

INDUSTRY OVERVIEW

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OVERVIEW OF GLOBAL ELECTRIC CONTROL MARKET

Definition and Classification of Electric Control

An electric control system converts electrical energy into controlled power output to manage motor or power supply operations and deliver efficient, reliable vehicle performance. Its principle involves the efficient and controlled flow and distribution of electrical energy between different forms and devices to support power output, energy conversion and coordinated system operation.

Within electric control systems, the power module represents the core functional component responsible for energy conversion. Power Electronics Building Block (“PEBB”) can be viewed as an integrated product architecture developed on the basis of power module technology, incorporating power conversion, energy buffering and thermal management into a more compact and system-level implementation.

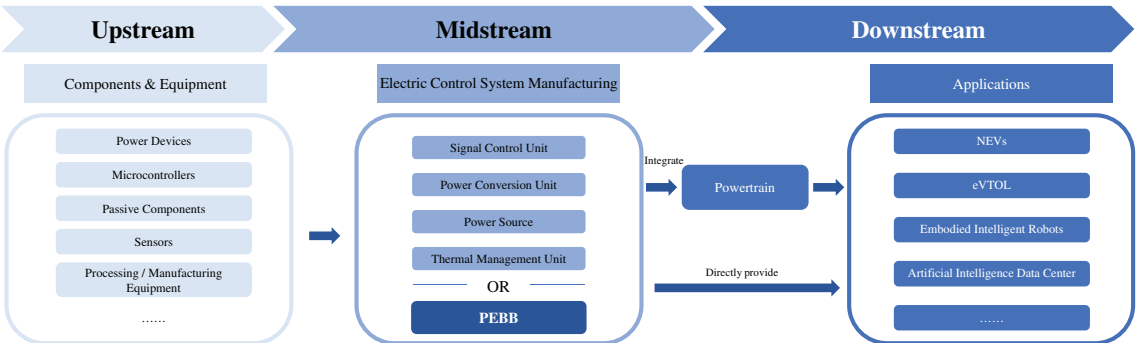
Introduction of Electric Control Industry Chain

The electric control system is a key component for electrical energy conversion and drive control, and its industry chain revolves around the core of power conversion. The upstream segment consists of various components and production equipment.

The midstream segment involves the manufacturing of electric control systems, covering the entire process from circuit design and module packaging to whole-set assembly. The manufacturing of electric control systems typically spans the full process from circuit design and control strategy development, to module packaging and whole-set assembly and testing. Among these stages, system integration and end-to-end manufacturing represent the most technology-intensive and value-concentrated segments, as they determine performance efficiency, reliability, safety and vehicle-level compatibility.

In downstream sectors, electric control systems are either integrated into powertrain assemblies or supplied directly to end applications, depending on specific system requirements.

The following chart presents the industry value chain for electric control systems:



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Market Size of Global Electric Control Market

The electric control market is in a phase of rapid expansion. From 2020 to 2025, the global electric control market size increased from RMB383.1 billion to RMB469.9 billion, representing a CAGR of approximately 4.2%. It is projected to maintain stable growth at a CAGR of approximately 5.3% from 2026 to 2030, reaching a market size of approximately RMB608.4 billion by 2030.

