

Predictive Maintenance Sensors Market Forecasts to 2034 – Global Analysis By Sensor Type (Vibration Sensors, Temperature Sensors, Pressure Sensors, Acoustic Sensors, and Infrared Sensors), Component, Deployment, Application, End User, and By Geography

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Abstracts

According to Statistics MRC, the Global Predictive Maintenance Sensors Market is accounted for \$12.8 billion in 2026 and is expected to reach \$42.6 billion by 2034 growing at a CAGR of 16.2% during the forecast period. Predictive maintenance sensors refer to vibration, temperature, pressure, acoustic emission, infrared, and ultrasonic sensing devices deployed on industrial machinery, production equipment, and critical infrastructure assets to continuously collect real-time equipment health data that AI-powered analytics platforms process to detect early signatures of developing mechanical faults, bearing degradation, lubrication failures, imbalance conditions, and corrosion progression, enabling maintenance teams to schedule corrective interventions before catastrophic failure events occur across manufacturing, oil and gas, power generation, and transportation infrastructure.

Market Dynamics:

Driver:

Industry 4.0 Maintenance Revolution

Industry 4.0 digitalization programs replacing time-based preventive maintenance schedules with data-driven predictive maintenance strategies are generating substantial

sensor deployment demand as manufacturers instrument previously unmonitored equipment with wireless sensor nodes providing the continuous machine health telemetry required for AI analytics-based failure prediction. Documented maintenance cost reductions of 25 to 30 percent and equipment lifespan extensions of 20 to 40 percent from predictive maintenance programs create compelling investment justifications across capital-intensive manufacturing operations.

Restraint:

Wireless Sensor Battery Limitations

Battery life limitations of wireless industrial IoT sensor nodes in extreme industrial environment deployment conditions including high temperature, vibration, and electromagnetic interference create maintenance burden and operational gaps in continuous monitoring coverage that require sensor battery replacement programs adding ongoing maintenance cost and creating periodic monitoring gaps during battery replacement procedures in hazardous or difficult-access equipment installation locations.

Opportunity:

Renewable Energy Asset Monitoring

Wind turbine, solar inverter, and battery storage system predictive maintenance sensor deployment represents a rapidly growing market opportunity as renewable energy asset operators require continuous mechanical and electrical health monitoring across geographically dispersed installations where on-site maintenance visits are expensive and early fault detection significantly reduces catastrophic failure risks and turbine downtime that directly impact energy generation revenue.

Threat:

Data Overload Analytics Challenges

Data overload from large-scale sensor deployments generating massive continuous equipment telemetry streams exceeds industrial operations team capacity for manual data review and creates analytical complexity that requires sophisticated AI platform investment to transform raw sensor data into actionable maintenance recommendations, creating a secondary cost barrier beyond initial sensor hardware

procurement that constrains total predictive maintenance program value realization for organizations lacking AI analytics capabilities.

Covid-19 Impact:

COVID-19 reduced on-site maintenance team availability that created urgent demand for remote equipment health monitoring capabilities enabling predictive maintenance program management during restricted site access periods. Pandemic-era supply chain disruptions for replacement parts amplified the value of early fault detection enabling longer advance notice for parts procurement before failure. Post-pandemic industrial automation investment wave incorporating predictive maintenance as a standard component of smart factory programs sustains strong sensor market growth.

The infrared sensors segment is expected to be the largest during the forecast period

The infrared sensors segment is expected to account for the largest market share during the forecast period, due to broad thermal imaging application across electrical panel inspection, mechanical bearing temperature monitoring, industrial process heat management, and building energy audit applications that collectively generate the highest deployment volume within the predictive maintenance sensor category. Cost reduction of industrial infrared thermal camera hardware expanding deployment from specialized applications to routine equipment monitoring sustains segment revenue leadership.

The hardware segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the hardware segment is predicted to witness the highest growth rate, driven by massive expansion of industrial sensor node deployment across previously unmonitored equipment creating substantial hardware procurement demand as predictive maintenance programs scale from pilot installations to enterprise-wide equipment monitoring coverage, combined with rapid miniaturization and cost reduction of MEMS vibration sensors, wireless communication modules, and edge AI chips enabling economical sensor instrumentation of a broader equipment population.

