STUDY GOAL AND OBJECTIVES
This report provides the industry executives with strategically significant competitor information, analysis, insight and projection on the competitive pattern and key companies in the industry, crucial to the development and implementation of effective business, marketing and R&D programs.

REPORT OBJECTIVES
◆ To establish a comprehensive, factual, annually updated and cost-effective information base on market size, competition patterns, market segments, goals and strategies of the leading players in the market, reviews and forecasts.
◆ To assist potential market entrants in evaluating prospective acquisition and joint venture candidates.
◆ To complement the organizations’ internal competitor information gathering efforts with strategic analysis, data interpretation and insight.
◆ To suggest for concerned investors in line with the current development of this industry as well as the development tendency.
◆ To help company to succeed in a competitive market, and

METHODOLOGY
Both primary and secondary research methodologies were used in preparing this study. Initially, a comprehensive and exhaustive search of the literature on this industry was conducted. These sources included related books and journals, trade literature, marketing literature, other product/promotional literature, annual reports, security analyst reports, and other publications. Subsequently, telephone interviews or email correspondence was conducted with marketing executives etc. Other sources included related magazines, academics, and consulting companies.

INFORMATION SOURCES
The primary information sources include Company Reports, and National Bureau of Statistics of China etc.
Abstract

New energy vehicle electronic technologies generally include battery management system (BMS), on-board charger, inverter, vehicle control unit/hybrid control unit (VCU/HCU), pedestrian warning system and DC/DC. Thereof, core parts like BMS, inverter (motor control unit) and VCU must be very safe and reliable. New energy vehicle power electronics can be divided into on-board charger (AC-DC), inverter (DC-AC) and DC-DC, as well as air-conditioner compressor motor controller, electric air conditioner heater (PTC), among others.

In 2017, China's EV motor controller market size ranged at RMB12.9 billion, and passenger car motor controller market expanded in size. It is predicted that boosted by new energy passenger car and hybrid vehicle markets, EV motor controller market will be worth RMB36.1 billion in 2022, and passenger car will play a dominant role.

China-made on-board charger (OBC) is priced at RMB1,000-4,500/unit for the moment. The larger power it is, the higher price will be. OBC falls into three types by power: <2.5KW, 3-5KW (mostly 3.3KW), and >6KW, respectively for EVs with battery capacity less than 15kWh, 15-24kWh electric passenger cars and small logistics vehicles, and 24kWh-above electric commercial vehicles and logistics vehicles. Market price of 6.6KW charger stands at RMB3,500-4,500, 3.3KW at RMB1,500-2,000 and 2KW at around RMB1,000.

Large power OBC is growing a trend as individual users and ride-hailing firms require far shorter charging time. 6.6KW OBC will win popularity; 10KW-23KW large power ones will find wider application. By RMB3,500 per unit, the OBC market size will be RMB7 billion in 2020; the DC/DC market will be valued at a staggering RMB3 billion in 2020 as long as the price of DC/DC converter is kept at RMB1,500.

Technology trends:

Passenger car generally has the voltage of 300-400V and will develop towards high voltage in the upcoming five years because of a demanding both on power and super charging. Accordingly, inverter design will extend from 650V IGBT design to 750V and 1,200V IGBT. In the next five to ten years, SiC IGBT chip will get massively utilized in motor controllers (inverters). SiC devices can cut down switching losses significantly, improve system efficiency, reduce dead time, and enhance system output capability. The total cost of battery packs and controllers can drop by 5%, and the mileage range can rise by 10%. Tesla is the first automaker to integrate a full SiC power module in its Model 3. Thanks to its collaboration with STMicroelectronics, the Tesla inverter is composed of 24 1-in-1 power modules assembled on a pin-fin heatsink.
High integration facilitates the spatial layout of the vehicle. In the limited space of new energy vehicles (especially passenger cars), the power and electronic integration technologies are used to integrate the automotive power supply with either motor controllers or electronic control system components such as the high-voltage power distribution boxes in a bid to reduce the space occupied by the automotive power supply, lowering the manufacturing cost and lifting the power density. This has become the development direction of the automotive power supply products.

Bidirectional DC/DC transmission is anticipated to gain ground as it can be used for braking energy recovery, auxiliary battery/capacitor charging and discharging, and high/low-voltage energy conversion of 48V micro-hybrid models. Bidirectional DC/DC solutions are more efficient, less occupied and more affordable than the reverse parallel of 2 unidirectional DC/DC converters, typically finding application in Toyota Prius.

The report highlights the following:

◆ Overview of new energy vehicle (NEV) power electronics, including definition, classification, industrial chains;

◆ Environments for new energy vehicle (NEV) power electronics industry, including policy climate, development of NEV market and its influence on the NEV power electronics industry;

◆ China-made NEV power electronics, including drive motor controllers, DC/DC converters, onboard chargers (industrial chains, cost analysis, business models, competitive landscape, leading manufacturers, as well as the competitive pattern of power electronics for passenger car and commercial vehicle); and analysis on automotive power electronics technologies and development tendencies;

◆ Five Chinese DC/DC and onboard charger companies, twenty-two Chinese motor controller manufacturers, eight global motor controller companies, and six global IGBT vendors (operation, development strategy, supply chain, NEV power electronics business, etc.);

◆ EV motor controller industry policy, market size, supply chain and competitive landscape as well as the world’s popular EV motors and electric control systems.
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