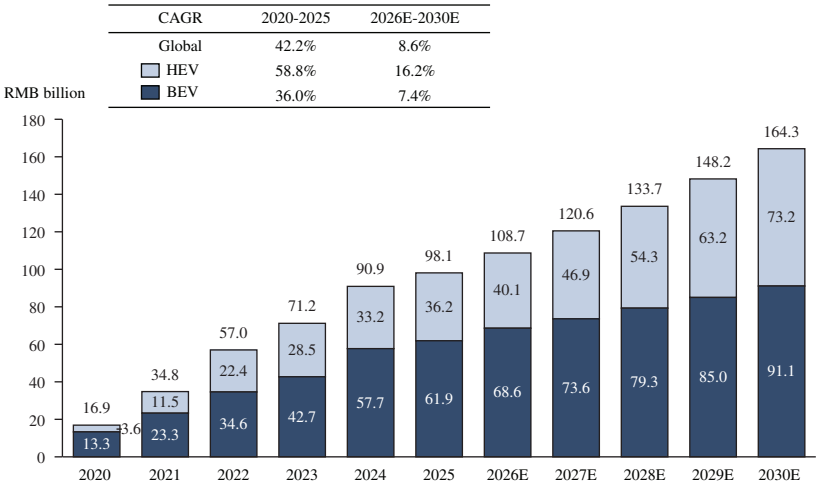
Global motor controller market increased from RMB114.7 billion in 2020 to RMB224.9 billion in 2025, achieving a CAGR of 14.4%, primarily driven by the rapid growth of NEV sales and the increasing penetration of electrified powertrains. Looking ahead, the motor controller market is expected to maintain stable growth, reaching RMB316.5 billion by 2030, achieving a CAGR of 7.1%, supported by continued expansion of NEV, eVTOL, and embodied intelligent robots market.

Market Size of Global Motor Controller for NEVs

Main drive motor controllers in the NEV field can generally be classified according to the power types of the compatible vehicles, including those two serving pure electric systems and hybrid power systems, respectively. The two differ significantly in terms of system architecture, voltage level, power semiconductor selection, and control logic. Correspondingly, differences in power sources and powertrain architectures lead to different motor control configurations. In practice, HEVs, which combine a battery system with an internal combustion engine, typically adopt dual motor controller architectures, while BEVs, powered solely by battery systems, generally employ single motor controller designs.

From 2020 to 2025, the market size for main drive motor controllers in pure electric vehicles increased from RMB13.3 billion in 2020 to RMB61.9 billion in 2025, with a CAGR of 36.0%. It is projected to maintain stable growth at a CAGR of approximately 7.4% from 2026 to 2030, reaching a market size of RMB91.1 billion by 2030. With the continuous increase in the penetration rate of hybrid power technology in mid-to-high-end models, main drive motor controllers for hybrid power will become a high-revenue growth point for electric control manufacturers in future, further enhancing the industry’s profitability. The market size of main drive motor controllers for HEVs increased from RMB3.6 billion in 2020 to RMB36.2 billion in 2025, with a CAGR as high as 58.8%. It is projected to grow at a rate of approximately 16.2% from 2026 to 2030, reaching a market size of RMB73.2 billion by 2030.

Market Size of Global Main Drive Motor Controller for NEVs by Power Type (in terms of Revenue), 2020-2030E



Source: CPCA, Frost & Sullivan

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Market Size of Global Motor Controller for Emerging Applications

As highly integrated platforms combining motor controller, eVTOL place extremely high requirement on power density, response speed, reliability and lightweight design of the system. The global market size of motor controller for eVTOL size is expected to grow from RMB10.3 billion in 2025 to RMB37.2 billion in 2030, with a CAGR of approximately 29.3%.

Integrating multiple core components such as motor drives, electric control systems, and power modules, the electric control system for embodied intelligent robots is a highly synergistic electromechanical composite platform. With the rapid evolution of AI algorithms, breakthroughs in sensing and actuation technologies, and the expansion of industrial automation and other applicants the global embodied intelligent robot industry is undergoing an accelerated development. The market size of global motor controller for embodied intelligent robots is expected to grow from RMB5.2 billion in 2025 to RMB40.7 billion in 2030, with a CAGR of approximately 50.9%.

OVERVIEW OF GLOBAL POWER MODULE MARKET

Definition of Power Modules

A power module is a highly integrated electronic unit that combines power devices and passive parts based on specific functions for further potting and packaging. It is one of the most important component of an electric control system.

