

Microgrid Monitoring Systems Market – Global Industry Size, Share, Trends, Opportunity, and Forecast, 2018-2028 Segmented By Grid Type (On-Grid and Off-Grid), By Component (Hardware and Software), By Ownership, (Private and Public), By End-User (Utilities, Campuses & Institutions, Commercial, Industrial, and Others), By Region and Competition

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Abstracts

Global microgrid monitoring systems market is forecasted to grow at a healthy CAGR during 2024-2028.

A microgrid monitoring system is a collection of hardware and software components that collect and analyze microgrid data. This data can be used to monitor the microgrid's performance, identify potential problems, and optimize the microgrid's operation. Over the years with the penetration of distributed energy sources in power systems and generation of electricity from them, controlling the stability of network has become more complicated. Therefore, there is a development of the concept microgrid monitoring systems which divides the distribution system into numerous subsystems. According to the International Energy Agency, there would be an increase in the development of microgrids by 2040, which would give 80 million people electricity through microgrids.

Sensors and meters to collect data on various parameters such as voltage, current, frequency, and power flow are typically included in a microgrid monitoring system, as are software tools for data analysis and visualization. Control algorithms and communication networks may also be included in the system, allowing operators to remotely monitor and manage the microgrid.

A microgrid monitoring system's primary function is to ensure that the microgrid operates efficiently and reliably. The system can detect and diagnose problems quickly by collecting real-time data on the performance of individual microgrid components, allowing operators to take corrective action before they escalate into more serious issues. Microgrid monitoring systems can also assist in optimizing the performance of the microgrid by identifying opportunities to increase efficiency, reduce costs, and improve overall system performance. Operators, for example, can identify ways to balance the load and improve the use of renewable energy sources by analyzing data on power consumption, generation, and storage, such as scheduling charging of energy storage systems to coincide with peak solar output.

Overall, microgrid monitoring systems play an important role in ensuring the reliable and efficient operation of microgrids, making them a must-have tool for organizations and communities seeking to improve energy security and resilience.

Increasing demand for reliable and uninterrupted power supply

Microgrids, which are self-contained power systems that can operate independently or in parallel with the main power grid, are becoming more popular as the demand for reliable and uninterrupted power supply grows. Microgrids are especially beneficial in areas where the main grid is unreliable or there is no grid infrastructure at all. It is critical to monitor and manage the performance of microgrids to ensure that they operate efficiently and reliably. Microgrid monitoring systems are intended to monitor and provide real-time data on the performance of the various components of a microgrid, such as generators, energy storage systems, and renewable energy sources. These systems allow microgrid operators to quickly detect and diagnose problems, such as a faulty generator or a battery that is not charging properly. By detecting problems early, operators can take corrective action before they become more serious and cause power outages. Microgrid monitoring systems help to optimise the performance of microgrids in addition to improving reliability. Operators can identify opportunities to increase efficiency, reduce costs, and improve the overall performance of the microgrid by collecting and analyzing data on power consumption, generation, and storage. Overall, the market for microgrid monitoring systems is being driven by the increasing demand for reliable and uninterrupted power supply, as more organizations and communities seek to deploy microgrids to improve energy security and resilience.

Some of the climate change impact that have driven to adopt renewable energy are:

In January 2022, massive power outages were caused by a heatwave in

Argentina, which affected around 700000 people.

In November 2020, freezing rain coated the power lines with ice in the Russian Federation, leaving thousands of homes without electricity for several days.

Increasing government investments in microgrid projects are driving the market

The market for microgrid monitoring systems is being driven by rising government investments in microgrid projects. Microgrid projects are being funded by governments all over the world to improve energy security, reduce greenhouse gas emissions, and promote renewable energy. Microgrids are especially useful in remote communities, military bases, and industrial facilities where the main power grid is unreliable or non-existent. They can provide a consistent source of electricity, even during outages, and can also aid in the integration of renewable energy sources such as solar and wind into the grid.

With rising government investments in microgrid projects, the demand for microgrid monitoring systems rises as well. These systems are critical for ensuring that microgrids operate efficiently and reliably. They enable operators to monitor the performance of individual microgrid components, quickly detect and diagnose problems, and take corrective action to avoid power outages.

Microgrid monitoring systems help to optimise the performance of microgrids in addition to improving reliability. Operators can identify opportunities to increase efficiency, reduce costs, and improve the overall performance of the microgrid by collecting and analyzing data on power consumption, generation, and storage.

Overall, the rising government investment in microgrid projects is propelling the market for microgrid monitoring systems, as more organizations and communities seek to deploy microgrids to improve energy security and promote renewable energy.

Microgrid is considered as a future of efficient and fast rebuilding of power systems. It allows high penetration of distributed generation into the power systems. Consequently, the government is highly positive to invest in the microgrid projects. For instance:

United Nations has formed Sustainable Developments Goals (SDG) and it ensures basic energy access for 100% of the global population by 2030.

India has a vision to achieve Net Zero Emissions by 2070, which can be achieved by increasing renewables capacity to 500 GW by 2030, reducing cumulative emissions by one billion tonnes by 2030, and reducing emissions intensity of India's gross domestic product (GDP) by 45% by 2030.

Market Segmentation

The global microgrid control system market is divided into grid type, component, and end-user. Based on grid type, the market is divided into on grid and off-grid. By component, the market is divided into hardware and software. By ownership, the market is divided into private and public. By end-user, the market is divided into utilities, campuses & institutions, commercial, industrial, and others.

The growth of the market has been accelerating due to the increase in the growth of renewable power generation which is exhibiting a rapid growth of compound annual growth rate (CAGR) during the forecast period.

Market Players

Global microgrid monitoring system market is characterized by a diverse group of regional and international manufacturers. The market for microgrid monitoring system is moderately fragmented in nature. There is very minimal product differentiation which induces vendors to retain their market shares by pricing their products and services competitively. Additionally, established international vendors face intense competition from regional vendors which provide customers with comparatively low-priced and customized products. Some of the major companies operating in global microgrid monitoring system market are Siemens AG, General Electric Company, Asea Brown Boveri (ABB) Ltd, Exelon Corporation, Eaton Corporation, Schneider Electric, Caterpillar Inc, Power Analytics Corporation, Homer Energy LLC, and S&C Electric Company.

Report Scope:

In this report, the global microgrid monitoring systems market has been segmented into the following categories, in addition to the industry trends, which have also been detailed below:

Microgrid Control System Market, By Grid type:

On-grid

Off-grid

Microgrid Control System Market, By Component:

Hardware

Software

Microgrid Control System Market, By Ownership:

Public

Private

Microgrid Control System Market, By End-User:

Utilities

Campuses & Institutions

Commercial

Industrial

Others

Microgrid Monitoring Systems Market, By Region:

North America

United States

Canada

Mexico

Europe

United Kingdom

Germany

France

Spain

Italy

Asia-Pacific

China

Japan

India

Australia

South Korea

Middle East & Africa

Israel

Turkey

Saudi Arabia

UAE

South America

Brazil

Argentina

Colombia

Competitive Landscape

Company Profiles: Detailed analysis of the major companies present in the global microgrid monitoring systems market.

Available Customizations:

Global microgrid monitoring systems market report with the given market data, Tech Sci Research, offers customizations according to a company's specific needs. The following customization options are available for the report:

Company Information

Detailed analysis and profiling of additional market players (up to ten).

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