

Bidirectional Electric Vehicle Charger Market - A Global and Regional Analysis: Focus on Application, Product, and Country-Level Analysis - Analysis and Forecast, 2022-2031

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Abstracts

Bidirectional Electric Vehicle Charger Overview

The global bidirectional electric vehicle charger market was valued at \$933.2 million in 2022 and is anticipated to reach \$4,820.6 million by 2031, witnessing a CAGR of 20.02% during the forecast period 2022-2031. The growth in the bidirectional electric vehicle charger market is expected to be driven by the need for renewable sources of power and energy and increasing sales of electric vehicles around the world.

Market Lifecycle Stage

The bidirectional electric vehicle (EV) charger market is in the early growth phase for several reasons. Firstly, bidirectional charging technology is a relatively new concept, and as such, it has not yet penetrated the market fully. This technology enables electric vehicles to not just consume energy from the grid but also feed it back to the grid, providing grid services and enhancing the overall stability and resiliency of the grid. Secondly, the adoption of electric vehicles is still in its early stages. However, with the increasing demand for greener mobility and the decreasing cost of battery technology, the adoption of electric vehicles is expected to increase in the coming years. As more and more electric vehicles hit the road, the demand for bidirectional charging will increase. Lastly, there is a growing need for grid services such as frequency regulation, which bidirectional charging can provide. Additionally, this need is expected to grow as the share of renewable energy in the grid mix increases, as solar and wind energy are inherently intermittent and require flexible solutions like bidirectional charging to help

balance the grid. As a result, the bidirectional electric vehicle charger market is expected to flourish in the forecast period.

Impact

There are several factors driving the growth of the bidirectional electric vehicle (EV) charger market:

- 1. Increased Demand for Renewable Energy Integration:** With the world shifting toward sustainable energy, there has been an increase in demand for integrating renewable energy sources like solar panels and wind turbines into the grid. Bidirectional EV charging technology allows electric vehicle batteries to store excess renewable energy when it is available and feed it back into the grid when there is a shortage.
- 2. Growing EV Penetration:** As the adoption of EVs continues to grow, the demand for charging infrastructure is also increasing. Bidirectional EV charging provides an opportunity to improve charging infrastructure by allowing EVs to not only receive electricity from the grid but also send it back during peak demand.
- 3. Reduced Energy Costs:** Bidirectional charging technology enables EV owners to sell excess energy stored in their vehicle batteries back to the grid or use it during peak demand hours. This feature can help EV owners reduce their energy costs and even earn profits in some cases.
- 4. Government Incentives:** Various governments around the world are providing incentives such as tax credits and subsidies to promote the adoption of bidirectional EV charging technology. This has encouraged manufacturers to invest in research and development of these products.
- 5. Advancements in Technology:** Recent advancements in electric vehicle and battery technology have improved the efficiency and reliability of bidirectional charging systems, making them a more practical option for widespread deployment.

Impact of COVID-19

The COVID-19 pandemic has had both positive and negative impacts on the bidirectional electric vehicle (EV) charger market. On one hand, the pandemic slowed down the overall growth of the market due to the economic slowdown and restrictions on travel and movement. This resulted in a reduction in the demand for new electric

vehicles, which in turn affected the growth of the EV charger market. On the other hand, the pandemic has also highlighted the importance of reducing air pollution and protecting the environment. This has resulted in an increased focus on sustainable transportation, including electric vehicles, and the need for efficient and reliable charging infrastructure. Furthermore, the pandemic has also accelerated the shift toward remote working, which has reduced the usage of commercial office space and increased the need for smart and efficient energy management systems. Bidirectional EV charging technology has the potential to play a vital role in such systems by enabling the use of EV batteries for energy storage and balancing grid demand. To summarize, the pandemic has slowed down the growth of the bidirectional EV charger market in the short term, but it has also highlighted the importance of sustainable transportation and the potential of bidirectional charging technology in building a smarter and more sustainable energy system.

Market Segmentation:

Segmentation 1: by Application

Vehicle-to-Grid (V2G)

Vehicle-to-Home (V2H)

Others (Vehicle-to-Vehicle and Vehicle-to-Load)

Segmentation 2: by Source

OEM

Aftermarket

Segmentation 3: by Propulsion Type

Battery Electric Vehicle (BEV)

Plug-in Hybrid Electric Vehicle (PHEV)

The bidirectional electric vehicle charger market based on the propulsion type segment is expected to be dominated by the BEV segment throughout the forecast period 2021-2031. Based on the application, the V2G segment is expected to dominate the market throughout the forecast period. Moreover, based on the source, the OEM segment is anticipated to dominate the market during the forecast period.

Segmentation 4: by Deployment of Charger

Domestic

Commercial

Segmentation 5: by Charging Type

100 kWh

Based on the deployment of charger, the domestic segment is expected to dominate the market, and based on charging type, the

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