Market Size of Global Power Modules

The global power module market continues to grow, driven by demand from NEVs and other sectors. From 2020 to 2025, the market size increased from RMB29.4 billion to RMB77.7 billion, with a CAGR of approximately 21.5%. It is projected that from 2026 to 2030, the market will continue to expand at a CAGR of approximately 8.5%, with the size expected to grow from RMB86.1 billion in 2026 to RMB119.2 billion in 2030. In terms of breakdown by region, China has shown the most significant market growth. Driven by emerging industries such as NEVs and industrial automation, the market size in China increased from RMB8.5 billion in 2020 to RMB32.1 billion in 2025, with a CAGR of 30.4%, far exceeding the global average. It is projected that from 2026 to 2030, the power module market in China will maintain a CAGR of approximately 10.9%, with the market size expected to further expand to RMB48.5 billion.

Development Trends of Global Power Module Industry

Iterative demand driven by the evolution towards high voltage and high-power fast charging. According to Frost & Sullivan Report, the average driving range of NEVs in China increased from approximately 400 kilometers in 2020 to approximately 550 kilometers in 2024. With increasing range anxiety and demand for charging convenience, the adoption of high-voltage fast-charging platforms is increasing, thereby promoting the penetration of high-voltage electrical architectures in vehicles.

Structural changes brought by higher density, lower loss and smaller size. Power modules are undergoing a deep transformation from packaging optimization to system structure innovation. High power density, low loss and miniaturization are the main themes of technological evolution. The new generation of power modules integrates drive circuits and thermal management systems within a single package, forming a highly integrated PEBB structure.

Evolution from packaging manufacturing to system collaboration. The core trend in power modules is the process innovation centered on thermal management and interconnection reliability. The characteristics such as high frequency and high junction temperature of third-generation semiconductor materials (SiC, GaN) are driving the transition from traditional soldering processes

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to sintering interconnection, thereby reducing thermal resistance, improving heat dissipation efficiency and increasing device lifespan. Packaging solutions such as double-sided cooling, copper sintering, high thermal conductivity substrates and new metal interconnection layers are widely adopted.

OVERVIEW OF GLOBAL NEV PEBB MARKET

Definition of NEV PEBB

NEV PEBB is highly integrated packaging units centered on power devices, which integrate power modules, drive circuits, DC link capacitors, sensors and heat dissipation structure within a single package, achieving integrated design of electrical energy conversion, signal control and thermal management functions. Compared to traditional solutions combining discrete components such as power modules, capacitors and current sensors, PEBB enables multiple key components to work synergistically within the same electrical and thermal management platform through structural co-packaging and functional integration, significantly improving the system’s power density and space utilization efficiency.

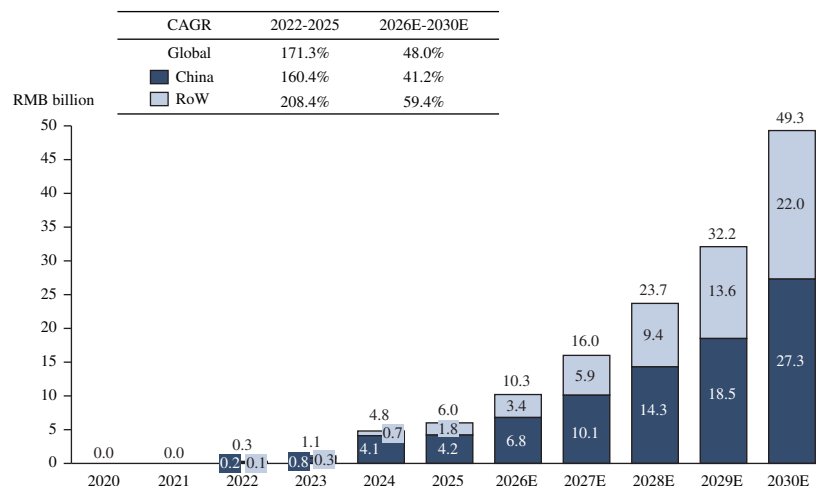
Market Size of Global NEV PEBB

Since the concept of PEBB was formally introduced in 2021, their market penetration rate in NEV was only 0.6% in 2022. With the progress and development of NEV electric control technology and the continuous growth in integration demand, the share of PEBB solutions further increased to 10.0% in 2025. By 2030, the share of PEBB will increase to 39.7%.

