

Grid Modernization Market - Global Industry Size, Share, Trends, Opportunity, and Forecast, Segmented, By Component (Hardware, Software, Services), By Application (Residential, Commercial, Industrial), By End-User (Utilities, Independent Power Producers (IPPs), Government & Municipalities), By Region, By Competition, 2020-2030F

<https://marketpublishers.com/r/G6B78C93D091EN.html>

Date: July 2025

Pages: 180

Price: US\$ 4,500.00 (Single User License)

ID: G6B78C93D091EN

Abstracts

Market Overview

The Grid Modernization Market was valued at USD 40.65 Billion in 2024 and is projected to reach USD 84.54 Billion by 2030, growing at a CAGR of 12.81%. This market includes a broad spectrum of technologies and infrastructure aimed at transforming conventional electric power systems into smart, adaptive, and resilient networks. Grid modernization encompasses the deployment of advanced metering infrastructure (AMI), automated distribution systems, integrated communication networks, real-time analytics, and grid-scale energy storage. With increasing energy demands, decentralized power generation, and a rising share of renewables, modern grids are being designed to manage bi-directional power flows, ensure reliability, and enable demand-side participation. Enhanced intelligence, flexibility, and digital control are becoming foundational to future-ready power systems, positioning grid modernization as a key pillar in global energy transition efforts.

Key Market Drivers

Rising Integration of Renewable Energy Sources Driving the Need for Grid Flexibility and Intelligence

The large-scale integration of renewable energy sources such as solar and wind into power grids is a primary catalyst for grid modernization. Traditional grids, structured for unidirectional flow from centralized fossil fuel plants, lack the capacity to manage the intermittent and decentralized nature of renewables. Solar and wind energy are inherently variable, influenced by weather and time, which challenges grid stability and demand-supply balance. This dynamic has increased the demand for intelligent grid systems capable of real-time forecasting, adaptive control, and flexible load management. Technologies like smart inverters, energy management systems, and advanced grid software are increasingly essential to accommodate variable renewable output and enhance system responsiveness and resilience.

Key Market Challenges

High Capital Investment and Budget Constraints

A significant barrier to grid modernization is the high initial capital required for infrastructure upgrades. Modern grids depend on investments in smart meters, advanced control systems, storage solutions, and communication platforms. The cost of replacing legacy infrastructure and deploying cutting-edge technology often exceeds the financial capacity of public utilities, especially in emerging economies. In addition to upfront costs, ongoing maintenance and operation require sustained budgetary commitment. Limited access to financing, regulatory uncertainties, and constrained utility revenues further compound these challenges, slowing down implementation in cost-sensitive markets.

Key Market Trends

Integration of Distributed Energy Resources (DERs) into Modernized Grid Infrastructure

A prominent trend in the grid modernization market is the widespread integration of distributed energy resources (DERs), including rooftop solar panels, battery storage, EV charging infrastructure, and microgrids. As the shift toward decentralized energy continues, traditional grid systems are evolving to support bi-directional energy flow and more localized energy generation. Consumers are becoming prosumers, simultaneously producing and consuming electricity, which necessitates smart grid controls and visibility at the grid edge. Utilities are increasingly deploying advanced distribution management systems (ADMS), smart inverters, and edge computing solutions to manage real-time data from DERs, ensuring stability and optimizing energy distribution.

This trend reflects the growing emphasis on energy independence, sustainability, and demand-side participation in grid operations.

Key Market Players

General Electric (GE)

Siemens AG

Schneider Electric

ABB Ltd.

Eaton Corporation

Cisco Systems, Inc.

IBM Corporation

Oracle Corporation

Report Scope:

In this report, the Global Grid Modernization Market has been segmented into the following categories, in addition to the industry trends which have also been detailed below:

Grid Modernization Market, By Component:

Hardware

Software

Services

Grid Modernization Market, By Application:

Residential

Commercial

Industrial

Grid Modernization Market, By End-User:

Utilities

Independent Power Producers (IPPs)

Government & Municipalities

Grid Modernization Market, By Region:

North America

United States

Canada

Mexico

Europe

France

United Kingdom

Italy

Germany

Spain

Asia-Pacific

China

India

Japan

Australia

South Korea

South America

Brazil

Argentina

Colombia

Middle East & Africa

South Africa

Saudi Arabia

UAE

Kuwait

Turkey

Competitive Landscape

Company Profiles: Detailed analysis of the major companies present in the Global Grid Modernization Market.

