

Predictive Maintenance In The Energy Market - Growth, Trends, Covid-19 Impact, and Forecasts (2023 - 2028)

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Report description:

The predictive maintenance in the energy market is anticipated to register a CAGR of 27.6% over the forecast period (2022-2027). The predictive Maintenance (PdM) platform has gained significant market prominence over recent years. PdM solutions are integrated with new or existing machinery infrastructure to determine machine health and identify signs of impending deterioration. PdM integration guarantees ROI and enables organizations to meet & exceed sustainability goals, enabling remote machine monitoring globally.

Key Highlights

Predictive maintenance is significantly helping to improve asset efficiency for the energy industry. Emerging technologies, like Big Data analytics, the Internet of Things, and cloud data storage, enable industrial equipment and sensors to send condition-based data to a centralized server, making fault detection easier, more practical, and direct. The rise in uptime, reduced maintenance cost, unexpected failures, and spare part inventory has led the market to propel and flourish simultaneously. Also, the repair and overhaul time decrease is crucial for the predictive maintenance market growth.

Most energy companies are asset-intensive organizations. It takes time and effort to ensure that these resources function to provide consumers with energy. Machine learning techniques, such as decision trees, can optimize the operation of the equipment and, by extension. Similarly, comparable algorithms can be employed to transform preventative maintenance programs into predictive ones, which is possible through Automation. It also provides marginal pricing, time shifting, and maximizing the use of assets allowing energy to be generated and delivered.

The predictive maintenance services and solutions provide an alert before the machine breaks down. Integrating business information, sensor data, and enterprise asset management (EAM) systems rapidly move from reactive to predictive maintenance services and solutions.

However, factors such as the high cost of installation, environmental concerns, the rising cost of operations, increasing consumer

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expectations, and misinterpretation of data leading to false requests hinder the market growth of predictive maintenance. These challenges increase the adoption rate of various analytics tools, owing to the growing need for better insights into the usage and performance patterns, helping make better decisions.

The emergence of COVID-19 significantly affected the market. The slowdown in economies worldwide resulted in both positive and negative impacts on the market. For instance, the drop in energy consumption was due to the lockdowns, hurting the market. However, companies operating in the industry have been trying to maintain the machinery in running quality due to a lack of personnel and a disrupted supply chain during the outbreak.

Predictive Maintenance in the Energy Market Trends

Solutions Segment is Anticipated to Witness Significant Growth

There has been an increasing demand for customized industrial predictive maintenance solutions in the energy sector, primarily for remote monitoring operations. Big Data has also played a significant role in analyzing processes, assets, and heavy equipment.

Multiple vendors, such as SAP, IBM, and Microsoft, are operating in the market, providing customized predictive maintenance solutions and services based on organizations' requirements. These solutions can protect their critical equipment to gain a competitive edge in productivity.

Artificial intelligence (AI) and machine learning (ML) enable organizations to have complete visibility of operations and create insights that can help overcome some of the sector's most disruptive challenges. The amount of big data produced by energy sector companies means that forward-thinking businesses invest in monitoring and predictive analytics tools that help leverage this data to its total capacity. According to Gartner, 40% of this sector's new monitoring and control systems will use IoT to enable intelligent operations by 2025.

The power generation industry is transitioning from coal to solar and wind energy due to the depletion of coal resources. Due to changing climatic conditions, most countries also heavily regulate coal power stations. Due to the increasing electricity consumption, developing countries invest in advanced technologies and equipment to scale their production capacities.

The deployment of predictive maintenance solutions is expected to empower end users to enhance productivity, with a reception to failure, by maximizing innovative maintenance activities in the power generation industry. The power generation industry in the developing countries of the APAC region requires operations to be performed with higher efficiency, better control, and faster monitoring to reduce the chances of operational failure.

The investments in renewable power generation, especially in wind turbines, offshore wind farms, and solar fields in countries like China and India, have fueled the growth of the predictive maintenance solutions market.

North America to Occupy a Significant Market Share

North America dominates the global predictive maintenance market, followed by Europe. This is because of underlying factors like the existence of a large number of service providers, developments in technology, and increased knowledge of preventative maintenance. The increasing focus on innovations through R&D for technological advancements in developed economies, such as Canada and the United States, has driven the demand for predictive maintenance solutions across the region. According to the US Energy Information Administration, the total energy consumption rate is expected to increase by 5% between 2020 and 2040. It has become crucial for companies to deliver energy efficiency and reduce downtimes to maintain profitability. This drives the market for data analytics in utilities and energy. The rising environmental concerns and increasing investments in sustainable energy will likely impact the market's growth.

