emissions and help end user towards their NetZero goals. NrgMonitor is a highly scalable and portable solution and is basically an extension of their current condition monitoring platform and includes machine efficiency & power consumption insights. that saves customers money and results in a quick return on investment. Initial estimates suggest that customer's implementing NrgMonitor on their rotating machinery can not only avoid downtime by more than 90% but can also save up to 15% of their annual energy consumption, hence able to contribute up to 15% of their overall NetZero target, just by suggesting right maintenance action on a right equipment at the right time.

Frost & Sullivan commends Nanoprecise on its continuous efforts to enhance its product line with new solutions. As a proven company in the predictive maintenance space, Nanoprecise showcases expertise and its ability to incorporate AI technology into its solutions. Its customer testimonials highlight its performance and overall client satisfaction, enabling the company to experience substantial growth in the future.

Conclusion

To create an innovative product, a company needs to understand the market's needs and deliver a solid solution designed and embedded with high-quality and reliable performance. Frost & Sullivan finds that Nanoprecise Sci Corp (Nanoprecise) embodies this concept. The company is one of the leading predictive maintenance solutions providers using the Internet of Things and artificial intelligence. Utilizing Nanoprecise's flagship products, customers have access to end-to-end capabilities for all asset management system levels. Customers have access to 24/7 monitoring across various wireless connectivity options. The company continues to grow by building strategic partnerships across various industries and garnering trust from customers, proven by successful use cases. Furthermore, Nanoprecise integrates a customer-centric approach to ensure that its offerings address users' wants and needs. With its strong overall performance, Nanoprecise earns Frost & Sullivan's 2022 North American New Product Innovation Award in the AI-based predictive maintenance industry.

What You Need to Know about the New Product Innovation Recognition

Frost & Sullivan's New Product Innovation Award recognizes the company that offers a new product or solution that uniquely addresses key customer challenges.

Best Practices Award Analysis

For the New Product Innovation Award, Frost & Sullivan analysts independently evaluated the criteria listed below.

New Product Attributes

Match to Needs: Customer needs directly influence and inspire product design and positioning

Reliability: Product consistently meets or exceeds customer performance expectations

Quality: Product offers best-in-class quality with a full complement of features and functionality

Positioning: Product serves a unique, unmet need that competitors cannot easily replicate

Design: Product features an innovative design that enhances both visual appeal and ease of use

Customer Impact

Price/Performance Value: Products or services provide the best value for the price compared to similar market offerings

Customer Purchase Experience: Quality of the purchase experience assures customers that they are buying the optimal solution for addressing their unique needs and constraints

Customer Ownership Experience: Customers proudly own the company's product or service and have a positive experience throughout the life of the product or service

Customer Service Experience: Customer service is accessible, fast, stress-free, and high quality

Brand Equity: Customers perceive the brand positively and exhibit high brand loyalty

About Frost & Sullivan

Frost & Sullivan is the Growth Pipeline Company™. We power our clients to a future shaped by growth. Our Growth Pipeline as a Service™ provides the CEO and the CEO's growth team with a continuous and rigorous platform of growth opportunities, ensuring long-term success. To achieve positive outcomes, our team leverages over 60 years of experience, coaching organizations of all types and sizes across 6 continents with our proven best practices. To power your Growth Pipeline future, visit Frost & Sullivan at http://www.frost.com.

The Growth Pipeline Engine™

Frost & Sullivan's proprietary model to systematically create ongoing growth opportunities and strategies for our clients is fuelled by the Innovation Generator™.

Learn more.

Key Impacts:

■ **Growth Pipeline:** *Continuous Flow of Growth Opportunities*

■ **Growth Strategies:** *Proven Best Practices*

■ **Innovation Culture:** *Optimized Customer Experience*

■ **ROI & Margin:** *Implementation Excellence*

■ **Transformational Growth:** *Industry Leadership*

The Innovation Generator™

Our 6 analytical perspectives are crucial in capturing the broadest range of innovative growth opportunities, most of which occur at the points of these perspectives.

Analytical Perspectives:

■ Mega Trend (MT)

■ Business Model (BM)

■ Technology (TE)

■ Industries (IN)

■ Customer (CU)

■ Geographies (GE)