The overall global market size of PEBB was approximately RMB6.0 billion in 2025, expected to grow to RMB49.3 billion by 2030, with a CAGR of 48.0% from 2026 to 2030.

In terms of geographic region, China plays a major role in the growth of global PEBB market. Leveraging its proven layout in the NEV industry chain and advantages in power semiconductor industry clusters, China is becoming the core driver of growth in the global PEBB market. Since the official shipment of PEBB products in 2022, PEBB shipments have continued to increase, reaching a market size of RMB4.2 billion in 2025. Looking ahead to 2026 to 2030, China will maintain steady expansion, expected to reach RMB27.3 billion by 2030 with a CAGR of approximately 41.2%, continuing to take the leadership in global market growth.

Market Size of Global PEBB by Region (in terms of Revenue), 2020-2030E



Source: Expert Interview, Frost & Sullivan

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Major Drivers for Global NEV PEBB Market

Demand for PEBB spurred by the multi-in-one and drive-control separation trends. As NEVs develop towards high voltage, high power density and lightweight, it is challenging for traditional discrete electric control solutions to meet requirements for efficiency, space and thermal management simultaneously. Empowered by integrating the power module, drive unit and thermal management unit within a single package, PEBB is enabled to achieve integrated design for electrical energy conversion, signal control and heat dissipation, significantly improving the system’s power density and assembly efficiency. OEMs are gradually turning to the standardized and reusable power units in the development of electric drive platforms, which becomes the core driver for the rapid increase in PEBB penetration technologies support the adoption of PEBB.

Breakthroughs in power devices and packaging. As a highly integrated architecture developed based on power module technology, PEBB relies on continuous advancements in power semiconductors, control chips and packaging processes to achieve higher levels of integration and performance. The mass production and application of SiC power devices significantly improves controller efficiency and power density; enhanced computing power of MCUs and DSPs and algorithm optimization drive more precise current and torque control; innovations in thermal management and packaging processes effectively improve systems’ reliability and lifespan. As these technologies continue to mature and become commercially viable at scale, OEMs are increasingly able to adopt integrated power electronics architectures in their electric drive platforms. As a result, technological advancements in power devices and packaging technologies are expected to support increasing adoption and penetration of PEBB products, thereby driving market growth.

Policies drives PEBB and motor controller growth. Supportive vehicle electrification policies across major automotive markets are expected to continue driving NEV penetration and, in turn, demand for PEBB products. In China, the New Energy Vehicle Industry Development Plan (2021-2035) and the Dual Credit Policy continue to support the long-term development of NEVs and energy-efficient vehicles. Overseas, the European Union’s Fit for 55 package and CO₂ emission standards require newly registered passenger cars and vans to achieve zero CO₂ emissions from 2035, while the United Kingdom’s Zero Emission Vehicle Mandate and Canada’s Electric Vehicle Availability Standard also establish clear pathways towards zero-emission vehicle adoption. These policies are expected to support continued growth in global NEV sales and production. As vehicle electrification continues to advance, OEMs are increasingly adopting higher-voltage platforms, higher-performance electric drive systems and more integrated power electronics architectures. Against this backdrop, demand for electric control systems and PEBB products is expected to increase alongside the expansion of the NEV market. Furthermore, the increasing adoption of platform-based vehicle development, standardized power electronics architectures and integrated electric drive solutions is expected to further support the long-term growth of both markets.

