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Data Center Construction Market - Global Outlook & Forecast 2023-2028

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Report description:

The global data center construction market is expected to grow at a CAGR of 6.50% from 2022-2028.

KEY HIGHLIGHTS/ TRENDS

Shift Towards Sustainable Measures to Reduce Carbon Emissions

The increasing data center power consumption and the need to decrease carbon emissions have prompted many service providers to purchase clean, renewable energy sources to power their current and new facilities. There is a high interest in adopting renewable power sources among global and local operators. Also, many smaller operators are installing solar panels on the rooftops of their facilities to power the data centers.

Innovative and Sustainable Data Center Power Technologies

Several operators are upgrading their data centers from traditional technologies to new ones. Such new technologies will also help the companies focus on sustainability. Some such innovations are as follows:

- Adoption of advanced UPS batteries such as Lithium-ion, Nickle-Zinc, and Prussian Blue sodium-ion batteries replacing lead-acid batteries
- Software-Defined Data Centers (SDDC) and AI in power monitoring
- Microgrid adoption in data centers, majorly among hyperscalers
- Floating data centers, underwater data centers, snow-cooled data centers, and boiling liquid for cooling data centers
- Replacing Diesel Generators with naturally Gas-Powered Hydrogen Fuel Cells & Hydrotreated Vegetable Oil (HVO).

AI to Boost Liquid-Cooling Adoption

Liquid cooling will rapidly grow among data centers deploying AI & ML workloads. For instance, most upcoming facilities will include at least one data hall to support the deployment of advanced two-phase immersion cooling and direct-to-chip cooling solutions. Meta (Facebook) has announced its plan to pause several new and expansion projects across the U.S., as it wants to create a new AI design for the data center facilities.

Government Support to Develop Data Centers

Over the past few years, data center growth has focused on countries offering tax incentives. Many state and local governments provide investments and sales tax incentives to attract operators. The U.S. is leading in providing tax incentives to data center operators. Several states in the U.S. provide tax incentives to data centers for investments, job opportunities, and compensation for employees.

Impact of Supply Chain Disruption

Supply chain disruptions are a major challenge faced by data center developers recently. With the onset of COVID-19, supply chain disruptions increased, leading to a shortage of infrastructure such as power equipment, cooling infrastructure, chips, and other infrastructure. Also, political instability and disturbances between Russia and Ukraine led to a price hike in energy and fuel costs. One of the major shortages faced in the data center construction market was chip shortage, which led to a decline in manufacturing several infrastructures.

SEGMENTATION INSIGHTS

Facility Type

- In 2022, over 31.5% of the overall power capacity addition in the global data center market was carried out by hyperscalers such as Meta (Facebook), Google, Microsoft, and Amazon Web Services.
- The investment by hyperscalers such as AWS, Google, Meta (Facebook), and Microsoft are majorly concentrated in the US region. However, the operators are moving from the US to the European and APAC regions.
- The colocation operators are continuously expanding their presence across the existing markets and are also involved in entering several new markets.

Data Center Electrical Infrastructure

- The emergence of microgrids and on-site power generation systems has led to increased energy storage and sustainable energy, thereby leading to increased savings and improved resiliency.
- The global data center construction market operators are focused on adopting advanced UPS batteries such as Lithium-ion, Nickle-Zinc, and Prussian Blue sodium-ion batteries. The adoption of Lithium-ion batteries is witnessing strong demand among operators.

Data Center Mechanical Infrastructure

- In terms of cooling systems, free cooling techniques have grown significantly over the last few years across regions with favorable climatic conditions that can use evaporative/adiabatic coolers for data center cooling purposes.
- Innovative designs such as district heating are expected to grow among data centers developed in states with colder climatic conditions.
- Procurement of 45U-48U rack cabinets to increase, with an increase in the design of the OCP-Ready Colocation facility supporting OCP-Rack Architecture

Data Center General Construction Services

-Apart from the construction, installation, and commissioning services, data centers also invest in improving physical security, monitoring, and management of facilities through data center infrastructure management (DCIM) on a real-time basis.
-The importance of monitoring is growing with the adoption of intelligent real-time monitoring software with automation, and AI features that can predict maintenance requirements, component failures, and automatic switchovers for uninterrupted operations.
-Supply chain constraints have increased the data center construction and procurement cost by an average of USD 2 - 3 million per MW. However, vendors and developers have successfully aided in this.

GEOGRAPHICAL ANALYSIS

Americas Region

-The availability of tax incentives, free cooling solutions, renewable energy, and low cost of industrial land and power will drive the operators to invest in the Americas region.
-The Americas region is among the most matured data center markets. The North American region, which includes the U.S. and Canada, leads the market in terms of investment, white floor addition, and power capacity addition.

European Region

-The presence of data protection laws such as the implementation of GDPR, availability of free cooling solutions, district heating systems, availability of renewable energy, and others are among the major factors that will attract operators to invest in the European region.
-The FLAP-D markets are developed and established data center markets in Western Europe. However, implementing a moratorium across the Netherlands and Ireland region might slow the investment in the next 2-3 years.
-Spain, Italy, Switzerland, and Belgium are among the region's emerging locations for data center investment. These countries have a higher potential to attract hyperscalers to invest in the market.

Middle East & Africa (MEA) Region

-Increased internet & social media penetration, digitalization initiatives, migration from on-premise to cloud, colocation, and managed services are among the factors driving the data center market in the MEA region.
-UAE and Saudi Arabia are the top destinations for the data center market in the Middle East region. Gulf Data Hub and Khazna Data Centers are among the top colocation operators investing in the industry. Other countries such as Israel, Kuwait, Qatar, Oman, and Bahrain are also witnessing investment and are among the emerging locations in the Middle East region.

APAC Region

-The APAC region is among the world's most dynamic and fastest-growing data center markets. The region has established and developed markets such as China, Australia, Japan, and Singapore.
-India is likely to be among the top destinations for the data center market in the APAC region owing to the deployment of 5G and the surge in internet & social media penetration aided by several digitalization initiatives.

VENDOR LANDSCAPE

Data Center Support Infrastructure Providers

-Vendors such as Schneider Electric, Rittal, Hewlett Packard Enterprise, and Delta Power Solutions provide infrastructure based on OCP design. This will aid in market revenue growth for these vendors, as many organizations prefer solutions such as 48V DC UPS systems.

Data Center Construction Contractors
-The surge in data center activities worldwide will be a major source of revenue for construction contractors. Some prominent construction contractors include AECOM, Arup, Corgan, DPR Construction, Fortis Construction, Holder Construction, Jacobs, Turner Construction, Syska Hennessy Group, RED Engineering, and Turner & Townsend.

Data Center Investors/ Operators
-The major hyperscale operators investing in the data center construction market include Amazon Web Services (AWS), Microsoft, Meta (Facebook), and Google.

KEY QUESTIONS ANSWERED:

1. How big is the data center construction market?
2. What is the growth rate of the data center construction market?
3. What is the estimated market size in terms of area in the global data center construction market by 2028?
4. What are the key trends in the data center construction industry?
5. How many MW of power capacity is expected to reach the global data center construction market by 2028?

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