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Offsite Data Center Power Infrastructure Market - Global Industry Size, Share, Trends, Opportunity, and Forecast, Segmented By Data Center Type (Colocation Data Centers, Hyperscale Data Centers, Modular/Containerized Data Centers, Edge Data Centers, Disaster Recovery Data Centers), By Power Capacity (Below 500 kW, 500 kW – 1 MW, 1 – 5 MW, Above 5 MW), By End-User Industry (IT & Telecom, BFSI, Healthcare, Government & Public Sector, Retail & E-commerce, Others), By Region, and By Competition, 2020-2030F

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Abstracts

Market Overview

The Global Offsite Data Center Power Infrastructure Market was valued at USD 13.52 billion in 2024 and is projected to reach USD 36.49 billion by 2030, expanding at a CAGR of 17.82% during the forecast period. This market is witnessing accelerated growth due to increasing reliance on outsourced data center models, particularly hyperscale, colocation, and modular facilities. As businesses embrace digital transformation, the surge in data creation and processing has amplified the need for scalable and resilient infrastructure. Offsite data centers demand highly reliable power systems to ensure uninterrupted 24/7 operations, positioning power infrastructure as a critical enabler of uptime and performance. The proliferation of cloud computing, IoT, and edge networks further intensifies the requirement for efficient, intelligent, and redundant energy solutions. Key components such as UPS systems, PDUs, generators,

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and lithium-ion battery systems are central to operations, with innovations focused on improving energy efficiency, system intelligence, and carbon footprint reduction to support green certification initiatives and resilience amid increasing power disruptions.

Key Market Drivers

Rising Adoption of Colocation and Hyperscale Data Centers

The widespread adoption of cloud services and digital platforms is fueling demand for colocation and hyperscale data centers, driving substantial investment in offsite power infrastructure. Enterprises are outsourcing storage and compute functions to third-party facilities to enhance scalability and reduce infrastructure costs. Hyperscale operators like Amazon, Google, and Microsoft require power systems capable of supporting continuous operations at multi-megawatt capacities, often exceeding 20 MW per site. Over 700 hyperscale data centers are operational globally, with 300 more in the pipeline. Meanwhile, colocation centers now handle approximately 40% of global cloud workloads and maintain strict power redundancy standards, typically N+1 or greater, to ensure service availability. This growth necessitates the deployment of advanced UPS systems, high-capacity generators, and intelligent PDUs that can manage increased energy loads and real-time performance demands with maximum efficiency.

Key Market Challenges

High Initial Capital Investment and Operational Costs

A significant hurdle for the offsite data center power infrastructure market is the high capital outlay and ongoing operational expenses associated with deploying and maintaining reliable energy systems. Advanced UPS units, diesel generators, switchgear, and smart monitoring tools represent considerable upfront investments, especially for smaller colocation and edge facilities. Integration of energy-efficient technologies—such as modular UPS or lithium-ion batteries—further raises costs, though they offer long-term benefits. Operational expenses are also substantial, covering maintenance, generator fuel storage, component testing, and software platform licensing. Additionally, offsite data centers often operate in regions with volatile energy markets, complicating cost management. The need for skilled personnel to manage and troubleshoot these systems adds further strain on operational budgets, making cost optimization a persistent challenge for operators.

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Key Market Trends

Integration of AI and Machine Learning in Power Monitoring

The incorporation of AI and Machine Learning into power infrastructure is transforming operations within offsite data centers. AI-driven platforms are enabling predictive maintenance, load optimization, and fault detection by analyzing data from smart sensors embedded in PDUs, UPS modules, and switchgear. These systems identify usage patterns, inefficiencies, and performance anomalies in real time, allowing for informed decisions to reduce energy waste and improve uptime. Predictive failure analytics now help detect early signs of component stress such as voltage dips or thermal irregularities, significantly cutting the risk of unplanned downtime. This trend is particularly prevalent in hyperscale and colocation environments, where energy management and system availability are mission-critical. By leveraging ML algorithms and IoT connectivity, operators can automate responses, shift loads, and fine-tune redundancy levels, reducing operational costs by up to 30% while enhancing resilience.

Key Market Players

Schneider Electric SE

Eaton Corporation plc

Vertiv Holdings Co

ABB Ltd.

Siemens AG

Legrand SA

Mitsubishi Electric Corporation

Huawei Technologies Co., Ltd.

Cummins Inc.

Caterpillar Inc

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Report Scope:

In this report, the Global Offsite Data Center Power Infrastructure Market has been segmented into the following categories, in addition to the industry trends which have also been detailed below:

Offsite Data Center Power Infrastructure Market, By Data Center Type:

Colocation Data Centers

Hyperscale Data Centers

Modular/Containerized Data Centers

Edge Data Centers

Disaster Recovery Data Centers

Offsite Data Center Power Infrastructure Market, By Power Capacity:

Below 500 kW

500 kW – 1 MW

1 – 5 MW

Above 5 MW

Offsite Data Center Power Infrastructure Market, By End-User Industry:

IT & Telecom

BFSI

Healthcare

Government & Public Sector

Retail & E-commerce

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- Others

Offsite Data Center Power Infrastructure Market, By Region:

- North America
  - United States
  - Canada
  - Mexico
- Europe
  - Germany
  - France
  - United Kingdom
  - Italy
  - Spain
- South America
  - Brazil
  - Argentina
  - Colombia
- Asia-Pacific
  - China
  - India

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Japan

South Korea

Australia

Middle East & Africa

Saudi Arabia

UAE

South Africa

Competitive Landscape

Company Profiles: Detailed analysis of the major companies present in the Global Offsite Data Center Power Infrastructure Market.

Available Customizations:

Global Offsite Data Center Power Infrastructure 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 five).

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