Global Trends in the NEV PEBB Industry

Rapidly increasing penetration rate. As an important form of electric drive system integration, PEBB is accelerating their penetration from high-end models to mainstream platforms. As various OEMs have gradually adopted PEBB architectures in high-voltage platforms and integrated electric drive solutions, the market size is entering a critical phase from verification to mass production. The standardization of vehicle platforms, the maturity of electric drive supply chain, and cost optimization are driving the mass adoption of PEBB in vehicles, propelling the industry into a volume growth phase.

These technological advancements directly translate into demand growth for the Group’s products. The proliferation of high-voltage platforms expands the addressable market for high-performance motor controllers. The industry’s shift toward system-level integration

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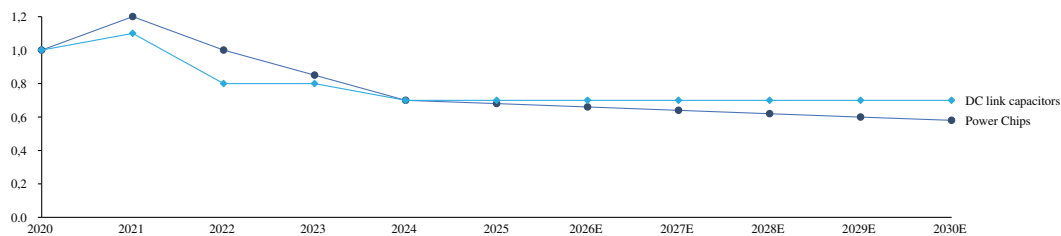
accelerates adoption of PEBB solutions, where the company holds a leading market position. Enhanced reliability and power density requirements align with its technical strengths, supporting continued expansion in both domestic and export markets.

Technology design focuses on standardization and modularization. PEBB design is evolving from customized solutions towards modularization and standardization. Mainstream electric drive companies achieve rapid matching between different power segments and drive platforms through unified interfaces, standard packaging and module sizes, thereby significantly reducing integration complexity within the system. The promotion of standardization not only enhances the versatility of PEBB across multiple vehicle models, but also changes the competition focus of the industry from “solution customization competition” to module platform competition.

TREND ANALYSIS OF COSTS AND PRICE OF KEY COMPONENTS

In electric control systems, motor controllers and PEBB share substantially similar cost structures, as both products are built around power conversion architectures and integrated control functions. Power chips are core semiconductor devices within electric control systems, PEBB and power modules. They perform high-frequency switching and electrical energy conversion functions, enabling controlled power output, efficiency optimisation and system protection. As such, power chips directly affect the performance, efficiency and reliability of electric control systems. Meanwhile, DC link capacitors are key components in electric control systems for energy balance and voltage stabilization. DC-link capacitors serve to stabilize the DC bus voltage, reduce ripple and buffer transient energy fluctuations, thereby supporting reliable and stable system operation under varying load conditions.

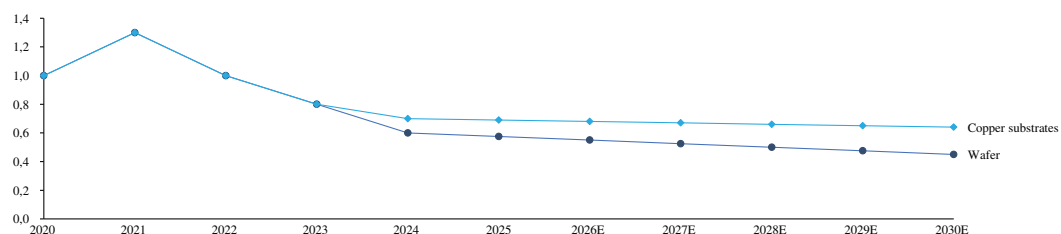
Price Index Change Trend of Main Electric Control Cost Items, 2020-2030E (2020=1.0)



Source: SEMI, Wind, Frost & Sullivan

Core costs of power modules mainly relate to wafers and copper substrates. Wafers serve as the fundamental carrier for power chips, providing the physical platform for current carrying, heat conduction and device manufacturing. Their cost is mainly composed of the prices of silicon wafers or silicon carbide substrates, epitaxial processing and device manufacturing processes. Copper substrates are key structural components in power modules for thermal management and electrical conduction. Their cost primarily comprised of copper materials and attached solder.

