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Global Fully Liquid-cooled Charging Pile Supply, Demand and Key Producers, 2026-2032

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Abstracts

The global Fully Liquid-cooled Charging Pile market size is expected to reach $ 4478 million by 2032, rising at a market growth of 29.0% CAGR during the forecast period (2026-2032).

A fully liquid?cooled charging pile is a DC fast charging unit for electric vehicles that employs a comprehensive liquid cooling system to manage the temperature of internal power electronic components, interconnects, and the charging gun, ensuring thermal stability under high current and high power operating conditions to improve charging efficiency and safety. This product addresses the limitations of traditional air cooling or partial liquid cooling approaches, which can suffer from heat accumulation, power reduction, overheating protection triggers, and shortened equipment life during sustained high?power output, by providing a more reliable and consistent high?performance charging experience. The evolution of fully liquid?cooled charging piles began with the surge in demand for ultra?fast charging and the widespread adoption of long?range EVs; as high?performance semiconductor devices, power electronic modules, advanced heat exchange materials, and liquid cooling loop technologies have matured, the full liquid cooling architecture has become a key technical pathway in high?power charging. Upstream raw materials and components include high?thermal?conductivity coolant fluids, liquid cooling piping and fittings, power semiconductors (such as SiC MOSFETs and IGBTs), high?conductivity interconnects, precision sensors, and control modules, supported by liquid cooling system manufacturers, power electronics suppliers, thermal management material providers, and intelligent control solution developers.In 2025, the global production capacity of fully liquid-cooled charging piles reached 30,000 units, with sales totaling 21,453 units. The average unit price was USD 34,285, and the gross profit margin of enterprises ranged between 30% and 40%.

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The market for fully liquid?cooled charging piles is currently evolving rapidly as the broader EV industry shifts toward higher?power fast charging. With growing expectations from users for faster, more stable charging?especially in applications such as long?distance travel, fleet operations, and high?utilization environments?conventional cooling approaches have shown limitations in maintaining sustained high?power output. This has driven fully liquid?cooled solutions to gain prominence as a key technical pathway in high?power charging infrastructure. Across the ecosystem, stakeholders are deepening collaboration around thermal management systems, power electronics integration, intelligent control, and safety strategies, gradually forming a more complete technology ecosystem. At the same time, challenges such as incomplete harmonization of standards, limited interoperability across suppliers, and adaptation to diverse deployment scenarios remain, requiring coordinated efforts to improve market adoption and deployment efficiency.

Looking ahead, fully liquid?cooled charging piles are expected to deepen their application footprint as technology maturity and supporting infrastructure continue to advance. Progress in high?performance thermal management materials, next?generation power semiconductor devices, modular system design, and intelligent energy management will further enhance reliability and efficiency, enabling broader deployment at strategic nodes such as highway corridors and logistics hubs. In parallel, trends in renewable energy integration, grid dispatch coordination, energy storage, and vehicle?to?grid interaction will provide more flexible and greener energy support for high?power charging. As international and regional charging standards converge and mature solutions see wider implementation, liquid?cooled technology is positioned to drive the high?power charging ecosystem toward greater efficiency and intelligence.

The forces propelling the development of fully liquid?cooled charging piles include policy support, user demand for superior charging experiences, accumulated industry technology, and innovation in business models. Policy frameworks that guide infrastructure development and raise energy efficiency standards give clear direction for investment and innovation; user expectations for fast, stable, and reliable charging also motivate continuous optimization of technical solutions. Breakthroughs in core components such as thermal management, power electronics, and smart control enhance product competitiveness, and closer collaboration between infrastructure operators and vehicle manufacturers accelerates real?world deployment. Yet challenges remain in cost control, ensuring high?power operational safety, interoperability across standards, and grid capacity to support localized high?power demand. Addressing these through multi?party collaboration, sustained technological

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progress, and targeted policy support will be key to removing barriers and fostering sustainable long?term growth for fully liquid?cooled charging technology.

This report studies the global Fully Liquid-cooled Charging Pile production, demand, key manufacturers, and key regions.

This report is a detailed and comprehensive analysis of the world market for Fully Liquid-cooled Charging Pile 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 Fully Liquid-cooled Charging Pile that contribute to its increasing demand across many markets.

Highlights and key features of the study
Global Fully Liquid-cooled Charging Pile total production and demand, 2021-2032, (Units)
Global Fully Liquid-cooled Charging Pile total production value, 2021-2032, (USD Million)
Global Fully Liquid-cooled Charging Pile production by region & country, production, value, CAGR, 2021-2032, (USD Million) & (Units), (based on production site)
Global Fully Liquid-cooled Charging Pile consumption by region & country, CAGR, 2021-2032 & (Units)
U.S. VS China: Fully Liquid-cooled Charging Pile domestic production, consumption, key domestic manufacturers and share
Global Fully Liquid-cooled Charging Pile production by manufacturer, production, price, value and market share 2021-2026, (USD Million) & (Units)
Global Fully Liquid-cooled Charging Pile production by Type, production, value, CAGR, 2021-2032, (USD Million) & (Units)
Global Fully Liquid-cooled Charging Pile production by Application, production, value, CAGR, 2021-2032, (USD Million) & (Units)

This report profiles key players in the global Fully Liquid-cooled Charging Pile 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 BYD, Huawei Digital Power, Kempower, ABB, Siemens, KSTAR, TELD, Sungrow, Sinexcel, EN Plus, etc.

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

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Stakeholders would have ease in decision-making through various strategy matrices used in analyzing the World Fully Liquid-cooled Charging Pile market

Detailed Segmentation:

Each section contains quantitative market data including market by value (US$ Millions), volume (production, consumption) & (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 Fully Liquid-cooled Charging Pile Market, By Region:

United States

China

Europe

Japan

South Korea

ASEAN

India

Rest of World

Global Fully Liquid-cooled Charging Pile Market, Segmentation by Type:

High Power (150?350 kW)

Ultra-High Power (350?500 kW)

Megawatt Level (500?1000 kW)

Multi-Megawatt Level (>1000 kW)

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Global Fully Liquid-cooled Charging Pile Market, Segmentation by Deployment Mode:

Standalone Charging Station

Charging Hub Charging Station

Energy Storage Integrated Charging Station

Global Fully Liquid-cooled Charging Pile Market, Segmentation by Application:

Highway Service Station

Logistics Hub

Public Transit Hub

Commercial Parking Area

Companies Profiled:

BYD

Huawei Digital Power

Kempower

ABB

Siemens

KSTAR

TELD

Sungrow

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Sinexcel

EN Plus

StarCharge

Tritium

Alpitronic

MIDA EV Power

Teison

MaxPower

Key Questions Answered:

1. How big is the global Fully Liquid-cooled Charging Pile market?
2. What is the demand of the global Fully Liquid-cooled Charging Pile market?
3. What is the year over year growth of the global Fully Liquid-cooled Charging Pile market?
4. What is the production and production value of the global Fully Liquid-cooled Charging Pile market?
5. Who are the key producers in the global Fully Liquid-cooled Charging Pile market?
6. What are the growth factors driving the market demand?

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