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Global Solar Powered Central Air Conditioning Supply, Demand and Key Producers, 2026-2032

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Abstracts

The global Solar Powered Central Air Conditioning market size is expected to reach $ 555 million by 2032, rising at a market growth of 7.6% CAGR during the forecast period (2026-2032).

Photovoltaic central air conditioning (PV central air conditioning) is an energy-saving cooling system that deeply integrates photovoltaic (PV) power generation technology with traditional central air conditioning systems. It utilizes solar PV modules directly or through inverter energy storage to power the air conditioning system, significantly reducing dependence on the power grid and improving energy efficiency and sustainability. It represents an innovative combination of renewable energy and HVAC technology. In 2025, global sales of PV central air conditioning systems reached approximately 470,000 units, with an average unit price of approximately US$700 and a capacity utilization rate of approximately 70%. Due to the relatively small initial scale of PV central air conditioning systems and the still high cost of PV modules, the overall industry's gross profit margin is relatively low, at approximately 15%. Upstream companies mainly include PV module manufacturers, inverter and energy storage equipment suppliers, as well as heat exchanger and core air conditioning component suppliers. Downstream customers include building developers, commercial real estate operators, large industrial facilities, data centers, and public institutions?customers with a strong demand for energy-efficient cooling. PV modules and power electronics equipment account for the majority of the product cost, followed by the refrigeration unit and control system. Installation, commissioning, and maintenance services also constitute a portion of the cost. From a demand perspective, downstream demand includes: retrofitting central air conditioning systems in commercial buildings with high energy conservation and emission reduction requirements; green building certification projects; upgrading data center and industrial refrigeration systems; and energy self-

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sufficiency refrigeration systems in rural and remote areas. Typical customers include real estate developers, green energy project contractors, manufacturing companies, and government procurement agencies. As global energy policies shift towards low-carbon and renewable energy, government subsidies and carbon emission limits have significantly driven the growth in demand for photovoltaic central air conditioning systems, while also promoting innovation in high-efficiency technologies. Advances in intelligent control and energy storage technologies further enhance system performance. On the consumer side, users are increasingly focused on reducing long-term operating costs and environmental performance, creating business opportunities driven by both technology and the market.

As a product integrating sustainable energy with traditional refrigeration technology, photovoltaic (PV) central air conditioning is driven by the global trend of energy transition. Especially against the backdrop of increasingly stringent carbon neutrality goals and green building standards, the application scenarios and scale potential of this technology are expected to continue to expand. PV central air conditioning has significant advantages in reducing energy consumption, carbon emissions, and improving energy self-sufficiency, making it suitable for scenarios with large-area cooling needs, such as commercial complexes, industrial parks, and public buildings. At the policy level, a series of incentive measures from governments, including financial subsidies for renewable energy systems, electricity price support, and carbon emission trading mechanisms, have further enhanced the economic attractiveness of PV-powered cooling solutions, thereby driving downstream customer demand for PV central air conditioning. Simultaneously, rapid advancements in PV module efficiency and power electronic inverter technology have led to improved overall product performance and reduced long-term operating costs, which is particularly important for large enterprise users pursuing net-zero emissions and optimized overall operating costs. Although the initial investment for current products is higher than that of traditional air conditioning and capacity utilization has not yet been fully realized, with increased technological maturity, industry expansion, and increased consumer acceptance of green and energy-saving products, the PV central air conditioning market is expected to enter a phase of accelerated growth in the coming years. This presents a crucial window of opportunity for industry participants to strategically position themselves and innovate technologically.

This report studies the global Solar Powered Central Air Conditioning production, demand, key manufacturers, and key regions.

This report is a detailed and comprehensive analysis of the world market for Solar

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Powered Central Air Conditioning and provides market size (US$ million) and Year-over-Year (YoY) Growth, considering 2025 as the base year. This report explores demand trends and competition, as well as details the characteristics of Solar Powered Central Air Conditioning that contribute to its increasing demand across many markets.

Highlights and key features of the study

Global Solar Powered Central Air Conditioning total production and demand, 2021-2032, (K Units)
Global Solar Powered Central Air Conditioning total production value, 2021-2032, (USD Million)
Global Solar Powered Central Air Conditioning production by region & country, production, value, CAGR, 2021-2032, (USD Million) & (K Units), (based on production site)
Global Solar Powered Central Air Conditioning consumption by region & country, CAGR, 2021-2032 & (K Units)
U.S. VS China: Solar Powered Central Air Conditioning domestic production, consumption, key domestic manufacturers and share
Global Solar Powered Central Air Conditioning production by manufacturer, production, price, value and market share 2021-2026, (USD Million) & (K Units)
Global Solar Powered Central Air Conditioning production by Type, production, value, CAGR, 2021-2032, (USD Million) & (K Units)
Global Solar Powered Central Air Conditioning production by Application, production, value, CAGR, 2021-2032, (USD Million) & (K Units)

This report profiles key players in the global Solar Powered Central Air Conditioning market based on the following parameters - company overview, production, value, price, gross margin, product portfolio, geographical presence, and key developments. Key companies covered as a part of this study include Hitachi, Smits, Freecold, iAIRE, LLC, Zamna Climate, Solar AC DC, Cielo, Gree, Hisense, Ningbo Deye Technology, etc.

This report also provides key insights about market drivers, restraints, opportunities, new product launches or approvals.

Stakeholders would have ease in decision-making through various strategy matrices used in analyzing the World Solar Powered Central Air Conditioning market

Detailed Segmentation:

Each section contains quantitative market data including market by value (US$

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Millions), volume (production, consumption) & (K Units) and average price (US$/Unit) by manufacturer, by Type, and by Application. Data is given for the years 2021-2032 by year with 2025 as the base year, 2026 as the estimate year, and 2027-2032 as the forecast year.

Global Solar Powered Central Air Conditioning Market, By Region:

United States

China

Europe

Japan

South Korea

ASEAN

India

Rest of World

Global Solar Powered Central Air Conditioning Market, Segmentation by Type:

Air-duct Type Central Air Conditioning

Water-duct Type Central Air Conditioning

Global Solar Powered Central Air Conditioning Market, Segmentation by Refrigeration Capacity:

Below 15KW

15-30KW

Above 30KW

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Global Solar Powered Central Air Conditioning Market, Segmentation by Heating Capacity:

Below 15KW

15-30KW

Above 30KW

Global Solar Powered Central Air Conditioning Market, Segmentation by Application:

Residential

Commercial

Companies Profiled:

Hitachi

Smits

Freecold

iAIRE, LLC

Zamna Climate

Solar AC DC

Cielo

Gree

Hisense

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Ningbo Deye Technology

Key Questions Answered:

1. How big is the global Solar Powered Central Air Conditioning market?
2. What is the demand of the global Solar Powered Central Air Conditioning market?
3. What is the year over year growth of the global Solar Powered Central Air Conditioning market?
4. What is the production and production value of the global Solar Powered Central Air Conditioning market?
5. Who are the key producers in the global Solar Powered Central Air Conditioning market?
6. What are the growth factors driving the market demand?

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