Price Index Change Trend of Main Power Module Cost Items, 2020-2030E (2020=1.0)



Source: SEMI, Wind, Frost & Sullivan

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NEV ELECTRIC CONTROL MARKET COMPETITION ANALYSIS

Ranking in China’s NEV Motor Controller Market

China’s NEV motor controller market exhibits a relatively fragmented competitive landscape. The core of competition in motor controllers lies in system integration capabilities, power device and control algorithm technologies, and reliability verification systems. We rank sixth in the market, with a revenue of RMB1,519.6 million in 2025.

Competitive Landscape of NEV Motor Controllers in China,
by Revenue, 2025

Ranking	Company	Revenue (RMB100 million)	Market share
1	Company A	74.4	18.2%
2	Company B	30.7	7.5%
3	Company C	22.4	5.5%
4	Company D	16.9	4.1%
5	Company E	15.6	3.8%
6	The Company	15.2	3.7%
7	Company F	13.8	3.4%
8	Company G	13.1	3.2%
9	Company H	11.3	2.8%
10	Company I	11.1	2.7%
	Others	183.7	45.1%
	Total	408.2	100%

Source: Annual reports of these companies, Expert Interview, Frost & Sullivan

Note:

(1) Totals may not sum due to rounding; Market share is based on unrounded data.

Company A: Found in 2019, an unlisted company headquartered in Guangdong, China, an OEM-affiliated electric control subsidiary. Its main products include automotive electronics, electronic components and micro electronics products.

Company B: Found in 2016, a company listed on the Shenzhen Stock Exchange, headquartered in Jiangsu, China, an independent third-party supplier. Its main products include NEV powertrain systems, motor controllers, motors, reducers and intelligent control software for vehicles and components.

Company C: Found in 2021, an unlisted company headquartered in Guangdong, China, independent third-party supplier. Its main products include powertrains and on-board charging systems.

Company D: Found in 2016, an unlisted company headquartered in Anhui, China, an independent third-party supplier. Its main products include e-axes and motor controllers.

Company E: Found in 2003, a Nasdaq-listed company headquartered in Texas, USA, an OEM with in-house systems. Its main products include permanent magnet synchronous motors, AC induction motors and inverters.

Company F: Found in 2005, a company listed on the Shanghai Stock Exchange, headquartered in Hunan, China, an independent third-party supplier. Its main products includes powertrains, distributed e-drive systems, liquid-cooled e-drive systems and asynchronous e-drive systems.

Company G: Found in 2021, an unlisted company headquartered in Jiangsu, China, an OEM-affiliated electric drive-related subsidiary. Its main products include electric motors, motor controllers, reducers and power transmission and distribution control equipment.

Company H: Found in 2010, an unlisted company headquartered in Shanghai, China, an OEM-affiliated electric drive-related subsidiary. Its main products include electric motors and motor controllers.

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Company I: Found in 1995, an unlisted company headquartered in Shanghai, China, an independent third-party supplier. Its main products include motors, inverters, power modules and current sensors.

Ranking in China’s NEV Power Modules Market

According to relevant statistics, we achieved a revenue of RMB69.1 million power modules in 2025, representing a market share of 3.2% and ranking seventh.

Ranking in China’s NEV PEBB Market

In 2025, we ranked first in the industry with a revenue of RMB346.7 million; it took a market share of 31.4%, establishing it one of the most competitive suppliers during the rapid market penetration of PEBB.