Region with largest share:

During the forecast period, the North America region is expected to hold the largest market share, due to the United States hosting extensive capital-intensive

manufacturing, oil and gas, and power generation infrastructure with high predictive maintenance sensor adoption, leading sensor technology companies including Honeywell, Emerson, Analog Devices, and Texas Instruments generating substantial domestic revenue, and strong industrial IoT investment culture driving sensor deployment across diverse industrial sectors.

Region with highest CAGR:

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest CAGR, due to China, Japan, South Korea, and India implementing large-scale smart manufacturing programs requiring extensive equipment health monitoring sensor deployment, rapidly growing renewable energy installations requiring continuous asset monitoring, and domestic industrial IoT sensor development in China and South Korea creating competitive supply ecosystems driving regional sensor market expansion.

Key players in the market

Some of the key players in Predictive Maintenance Sensors Market include Siemens AG, ABB Ltd., Emerson Electric Co., Honeywell International, Schneider Electric, General Electric, Rockwell Automation, Bosch Sensortec, STMicroelectronics, Texas Instruments, Analog Devices, National Instruments, Eaton Corporation, Omron Corporation, Yokogawa Electric, Endress+Hauser, and Parker Hannifin.

Key Developments:

In March 2026, Emerson Electric Co. launched a new wireless vibration sensor platform with six-month battery life and integrated edge AI processing for rotating machinery fault detection requiring no external gateway hardware for deployment.

In February 2026, Analog Devices introduced a new MEMS vibration sensing IC combining accelerometer, temperature, and acoustic emission sensing in a single chip enabling cost-effective multi-parameter equipment monitoring at industrial scale.

In January 2026, Honeywell International expanded its Forge predictive maintenance platform with new AI models for wind turbine gearbox fault detection enabling renewable energy operators to predict bearing failures up to 30 days in advance.

Sensor Types Covered:

Vibration Sensors

Temperature Sensors

Pressure Sensors

Acoustic Sensors

Infrared Sensors

Components Covered:

Hardware

Software Platforms

Analytics Services

Deployments Covered:

Wireless Sensors

Wired Sensors

Applications Covered:

Equipment Monitoring

Asset Performance Management

Failure Detection

Condition Monitoring

Energy Optimization

End Users Covered:

Manufacturing

Oil & Gas

Energy & Utilities

Transportation

Aerospace

Regions Covered:

North America

United States

Canada

Mexico

Europe

United Kingdom

Germany

France

Italy

Spain

Netherlands

Belgium

Sweden

Switzerland

Poland

Rest of Europe

Asia Pacific

China

Japan

India

South Korea

Australia

Indonesia

Thailand

Malaysia

Singapore

Vietnam

Rest of Asia Pacific

South America

Brazil

Argentina

Colombia

Chile

Peru

Rest of South America

Rest of the World (RoW)

Middle East

Saudi Arabia

United Arab Emirates

Qatar

Israel

Rest of Middle East

Africa

South Africa

Egypt

Morocco

Rest of Africa

What our report offers:

Market share assessments for the regional and country-level segments

Strategic recommendations for the new entrants

Covers Market data for the years 2023, 2024, 2025, 2026, 2027, 2028, 2030,

2032 and 2034

Market Trends (Drivers, Constraints, Opportunities, Threats, Challenges, Investment Opportunities, and recommendations)

Strategic recommendations in key business segments based on the market estimations

Competitive landscaping mapping the key common trends

Company profiling with detailed strategies, financials, and recent developments

Supply chain trends mapping the latest technological advancements

Free Customization Offerings:

All the customers of this report will be entitled to receive one of the following free customization options:

Company Profiling

Comprehensive profiling of additional market players (up to 3)

SWOT Analysis of key players (up to 3)

Regional Segmentation

Market estimations, Forecasts and CAGR of any prominent country as per the client's interest (Note: Depends on feasibility check)

Competitive Benchmarking

Benchmarking of key players based on product portfolio, geographical presence, and strategic alliances

Contents

1 EXECUTIVE SUMMARY

- 1.1 Market Snapshot and Key Highlights
- 1.2 Growth Drivers, Challenges, and Opportunities
- 1.3 Competitive Landscape Overview
- 1.4 Strategic Insights and Recommendations

