

# Global Capacitor Bank Market Forecast: Growth from US\$ 3.6 Billion to US\$ 5.5 Billion by 2034 - TMR

*Capacitor Bank Market to Reach US\$ 5.5 Bn by 2034, Growing at a 4.1% CAGR from US\$ 3.6 Bn in 2023*

WILMINGTON, DE, UNITED STATES, December 18, 2024 /

EINPresswire.com/ -- The global [capacitor bank market](#) is projected to grow significantly, reaching a valuation of US\$ 5.5 billion by 2034, up from US\$ 3.6 billion in 2023. The market is anticipated to expand at a compound annual growth rate (CAGR) of 4.1% from 2024 to 2034. Key drivers of this growth include the rise in renewable energy generation and the modernization of aging grid infrastructure.



Capacitor Bank Market

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Capacitor Bank Market Outlook 2034: Valued at US\$ 3.6 Bn in 2023, the market is estimated to grow at a CAGR of 4.1%, reaching US\$ 5.5 Bn by 2034"

*Transparency Market Research*

## Analyst Viewpoint

The increasing adoption of renewable energy sources is reshaping the dynamics of the capacitor bank market. Capacitors play an essential role in solar and wind energy systems, enabling power factor correction and enhancing grid efficiency. Additionally, the global push for modernizing aging grid infrastructure is propelling the

demand for capacitor banks, which help stabilize power systems by mitigating voltage drops and reducing energy losses.

Leading market players are developing advanced technologies, such as tuned-filter capacitor

banks, to combine reactive power compensation with harmonic current dampening. These innovations are addressing challenges in grid stability while improving energy efficiency.

## Market Introduction

A capacitor bank is an assembly of multiple capacitors connected in series or parallel to store electrical energy. These systems are integral in correcting power factor lag, improving energy transfer efficiency, and addressing phase shifts in AC power supplies. Known as power factor correction banks, these devices are indispensable for industries and utilities seeking to optimize energy use.

Types of capacitor banks include:

- Internally Fused: Capacitors connected in parallel and series, capable of operation even when elements are out of service.
- Externally Fused: Banks configured with one or more series groups of parallel-connected capacitor units, rated between 50 KVAR and 40 KVAR.
- Fuseless: Constructed with series-connected capacitor units, ideal for high-voltage applications.

Recent innovations in design include self-healing capacitors, extended foil, and solderless connections, offering improved reliability and performance. Self-healing capacitors, for example, can restore functionality after dielectric faults, ensuring durability and operational efficiency.

## Market Drivers

### 1. Rise in Renewable Energy Generation

The increasing adoption of renewable energy sources, such as solar and wind, is driving demand for capacitor banks. In solar energy systems, capacitor banks supply reactive power to offset lagging currents caused by inductive loads, thereby enhancing the power factor of photovoltaic (PV) plants.

- According to the Federal Energy Regulatory Commission (FERC), solar accounted for 49.3% of new domestic generating capacity in the U.S. in 2023, surpassing all other energy sources. This surge in solar installations is expected to bolster the capacitor bank market.

In the wind energy sector, capacitor banks are connected to stator terminals of induction generators in wind energy conversion systems. These banks provide reactive power to both machines and loads, ensuring system efficiency.

- The International Energy Agency (IEA) reported that global installed wind energy capacity reached 900 GW in 2022, with 93% being onshore systems. This growth underscores the

increasing reliance on capacitor banks to support renewable energy integration.

## 2. Aging Grid Infrastructure

Aging power grids pose challenges for integrating new renewable energy sources. Issues such as voltage drops and energy losses are common in legacy systems, making capacitor banks a critical solution for grid modernization.

Governments are investing in maintenance and upgrades of grid infrastructure to ensure energy stability. For example:

- In 2023, Svenska kraftnät, Sweden's transmission system operator, collaborated with Sweco to review and modernize the country's electricity transmission grid.

Capacitor banks help mitigate power losses and voltage fluctuations, enabling smoother energy distribution in outdated grids.

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## Regional Outlook

### Asia Pacific: A Dominant Market

Asia Pacific held the largest market share for capacitor banks in 2023, driven by significant investments in renewable energy. Key highlights include:

- India: Installed 17.4 GW of solar capacity in 2022, a 23% increase from 2021. Rooftop solar accounted for 28% of installations, according to SolarPower Europe.
- China: Added 100 GW of solar capacity in 2022, solidifying its leadership in renewable energy adoption.

The rapid deployment of renewable energy projects in Asia Pacific is fueling demand for capacitor banks, particularly for power factor correction and harmonic filtering applications.

### North America and Europe

North America and Europe are also key markets, driven by ongoing renewable energy projects and grid modernization initiatives. The U.S. and Germany are at the forefront of adopting advanced capacitor bank technologies to address challenges in energy efficiency and grid stability.

## Technological Innovations

Leading manufacturers are introducing advanced capacitor bank solutions to meet evolving energy needs. Recent developments include:

- Self-healing Capacitors: Enhance reliability by repairing dielectric faults automatically.
- Extended Foil Capacitors: Offer low inductance and improved performance.
- Tuned-Filter Capacitor Banks: Combine reactive power compensation with harmonic dampening to prevent resonance.

Key innovations include:

- In February 2024, Powerside launched the Pole-MVar, a compact pole-mounted tuned-filter capacitor bank designed to address harmonic distortion.
- In 2023, Kyocera AVX introduced high-capacity supercapacitor banks with low leakage and compliance with UL 810A standards.

## Competitive Landscape

Prominent players in the capacitor bank market include Eaton, ABB, Schneider Electric, TDK Electronics AG, Vishay Intertechnology, and GE Vernova. These companies are focusing on expanding their product portfolios and investing in R&D to develop innovative solutions.

Recent Developments:

- Eaton: Introduced sealed supercapacitor banks to replace legacy models, improving energy efficiency and reliability.
- ABB: Expanded its range of capacitor banks for industrial and renewable energy applications.
- Hitachi: Focused on developing high-performance capacitor banks for smart grid applications.

## Market Segmentation

The capacitor bank market is segmented based on voltage, type, installation, application, and region:

### By Voltage

- Low (<10 kV)
- Medium (10 kV - 69 kV)
- High (>69 kV)

### By Type

- Internally Fused
- Externally Fused
- Fuseless

#### By Installation

- Open Air Substation
- Metal Enclosed Substation
- Pole Mounted
- Others

#### By Application

- Power Factor Correction
- Harmonic Filtering
- Voltage Regulation
- Renewable Integration
- Industrial Applications
- Data Centers
- Others

#### By Region

- North America
- Europe
- Asia Pacific
- Latin America
- Middle East & Africa

#### Future Outlook

The capacitor bank market is poised for steady growth, driven by the global transition to renewable energy and the need to modernize aging grid infrastructure. Advancements in technology, such as self-healing and tuned-filter capacitor banks, are expected to play a pivotal role in meeting future energy demands.

Asia Pacific will continue to lead the market, while North America and Europe are likely to see substantial growth due to ongoing renewable energy projects and infrastructure upgrades.

As key players innovate and expand their offerings, the capacitor bank market is set to play a crucial role in enhancing energy efficiency and enabling the global shift toward sustainable power systems.

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