Competitive Landscape of NEV PEBB in China,
by Revenue, 2025

Ranking	Company	Revenue (RMB100 million)	Market share
1	The Company	3.5	31.4%
2	Company B	2.9	26.1%
3	Company C	2.3	20.7%
4	Company I	0.4	4.0%
5	Company R	0.4	3.6%
	Others	1.6	14.3%
	Total	11.1	100.0%

Source: Annual reports of these companies, Expert Interview, Frost & Sullivan

Note:

- (1) This ranking covers only revenue from standalone PEBB shipments, excluding PEBB products integrated within motor controllers.
- (2) Totals may not sum due to rounding; Market share is based on unrounded data.

Companies B, C and I are listed in the note above.

Company R: Founded in 1916, a Frankfurt Stock Exchange — listed company headquartered in Munich, Germany. Main products include electric motors, e-drive axles, and inverters.

Threats and Challenges

Technological Iteration. The electric control industry is characterized by rapid technological iteration, particularly in power semiconductor technologies and system integration architectures. Continuous transition toward higher efficiency devices and higher power density solutions requires sustained research and development investment, frequent product upgrades and close coordination with OEM platforms. Failure to keep pace with evolving technical standards and performance expectations may result in reduced competitiveness or delayed platform adoption.

Supply Chain Volatility. The industry is also exposed to supply chain volatility in key components such as power chips, substrates and other critical materials. Fluctuations in capacity availability, pricing or lead times may affect production planning, cost stability and delivery schedules. Given the dependence on specialized upstream suppliers, prolonged supply disruptions or demand surges could create operational pressure and impact industry-wide performance.

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Barriers to Entry

Technology barriers. In the R&D phase, electric control system designs are required to have a deep understanding of customer requirements and vehicle-level system architectures. This demands comprehensive knowledge of overall vehicle design as well as strong cross-disciplinary expertise, creating high technology barriers for new entrants. It is required for a company to possess not only device-level design capabilities, but also the capabilities to conduct system-level integration and reliability verification.

Customer verification barriers. OEMs establish strict certification systems for electric control and power module suppliers. New products must be subject to a series of verifications including electrical performance, EMC, thermal cycling, vibration and shock. The certification cycle typically lasts 12 to 24 months, and once verified, customers have low willingness to change suppliers. Given the high degree of binding between electric control systems and vehicle platforms, new entrants seeking to establish stable cooperative relationships find it difficult to quickly penetrate the supply chains of mainstream automakers.

Talent barriers. The electric control industry demands highly interdisciplinary talent. As electric drive systems evolve toward high voltages and greater integration, electric control design must extend upward to “system-level power forecasting and load analysis.” The lengthy training cycles and substantial investment required for cultivating such talents create significant barriers to entry. It is a great challenge for new entrants to deliver reliable mass production in a short period.

SOURCE OF INFORMATION

In connection with the [REDACTED], we engaged Frost & Sullivan, an independent market research consultant, to conduct an analysis of, and to prepare the Frost & Sullivan Report about, the NEV and electric control market. In connection with the market research services provided, we have paid a fee of RMB600,000 to Frost & Sullivan, which we believe to be consistent with market rates.

In compiling and preparing the Frost & Sullivan Report, Frost & Sullivan conducted (i) primary research includes interviewing industry participants, competitors, downstream customers and recognized third-party industry associations; and (ii) secondary research includes reviewing corporate annual reports, databases of relevant official authorities, as well as the exclusive database established by Frost & Sullivan over the past decades. The market projections in the Frost & Sullivan Report are based on the following key assumptions during the forecast period: (i) the social, economic and political conditions in global markets discussed will remain stable during the forecast period, (ii) government policies on global and China NEV and electric control market will remain consistent during the forecast period, and (iii) NEV and electric control market will be driven by the factors which are stated in the Frost & Sullivan Report.

Except as otherwise noted, all the data and forecasts contained in this section are derived from the Frost & Sullivan Report. The commissioned report has been prepared by Frost & Sullivan independently without the influence from the Company or other interested parties. Our Directors confirm that, to the best of their knowledge, after making reasonable inquiries, there is no material and adverse change in the market information since the date of the Frost & Sullivan Report, which may qualify, contradict or have an impact on the information in this section.