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Data-Center Energy Optimization and Power-Management Solutions Market Forecasts to 2034 – Global Analysis By Deployment Model (On-Premises Data Centers, Colocation Facilities, Cloud Data Centers and Edge Data Centers), Technology, Application, End User and By Geography

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Abstracts

According to Stratistics MRC, the Global Data-Center Energy Optimization and Power-Management Solutions Market is accounted for $5.6 billion in 2026 and is expected to reach $11.6 billion by 2034 growing at a CAGR of 9.6% during the forecast period. Modern data center energy management and optimization solutions are designed to enhance performance, lower operational expenses, and maintain consistent system reliability. They combine smart monitoring platforms, advanced analytics, and automated controls to evaluate power usage, improve cooling efficiency, and distribute loads effectively. Through machine learning and real-time insights, organizations can detect inefficiencies, anticipate hardware issues, and carry out preventive maintenance. Incorporating renewable power sources and energy storage further strengthens sustainability and reduces emissions. Altogether, these innovations support flexible, scalable, and ecofriendly data center ecosystems globally while enabling higher uptime performance and meeting increasing demands of cloud computing and digital services.

According to the International Energy Agency (IEA), data centers consumed around 200 TWh of electricity globally in 2022, representing ~1% of total global electricity demand. This underscores the urgent need for energy optimization and advanced power-management solutions in the sector.

Market Dynamics:

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Driver:

Rising energy costs and operational expenses

Escalating electricity prices are pushing data center operators to adopt energy optimization and power management solutions. Since power usage represents a significant portion of operational spending, reducing consumption has become a critical priority. Advanced systems enable real-time monitoring, efficient resource allocation, and improved cooling mechanisms to minimize unnecessary energy use. These tools help organizations cut costs without compromising performance or reliability. As businesses aim to improve financial efficiency and sustainability, the adoption of intelligent power-management technologies is increasing. This cost-driven approach is a key factor accelerating the growth of energy-efficient solutions in modern data center environments worldwide.

Restraint:

High initial investment costs

One of the primary challenges in adopting data center energy optimization solutions is the high upfront cost associated with implementation. Advanced technologies such as intelligent monitoring, automation tools, and energy-efficient cooling systems demand considerable capital investment. Many smaller organizations struggle to allocate such budgets, even if long-term benefits exist. Retrofitting older infrastructure further increases expenses and complexity. These financial constraints can delay decision-making and reduce adoption rates, especially in developing markets. Although these solutions offer future cost savings, the initial spending requirement continues to act as a major restraint for broader market expansion.

Opportunity:

Adoption of AI-driven energy management solutions

The adoption of artificial intelligence for managing energy in data centers presents promising opportunities for market growth. AI-based systems can process complex data sets to enhance energy efficiency, forecast potential issues, and automate operational changes. These solutions help reduce costs, improve reliability, and optimize performance. With advancements in machine learning, energy management systems

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are becoming more intelligent and effective. Businesses are increasingly investing in these technologies to improve sustainability and operational efficiency. This trend is expected to accelerate innovation and create new opportunities in the data center energy optimization market.

Threat:

Rapid technological obsolescence

Continuous technological advancements present a major risk to the data center energy optimization market. As new solutions and systems are introduced, older technologies can become less effective or obsolete. Organizations that invest in existing tools may encounter difficulties in maintaining compatibility or efficiency over time. The need for regular upgrades increases costs and operational challenges. Additionally, uncertainty about future developments can make companies cautious about adopting new technologies. This rapid pace of innovation creates pressure on both providers and users, potentially slowing adoption and affecting the long-term stability of the market.

Covid-19 Impact:

The COVID-19 outbreak greatly influenced the data center energy optimization market by increasing reliance on digital services. The shift to remote working, virtual learning, and online entertainment significantly raised data usage, driving demand for data center capacity and energy efficiency solutions. This created a stronger need for advanced power-management systems to handle rising workloads efficiently. At the same time, disruptions in supply chains and project delays hindered short-term growth. Nevertheless, the situation emphasized the need for reliable and energy-efficient infrastructure, encouraging organizations to invest more in optimization technologies for future resilience and operational efficiency.