2 RESEARCH FRAMEWORK

- 2.1 Study Objectives and Scope
- 2.2 Stakeholder Analysis
- 2.3 Research Assumptions and Limitations
- 2.4 Research Methodology
 - 2.4.1 Data Collection (Primary and Secondary)
 - 2.4.2 Data Modeling and Estimation Techniques
 - 2.4.3 Data Validation and Triangulation
 - 2.4.4 Analytical and Forecasting Approach

3 MARKET DYNAMICS AND TREND ANALYSIS

- 3.1 Market Definition and Structure
- 3.2 Key Market Drivers
- 3.3 Market Restraints and Challenges
- 3.4 Growth Opportunities and Investment Hotspots
- 3.5 Industry Threats and Risk Assessment
- 3.6 Technology and Innovation Landscape
- 3.7 Emerging and High-Growth Markets
- 3.8 Regulatory and Policy Environment
- 3.9 Impact of COVID-19 and Recovery Outlook

4 COMPETITIVE AND STRATEGIC ASSESSMENT

- 4.1 Porter's Five Forces Analysis
 - 4.1.1 Supplier Bargaining Power
 - 4.1.2 Buyer Bargaining Power
 - 4.1.3 Threat of Substitutes
 - 4.1.4 Threat of New Entrants

- 4.1.5 Competitive Rivalry
- 4.2 Market Share Analysis of Key Players
- 4.3 Product Benchmarking and Performance Comparison

5 GLOBAL PREDICTIVE MAINTENANCE SENSORS MARKET, BY SENSOR TYPE

- 5.1 Vibration Sensors
- 5.2 Temperature Sensors
- 5.3 Pressure Sensors
- 5.4 Acoustic Sensors
- 5.5 Infrared Sensors

6 GLOBAL PREDICTIVE MAINTENANCE SENSORS MARKET, BY COMPONENT

- 6.1 Hardware
- 6.2 Software Platforms
- 6.3 Analytics Services

7 GLOBAL PREDICTIVE MAINTENANCE SENSORS MARKET, BY DEPLOYMENT

- 7.1 Wireless Sensors
- 7.2 Wired Sensors

8 GLOBAL PREDICTIVE MAINTENANCE SENSORS MARKET, BY APPLICATION

- 8.1 Equipment Monitoring
- 8.2 Asset Performance Management
- 8.3 Failure Detection
- 8.4 Condition Monitoring
- 8.5 Energy Optimization

9 GLOBAL PREDICTIVE MAINTENANCE SENSORS MARKET, BY END USER

- 9.1 Manufacturing
- 9.2 Oil & Gas
- 9.3 Energy & Utilities
- 9.4 Transportation
- 9.5 Aerospace

10 GLOBAL PREDICTIVE MAINTENANCE SENSORS MARKET, BY GEOGRAPHY

10.1 North America

10.1.1 United States

10.1.2 Canada

10.1.3 Mexico

10.2 Europe

10.2.1 United Kingdom

10.2.2 Germany

10.2.3 France

10.2.4 Italy

10.2.5 Spain

10.2.6 Netherlands

10.2.7 Belgium

10.2.8 Sweden

10.2.9 Switzerland

10.2.10 Poland

10.2.11 Rest of Europe

10.3 Asia Pacific

10.3.1 China

10.3.2 Japan

10.3.3 India

10.3.4 South Korea

10.3.5 Australia

10.3.6 Indonesia

10.3.7 Thailand

10.3.8 Malaysia

10.3.9 Singapore

10.3.10 Vietnam

10.3.11 Rest of Asia Pacific

10.4 South America

10.4.1 Brazil

10.4.2 Argentina

10.4.3 Colombia

10.4.4 Chile

10.4.5 Peru

10.4.6 Rest of South America

10.5 Rest of the World (RoW)

10.5.1 Middle East

- 10.5.1.1 Saudi Arabia
- 10.5.1.2 United Arab Emirates
- 10.5.1.3 Qatar
- 10.5.1.4 Israel
- 10.5.1.5 Rest of Middle East
- 10.5.2 Africa
 - 10.5.2.1 South Africa
 - 10.5.2.2 Egypt
 - 10.5.2.3 Morocco
 - 10.5.2.4 Rest of Africa

11 STRATEGIC MARKET INTELLIGENCE

- 11.1 Industry Value Network and Supply Chain Assessment
- 11.2 White-Space and Opportunity Mapping
- 11.3 Product Evolution and Market Life Cycle Analysis
- 11.4 Channel, Distributor, and Go-to-Market Assessment