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Rise in the investment of AI and ML to minimize the downtime and maintenance cost of an asset, adoption of IoT, the need to extend the overall lifespan of machinery and equipment, the declining prices of sensors, advancements in sensor technology, the evolution of high-speed networking technologies are other factors contributing to the market's growth. Also, regulatory compliance has been a massive driver behind the high adoption of IoT technology in the United States. The introduction of the Energy Act in the United States has accelerated the efforts to monitor sustainable energy consumption.

The energy industry, one of the largest industries in the United States, is attracting considerable investments. For instance, according to Bloomberg New Energy Finance (BNEF), the United States is expected to invest about USD 700 billion in the next 20 years to drive renewable energy capacity. These factors are expected to augment the market's growth for predictive maintenance.

The Energy sector continues to be targeted for deal activity as environmental, social, and governance (ESG) strategies are strengthened. General investor interest persists, even though macroeconomic pressures could pose a broad range of valuation challenges for energy, power, and utility companies across North America. For example, South Jersey Industries was acquired by J.P Morgan for \$7.8 billion. Similarly, OPAL Fuels LLC was acquired by ArcLight Clean Energy transition Corp for \$1.5 Billion. This accelerates North America's energy sector and further enhances the growth of predictive maintenance in this region.

Predictive Maintenance in the Energy Market Competitor Analysis

Multiple domestic and international firms make predictive maintenance in the energy market significantly competitive. The market is moderately concentrated, with significant players adopting strategies like product innovation, mergers, and acquisitions to expand their market dominance. Some major players operating in the market include IBM Corporation, SAP SE, Siemens AG, and Robert Bosch GmbH.

In May 2022, Hitachi Ltd. announced the launch of Lumada Inspection Insights developed by Hitachi Energy and Hitachi Vantara, enabling businesses to automate asset inspection and advance sustainability objectives. The new approach employs AI and machine learning to evaluate resources, hazards, and a wide range of image kinds to address multiple reasons for failures.

In October 2021, Spanish technology company Ingeteam announced the launch of its new tool that combines all its predictive maintenance products and services in a single brand. Ingepredict has been directed at increasing production and extending the service life of assets at industrial and renewable energy generation plants. The primary aim of Ingepredict is to facilitate the early detection of faults, poor maintenance, or any other deviation that could lead to unplanned downtime.

In October 2021, Ras Ghareb Wind Energy announced that it selected Hitachi ABB Power Grids to optimize operations at its 262.5MW wind energy plant in Egypt. Hitachi ABB Power Grids will provide predictive maintenance for a 220/33kV grid connection to ensure peak performance at Egypt's largest wind farm power project. The services are also expected to help reduce the risk of failure, extend asset life, and lower operational costs.

Additional Benefits:

The market estimate (ME) sheet in Excel format
3 months of analyst support

Table of Contents:

1 INTRODUCTION

1.1 Study Assumptions and Market Definition

1.2 Scope of the Study

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2 RESEARCH METHODOLOGY

3 EXECUTIVE SUMMARY

4 MARKET DYNAMICS

4.1 Market Overview

4.2 Market Drivers

4.2.1 Increasing Investments in the Energy Sector

4.2.2 Increasing Adoption of Automation

4.3 Market Challenges

4.3.1 Higher Deployment Cost

4.4 Industry Value Chain Analysis

4.5 Industry Attractiveness - Porter's Five Forces Analysis

4.5.1 Threat of New Entrants

4.5.2 Bargaining Power of Buyers

4.5.3 Bargaining Power of Suppliers

4.5.4 Threat of Substitute Products

4.5.5 Intensity of Competitive Rivalry

4.6 Assessment of COVID-19 impact on the Market

5 MARKET SEGMENTATION

5.1 By Offering

5.1.1 Solutions

5.1.2 Services

5.2 By Deployment Model

5.2.1 On-premise

5.2.2 Cloud

5.3 By Region

5.3.1 North America

5.3.2 Europe

5.3.3 Asia-Pacific

5.3.4 Latin America

5.3.5 Middle East & Africa

6 COMPETITIVE LANDSCAPE

6.1 Company Profiles

6.1.1 IBM Corporation

6.1.2 SAP SE

6.1.3 Siemens AG

6.1.4 Intel Corporation

6.1.5 Robert Bosch GmbH

6.1.6 Accenture PLC

6.1.7 ABB Ltd

6.1.8 Schneider Electric

6.1.9 Banner Engineering Corp.

6.1.10 GE Automation & Control

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7 INVESTMENT ANALYSIS

8 MARKET OPPORTUNITIES AND FUTURE TRENDS

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