The cloud data centers segment is expected to be the largest during the forecast period

The cloud data centers segment is expected to account for the largest market share during the forecast period because of their large-scale operations and high computational demands. They handle vast amounts of digital workloads, resulting in significant energy usage that requires efficient management. To address this, providers implement advanced optimization tools such as automated controls, smart cooling systems, and real-time energy monitoring. Their flexible and scalable nature allows quick adoption of innovative technologies, enhancing overall efficiency. As cloud

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computing demand continues to rise globally, these data centers maintain their leading position in utilizing energy optimization and power-management solutions.

The AI-driven energy optimization platforms segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the AI-driven energy optimization platforms segment is predicted to witness the highest growth rate. This strong growth is supported by rising demand for smart and automated energy management solutions in advanced data center environments. These systems utilize machine learning and data analytics to track energy usage, forecast demand patterns, and optimize power and cooling operations in real time. With increasing data center complexity, organizations are rapidly adopting AI-based solutions to boost efficiency, cut costs, and improve sustainability. Their adaptability and high accuracy position them as the fastest-growing segment in the industry.

Region with largest share:

During the forecast period, the North America region is expected to hold the largest market share because of its advanced digital infrastructure and strong concentration of major data center companies. The region hosts numerous hyperscale and cloud service facilities that require efficient energy usage and management. Rising electricity consumption and strict environmental regulations encourage the adoption of energy-efficient technologies. Furthermore, continuous investments in innovative solutions like artificial intelligence, automation, and advanced cooling systems support market expansion. With a strong emphasis on technological advancement and efficiency, North America maintains its dominant position in this sector.

Region with highest CAGR:

Over the forecast period, the Asia-Pacific region is anticipated to exhibit the highest CAGR. This growth is driven by rapid digital adoption and the expansion of IT infrastructure across major economies like China, India, Japan, and South Korea. Increasing demand for cloud services, online platforms, and data processing is boosting the need for efficient energy management in data centers. Investments in hyperscale and edge facilities, along with government support for digital development and sustainability, are further accelerating growth. Rising energy costs and environmental concerns are also encouraging the adoption of advanced optimization solutions in the region.

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Key players in the market

Some of the key players in Data-Center Energy Optimization and Power-Management Solutions Market include Schneider Electric, Vertiv Holdings Co., Eaton, ABB, Siemens AG, Delta Electronics, Huawei Technologies, IBM Corporation, Nlyte Software, Legrand, Rittal, STULZ, Mitsubishi Electric, Cisco Systems, Johnson Controls, Socomec, Cummins and Honeywell.

Key Developments:

In December 2025, ABB and HDF Energy have signed a joint development agreement (JDA) to co-develop a high-power, megawatt-class hydrogen fuel cell system designed for use in marine vessels. The project targets use of the system on various vessel types, including large seagoing ships such as container feeder vessels and liquefied hydrogen carriers.

In November 2025, Vertiv and Caterpillar Inc. announced the signing of a strategic undertaking to collaborate on advanced energy optimization solutions for data centers. This initiative will integrate Vertiv's power distribution and cooling portfolio with Caterpillar's, and its subsidiary Solar Turbines', product and expertise in power generation and CCHP to deliver pre-designed architectures that simplify deployment, accelerate time-to-power and optimize performance for data center operations.

In November 2025, Schneider Electric announced a two-phase supply capacity agreement (SCA) totaling $1.9 billion in sales. The milestone deal includes prefabricated power modules and the first North American deployment of chillers. The announcement was unveiled at Schneider Electric'sInnovation Summit North America in Las Vegas, convening more than 2,500 business leaders and market innovators to accelerate practical solutions for a more resilient, affordable and intelligent energy future.

Deployment Models Covered:

- On-Premises Data Centers
- Colocation Facilities
- Cloud Data Centers

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- Edge Data Centers

Technologies Covered:

- Intelligent Power Distribution Units (iPDUs)
- Uninterruptible Power Supply (UPS) Systems
- Dynamic Voltage and Frequency Scaling (DVFS)
- Advanced Cooling & Thermal Management Systems
- AI-Driven Energy Optimization Platforms
- Renewable Energy Integration Solutions

Applications Covered:

- Server Power Management
- Storage Infrastructure Optimization
- Network Equipment Efficiency
- Facility Energy Control

End Users Covered:

- Hyperscale Operators
- Enterprise Data Centers
- Telecom Service Providers
- Government & Public Sector

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Financial Institutions

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

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China

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South Korea

Australia

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Thailand

Malaysia

Singapore

Vietnam

Rest of Asia Pacific

South America

Brazil

Argentina

Colombia

Chile

Peru

Rest of South America

Rest of the World (RoW)

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- 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

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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

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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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