Available Customizations:

Grid Modernization Market - Global Industry Size, Share, Trends, Opportunity, and Forecast, Segmented, By Comp...

Global Grid Modernization Market report with the given Market data, TechSci 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 five).

Contents

1. PRODUCT OVERVIEW

- 1.1. Market Definition
- 1.2. Scope of the Market
 - 1.2.1. Markets Covered
 - 1.2.2. Years Considered for Study
- 1.3. Key Market Segmentations

2. RESEARCH METHODOLOGY

- 2.1. Objective of the Study
- 2.2. Baseline Methodology
- 2.3. Formulation of the Scope
- 2.4. Assumptions and Limitations
- 2.5. Sources of Research
 - 2.5.1. Secondary Research
 - 2.5.2. Primary Research
- 2.6. Approach for the Market Study
 - 2.6.1. The Bottom-Up Approach
 - 2.6.2. The Top-Down Approach
- 2.7. Methodology Followed for Calculation of Market Size & Market Shares
- 2.8. Forecasting Methodology
 - 2.8.1. Data Triangulation & Validation

3. EXECUTIVE SUMMARY

- 3.1. Overview of the Market
- 3.2. Overview of Key Market Segmentations
- 3.3. Overview of Key Market Players
- 3.4. Overview of Key Regions/Countries
- 3.5. Overview of Market Drivers, Challenges, and Trends

4. VOICE OF CUSTOMER

5. GLOBAL GRID MODERNIZATION MARKET OUTLOOK

- 5.1. Market Size & Forecast

- 5.1.1. By Value
- 5.2. Market Share & Forecast
 - 5.2.1. By Component (Hardware, Software, Services)
 - 5.2.2. By Application (Residential, Commercial, Industrial)
 - 5.2.3. By End-User (Utilities, Independent Power Producers (IPPs), Government & Municipalities)
 - 5.2.4. By Region
- 5.3. By Company (2024)
- 5.4. Market Map

6. NORTH AMERICA GRID MODERNIZATION MARKET OUTLOOK

- 6.1. Market Size & Forecast
 - 6.1.1. By Value
- 6.2. Market Share & Forecast
 - 6.2.1. By Component
 - 6.2.2. By Application
 - 6.2.3. By End-User
 - 6.2.4. By Country
- 6.3. North America: Country Analysis
 - 6.3.1. United States Grid Modernization Market Outlook
 - 6.3.1.1. Market Size & Forecast
 - 6.3.1.1.1. By Value
 - 6.3.1.2. Market Share & Forecast
 - 6.3.1.2.1. By Component
 - 6.3.1.2.2. By Application
 - 6.3.1.2.3. By End-User
 - 6.3.2. Canada Grid Modernization Market Outlook
 - 6.3.2.1. Market Size & Forecast
 - 6.3.2.1.1. By Value
 - 6.3.2.2. Market Share & Forecast
 - 6.3.2.2.1. By Component
 - 6.3.2.2.2. By Application
 - 6.3.2.2.3. By End-User
 - 6.3.3. Mexico Grid Modernization Market Outlook
 - 6.3.3.1. Market Size & Forecast
 - 6.3.3.1.1. By Value
 - 6.3.3.2. Market Share & Forecast
 - 6.3.3.2.1. By Component