12 INDUSTRY DEVELOPMENTS AND STRATEGIC INITIATIVES

- 12.1 Mergers and Acquisitions
- 12.2 Partnerships, Alliances, and Joint Ventures
- 12.3 New Product Launches and Certifications
- 12.4 Capacity Expansion and Investments
- 12.5 Other Strategic Initiatives

13 COMPANY PROFILES

- 13.1 Siemens AG
- 13.2 ABB Ltd.
- 13.3 Emerson Electric Co.
- 13.4 Honeywell International
- 13.5 Schneider Electric
- 13.6 General Electric
- 13.7 Rockwell Automation
- 13.8 Bosch Sensortec
- 13.9 STMicroelectronics
- 13.10 Texas Instruments
- 13.11 Analog Devices

- 13.12 National Instruments
- 13.13 Eaton Corporation
- 13.14 Omron Corporation
- 13.15 Yokogawa Electric
- 13.16 Endress+Hauser
- 13.17 Parker Hannifin

List Of Tables

LIST OF TABLES

- Table 1 Global Predictive Maintenance Sensors Market Outlook, By Region (2023-2034) (\$MN)
- Table 2 Global Predictive Maintenance Sensors Market Outlook, By Sensor Type (2023-2034) (\$MN)
- Table 3 Global Predictive Maintenance Sensors Market Outlook, By Vibration Sensors (2023-2034) (\$MN)
- Table 4 Global Predictive Maintenance Sensors Market Outlook, By Temperature Sensors (2023-2034) (\$MN)
- Table 5 Global Predictive Maintenance Sensors Market Outlook, By Pressure Sensors (2023-2034) (\$MN)
- Table 6 Global Predictive Maintenance Sensors Market Outlook, By Acoustic Sensors (2023-2034) (\$MN)
- Table 7 Global Predictive Maintenance Sensors Market Outlook, By Infrared Sensors (2023-2034) (\$MN)
- Table 8 Global Predictive Maintenance Sensors Market Outlook, By Component (2023-2034) (\$MN)
- Table 9 Global Predictive Maintenance Sensors Market Outlook, By Hardware (2023-2034) (\$MN)
- Table 10 Global Predictive Maintenance Sensors Market Outlook, By Software Platforms (2023-2034) (\$MN)
- Table 11 Global Predictive Maintenance Sensors Market Outlook, By Analytics Services (2023-2034) (\$MN)
- Table 12 Global Predictive Maintenance Sensors Market Outlook, By Deployment (2023-2034) (\$MN)
- Table 13 Global Predictive Maintenance Sensors Market Outlook, By Wireless Sensors (2023-2034) (\$MN)
- Table 14 Global Predictive Maintenance Sensors Market Outlook, By Wired Sensors (2023-2034) (\$MN)
- Table 15 Global Predictive Maintenance Sensors Market Outlook, By Application (2023-2034) (\$MN)
- Table 16 Global Predictive Maintenance Sensors Market Outlook, By Equipment Monitoring (2023-2034) (\$MN)
- Table 17 Global Predictive Maintenance Sensors Market Outlook, By Asset Performance Management (2023-2034) (\$MN)
- Table 18 Global Predictive Maintenance Sensors Market Outlook, By Failure Detection

(2023-2034) (\$MN)

Table 19 Global Predictive Maintenance Sensors Market Outlook, By Condition Monitoring (2023-2034) (\$MN)

Table 20 Global Predictive Maintenance Sensors Market Outlook, By Energy Optimization (2023-2034) (\$MN)

Table 21 Global Predictive Maintenance Sensors Market Outlook, By End User (2023-2034) (\$MN)

Table 22 Global Predictive Maintenance Sensors Market Outlook, By Manufacturing (2023-2034) (\$MN)

Table 23 Global Predictive Maintenance Sensors Market Outlook, By Oil & Gas (2023-2034) (\$MN)

Table 24 Global Predictive Maintenance Sensors Market Outlook, By Energy & Utilities (2023-2034) (\$MN)

Table 25 Global Predictive Maintenance Sensors Market Outlook, By Transportation (2023-2034) (\$MN)

Table 26 Global Predictive Maintenance Sensors Market Outlook, By Aerospace (2023-2034) (\$MN)

Note: Tables for North America, Europe, APAC, South America, and Rest of the World (RoW) Regions are also represented in the same manner as above.

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