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Power Electronics for Electric Vehicle Market By Application (Inverter, Converter, and On-board Charger) and End Use (Automotive, Railways, Marine, and Electrically Powered Airborne Vehicles): Global Opportunity Analysis and Industry Forecast, 2019–2026

https://marketpublishers.com/r/P13D6F13ED7FEN.html
Date: January 2020
Pages: 89
Price: US$ 4,296.00 (Single User License)
ID: P13D6F13ED7FEN

Abstracts

The power electronics for electric vehicle market size was valued at $2.59 billion in 2018, and is projected to reach $30.01 billion by 2026, growing at a CAGR of 35.5% from 2019 to 2026. Power electronic is the key technology for energy saving and high functionalizing in energy usage. Power electronic plays an important role in the electrified vehicle applications, which provides compact and high-efficient solutions to power conversion. Power electronics is an engineering study of converting electrical power from one form to another. The world-wide average rate of 12 billion kilowatts every hour of every day of every year, more than 80% of the power generated, is being reprocessed or recycled through some form of power electronic systems.

The inverters segment secured highest revenue share in power electronics for electric vehicle market in 2018. However, on-board chargers' market is anticipated to witness higher growth rate during the forecast period, owing to growth in electrification of vehicle. Among the end users, automotive segment dominated the power electronics market in 2018, and is projected to follow same trend during forecast period. The railway segment is expected to grow at a CAGR of 40.7% from 2019 to 2026, owing to surge in demand for electric propulsion systems in the locomotive industry.

Rise in interest of energy efficiency power devices and environmental protection has led to the development of electric vehicle technology. The primary energy sources in these

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vehicles are batteries or capacitors instead of gasoline or diesel fuel as in the conventional ICE vehicles. The power electronics are key components in propulsion system that effectively drive the adoption of electric motor and control the power converters. The implementation of innovative battery technology in electric vehicle is in progress, which is expected to reduce the cost of these vehicles. Currently, the performance of lithium-ion battery cathodes is being improved, which also reduces battery cost; thereby, reducing the cost of electric vehicle as compared to gas power vehicle in the coming years.

The major factors that drive the power electronics for electric vehicle market include surge in demand for energy-efficient battery-powered devices, stringent emission regulations to reduce vehicle weight and emission, and government initiatives to balance environmental pollution and vehicle emission. However, high cost of vehicle and complexity in designing and integrating advance power electronic components in electric vehicles hinder the power electronics for electric vehicle market growth. Furthermore, technological advancements in vehicle battery and increase in R&D activities are expected to create lucrative growth opportunities for the power electronics for electric vehicle market. In addition, power electronics supports high input impedance and improved parallel current sharing, which increases the adoption of power electronic components in electric vehicles.

The power electronics for electric vehicle market is segmented on the basis of application, end use, and region. The application segment is divided into inverter, converter, and on-board charger. By end use, the market is classified into automotive, railway, marine, and electrically powered airborne vehicles

The key players profiled in the report include Denso Corporation, Robert Bosch GmbH, Infineon Technologies AG, Delphi Technologies, and other companies that secured major share in the automotive electronics market. The other key player profiled in this report include Continental AG, Hitachi Automotive Systems, Ltd., Delphi Technologies, Valeo, Mitsubishi Electric Corporation, Denso Corporation, Infineon Technologies, Robert Bosch GmbH, Hella, Panasonic Corporation, Tesla Inc., Toyota Industries Corporation, and Hangzhou Tiecheng Information Technology.

KEY MARKET SEGMENTS

BY APPLICATION

Inverter

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Converter

On-board Charger

BY END USE

Automotive

Railways

Marine

Electrically Powered Airborne Vehicles

KEY PLAYERS

Denso Corporation

Robert Bosch GmbH

Infineon Technologies AG

Delphi Technologies

Continental AG

Hitachi Automotive Systems, Ltd.

Delphi Technologies

Valeo

Mitsubishi Electric Corporation

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Hella

Panasonic Corporation

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