6.3.3.2.2. By Application

6.3.3.2.3. By End-User

7. EUROPE GRID MODERNIZATION MARKET OUTLOOK

7.1. Market Size & Forecast

7.1.1. By Value

7.2. Market Share & Forecast

7.2.1. By Component

7.2.2. By Application

7.2.3. By End-User

7.2.4. By Country

7.3. Europe: Country Analysis

7.3.1. Germany Grid Modernization Market Outlook

7.3.1.1. Market Size & Forecast

7.3.1.1.1. By Value

7.3.1.2. Market Share & Forecast

7.3.1.2.1. By Component

7.3.1.2.2. By Application

7.3.1.2.3. By End-User

7.3.2. United Kingdom Grid Modernization Market Outlook

7.3.2.1. Market Size & Forecast

7.3.2.1.1. By Value

7.3.2.2. Market Share & Forecast

7.3.2.2.1. By Component

7.3.2.2.2. By Application

7.3.2.2.3. By End-User

7.3.3. Italy Grid Modernization Market Outlook

7.3.3.1. Market Size & Forecast

7.3.3.1.1. By Value

7.3.3.2. Market Share & Forecast

7.3.3.2.1. By Component

7.3.3.2.2. By Application

7.3.3.2.3. By End-User

7.3.4. France Grid Modernization Market Outlook

7.3.4.1. Market Size & Forecast

7.3.4.1.1. By Value

7.3.4.2. Market Share & Forecast

7.3.4.2.1. By Component

- 7.3.4.2.2. By Application
- 7.3.4.2.3. By End-User
- 7.3.5. Spain Grid Modernization Market Outlook
 - 7.3.5.1. Market Size & Forecast
 - 7.3.5.1.1. By Value
 - 7.3.5.2. Market Share & Forecast
 - 7.3.5.2.1. By Component
 - 7.3.5.2.2. By Application
 - 7.3.5.2.3. By End-User

8. ASIA-PACIFIC GRID MODERNIZATION MARKET OUTLOOK

- 8.1. Market Size & Forecast
 - 8.1.1. By Value
- 8.2. Market Share & Forecast
 - 8.2.1. By Component
 - 8.2.2. By Application
 - 8.2.3. By End-User
 - 8.2.4. By Country
- 8.3. Asia-Pacific: Country Analysis
 - 8.3.1. China Grid Modernization Market Outlook
 - 8.3.1.1. Market Size & Forecast
 - 8.3.1.1.1. By Value
 - 8.3.1.2. Market Share & Forecast
 - 8.3.1.2.1. By Component
 - 8.3.1.2.2. By Application
 - 8.3.1.2.3. By End-User
 - 8.3.2. India Grid Modernization Market Outlook
 - 8.3.2.1. Market Size & Forecast
 - 8.3.2.1.1. By Value
 - 8.3.2.2. Market Share & Forecast
 - 8.3.2.2.1. By Component
 - 8.3.2.2.2. By Application
 - 8.3.2.2.3. By End-User
 - 8.3.3. Japan Grid Modernization Market Outlook
 - 8.3.3.1. Market Size & Forecast
 - 8.3.3.1.1. By Value
 - 8.3.3.2. Market Share & Forecast
 - 8.3.3.2.1. By Component

- 8.3.3.2.2. By Application
- 8.3.3.2.3. By End-User
- 8.3.4. South Korea Grid Modernization Market Outlook
 - 8.3.4.1. Market Size & Forecast
 - 8.3.4.1.1. By Value
 - 8.3.4.2. Market Share & Forecast
 - 8.3.4.2.1. By Component
 - 8.3.4.2.2. By Application
 - 8.3.4.2.3. By End-User
- 8.3.5. Australia Grid Modernization Market Outlook
 - 8.3.5.1. Market Size & Forecast
 - 8.3.5.1.1. By Value
 - 8.3.5.2. Market Share & Forecast
 - 8.3.5.2.1. By Component
 - 8.3.5.2.2. By Application
 - 8.3.5.2.3. By End-User

9. SOUTH AMERICA GRID MODERNIZATION MARKET OUTLOOK

- 9.1. Market Size & Forecast
 - 9.1.1. By Value
- 9.2. Market Share & Forecast
 - 9.2.1. By Component
 - 9.2.2. By Application
 - 9.2.3. By End-User
 - 9.2.4. By Country
- 9.3. South America: Country Analysis
 - 9.3.1. Brazil Grid Modernization Market Outlook
 - 9.3.1.1. Market Size & Forecast
 - 9.3.1.1.1. By Value
 - 9.3.1.2. Market Share & Forecast
 - 9.3.1.2.1. By Component
 - 9.3.1.2.2. By Application
 - 9.3.1.2.3. By End-User
 - 9.3.2. Argentina Grid Modernization Market Outlook
 - 9.3.2.1. Market Size & Forecast
 - 9.3.2.1.1. By Value
 - 9.3.2.2. Market Share & Forecast
 - 9.3.2.2.1. By Component

- 9.3.2.2.2. By Application
- 9.3.2.2.3. By End-User
- 9.3.3. Colombia Grid Modernization Market Outlook
 - 9.3.3.1. Market Size & Forecast
 - 9.3.3.1.1. By Value
 - 9.3.3.2. Market Share & Forecast
 - 9.3.3.2.1. By Component
 - 9.3.3.2.2. By Application
 - 9.3.3.2.3. By End-User

10. MIDDLE EAST AND AFRICA GRID MODERNIZATION MARKET OUTLOOK

- 10.1. Market Size & Forecast
 - 10.1.1. By Value
- 10.2. Market Share & Forecast
 - 10.2.1. By Component
 - 10.2.2. By Application
 - 10.2.3. By End-User
 - 10.2.4. By Country
- 10.3. Middle East and Africa: Country Analysis
 - 10.3.1. South Africa Grid Modernization Market Outlook
 - 10.3.1.1. Market Size & Forecast
 - 10.3.1.1.1. By Value
 - 10.3.1.2. Market Share & Forecast
 - 10.3.1.2.1. By Component
 - 10.3.1.2.2. By Application
 - 10.3.1.2.3. By End-User
 - 10.3.2. Saudi Arabia Grid Modernization Market Outlook
 - 10.3.2.1. Market Size & Forecast
 - 10.3.2.1.1. By Value
 - 10.3.2.2. Market Share & Forecast
 - 10.3.2.2.1. By Component
 - 10.3.2.2.2. By Application
 - 10.3.2.2.3. By End-User
 - 10.3.3. UAE Grid Modernization Market Outlook
 - 10.3.3.1. Market Size & Forecast
 - 10.3.3.1.1. By Value
 - 10.3.3.2. Market Share & Forecast
 - 10.3.3.2.1. By Component

- 10.3.3.2.2. By Application
- 10.3.3.2.3. By End-User
- 10.3.4. Kuwait Grid Modernization Market Outlook
 - 10.3.4.1. Market Size & Forecast
 - 10.3.4.1.1. By Value
 - 10.3.4.2. Market Share & Forecast
 - 10.3.4.2.1. By Component
 - 10.3.4.2.2. By Application
 - 10.3.4.2.3. By End-User
- 10.3.5. Turkey Grid Modernization Market Outlook
 - 10.3.5.1. Market Size & Forecast
 - 10.3.5.1.1. By Value
 - 10.3.5.2. Market Share & Forecast
 - 10.3.5.2.1. By Component
 - 10.3.5.2.2. By Application
 - 10.3.5.2.3. By End-User

11. MARKET DYNAMICS

- 11.1. Drivers
- 11.2. Challenges

12. MARKET TRENDS & DEVELOPMENTS

- 12.1. Merger & Acquisition (If Any)
- 12.2. Product Launches (If Any)
- 12.3. Recent Developments

13. COMPANY PROFILES

- 13.1. Siemens AG
 - 13.1.1. Business Overview
 - 13.1.2. Key Revenue and Financials
 - 13.1.3. Recent Developments
 - 13.1.4. Key Personnel/Key Contact Person
 - 13.1.5. Key Product/Services Offered
- 13.2. Schneider Electric
- 13.3. ABB Ltd.
- 13.4. Eaton Corporation

- 13.5. Cisco Systems, Inc.
- 13.6. IBM Corporation
- 13.7. Oracle Corporation
- 13.8. General Electric (GE)

14. STRATEGIC RECOMMENDATIONS

15. ABOUT US & DISCLAIMER

I would like to order

Product name: Grid Modernization Market - Global Industry Size, Share, Trends, Opportunity, and Forecast, Segmented, By Component (Hardware, Software, Services), By Application (Residential, Commercial, Industrial), By End-User (Utilities, Independent Power Producers (IPPs), Government & Municipalities), By Region, By Competition, 2020-2030F

Product link: <https://marketpublishers.com/r/G6B78C93D091EN.html>

Price: US\$ 4,500.00 (Single User License / Electronic Delivery)

If you want to order Corporate License or Hard Copy, please, contact our Customer Service:

info@marketpublishers.com

Payment

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page <https://marketpublishers.com/r/G6B78C93D091EN.html>