

Global and China Hybrid Vehicle Industry (Stop-Go, 48V + BSG/ISG, HEV, PHEV) Research Report 2016-2020

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Abstracts

Hybrid vehicles make use of traditional fuels while being accompanied by electric motors and engines. Electric motors function as the auxiliary power of engines to improve low-speed power output and fuel consumption. Hybrid system can reduce fuel loss of traditional fuel vehicles and level down fuel consumption so as to save energy and reduce emission.

According to the revised versions of the mandatory national standards - Passenger Car Fuel Consumption Limits (GB 19578) and Passenger Car Fuel Consumption Evaluation Methods and Indicators (GB 27999), China requires that the average fuel consumption of passenger cars produced locally in 2015 should drop to 6.9L / 100km, and further to 5.0L / 100km by 2020.

In addition, Management Measures for Average Fuel Consumption of Passenger Car Companies (Draft)' has been stipulated, in which the most important content is concerned about the average fuel consumption credit and trading system of enterprises as well as hefty fines on non-compliance companies.

Globally, the EU's 2020 emission goal is 3.8L / 100km, while the United States and Japan target 5L / 100km. The EU undertakes enormous pressure on energy saving and emission reduction, thus it prefers hybrid technology.

On the market, there are three types of common hybrid system:

(1) 12V + Stop-Start System (Micro Hybrid) acts as the entry technology of hybrid vehicles. Micro hybrid vehicles can be accomplished only by adding a set of start-stop

system to traditional cars, so that engines can stop running in the case of a red light or traffic congestion and resume working as long as clutches are stamped again. By this means, 5%-15% of energy can be saved and 3%-6% of carbon dioxide emissions can be reduced.

(2) 48 + ISG / BSG System. In 2011, several German automakers jointly launched the concept of 48Vsystem, and constituted LV148 standards. 48V system supplies power to 12V system via DC / DC adapters so as to improve the existing 12V start-stop system. As an upgraded version of 12V start-stop system, 48V system supports extended load, enhances the fuel economy to 15%-20%, and only requires less than half of the costs of high-voltage hybrid technology.

(3) Full Hybrid (PHEV and HEV). The most widely used full hybrid P2 structure, for instance, connects motors and engines by clutches as well as links motors with transmissions through clutches as well. The system can enable idle speed start-stop, brake energy recovery, acceleration boost and battery electric driving.

In 2015, the global sales volume of electric passenger vehicles (EV & PHEV) soared 67.4% year on year to 549,000, mainly thanks to the growth in China and Europe, especially the radical growth in Chinese electric vehicle market. Specifically, 387,000 battery electric vehicles (BEV) and 163,000 plug-in hybrid electric vehicles (PHEV) were sold. Except PHEV, the development of hybrid market segments is shown as follows:

(1) 12V Start-Stop System. The most active promoter is the EU. Only 5% of new cars in Europe were equipped with start-stop system in 2008, while the proportion jumped to over 60% in 2014 when 12.55 million new cars were sold herein. This market will see explosive growth in 2017. By 2020, the global sales volume of new cars equipped with start-stop system will rise to 30 million, accounting for around 27% of the global new car sales.

(2) 48V System. Worldwide, major manufacturers will conduct the first mass production of 48V system in 2016 and will further raise the output in 2020. Continental AG predicts that the market share of hybrid vehicles will reach 20%, of which 50% will be powered by 48V micro hybrid system.

(3) HEV Market. In 2014, more than 1.9 million HEVs (including lithium battery HEVs and NiMH battery HEVs) were marketed globally; the figure was estimated at 2.056 million in 2015. According to the data of the market research agency FOURIN, Toyota became a HEV champion with the sales volume of 1.183 million in 2014, followed by

Honda with 279,800, Ford with 87,208, Nissan with 84,316, and Hyundai Kia with 77,473.

The future development trends vary with countries:

- (1) Europe will promote 12V start-stop system and 48V system aggressively, which will gradually become the standard configuration of original fuel vehicles. In addition, EV, PHEV and HEV will witness moderate development in Europe;
- (2) Japan will prefer HEV and fuel cell technology, while the sales volume of EV and PHEV will remain at a low level;
- (3) The United States are developing a variety of technologies simultaneously, but low oil prices will drag down the sales volume of EV and PHEV, whereas HEV will be favored;
- (4) China will focus on EV and PHEV, and encourage more economical HEV. The pre-installation of 12V start-stop system will escalate fast. As for 48V system, Chinese government's attitude is ambiguous, and no vehicle manufacturers have made plans for the vehicle models involved with this technology.

Global and China Hybrid Vehicle Industry (Stop-Go, 48V + BSG / ISG, HEV, PHEV) Research Report 2016-2020 by ResearchInChina focuses on the followings:

Overview, classification, characteristics and applications of hybrid vehicle technology;

Global and China's goals for automotive energy conservation and emission reduction, industrial subsidy policies and other aspects in the next decade;

Analysis on hybrid vehicle technology, working principles and applications of various structures, hybrid vehicle industry chain and development trends of technology;

Status quo and market segments (embracing 12V + start-stop micro hybrid system, 48V + BSG / ISG, full hybrid (HEV, PHEV), etc.) of global hybrid vehicle market; development and trends of the hybrid vehicle market in Japan, the United States and Europe;

Status quo of Chinese hybrid vehicle market, as well as development and trends of market segments;

Hybrid operation, development strategies, products and technology solutions, customers and layout in China of 8 global and Chinese hybrid system integrators;

Hybrid operation, development strategies, products and technology solutions, customers and layout in China of 10 global and Chinese vehicle manufacturers.

Contents

1 OVERVIEW OF HYBRID VEHICLES

- 1.1 Introduction
- 1.2 Classification

2 POLICY

- 2.1 Energy Supply
- 2.2 Vehicle Emission Standards
- 2.3 Electric Vehicle Subsidies
 - 2.3.1 Purchase Tax Relief
 - 2.3.2 Financial Subsidies for Purchase
 - 2.3.3 Financial Subsidies for Use
 - 2.3.4 Industrial Promotion Policy

3 HYBRID VEHICLE TECHNOLOGY ROADMAP

- 3.1 Hybrid System (by Power Structure)
 - 3.1.1 Series Hybrid Electric Vehicle (SHEV)
 - 3.1.2 Parallel Hybrid Electric Vehicle (PHEV)
 - 3.1.3 Power-Split Hybrid Electric Vehicle (PSHEV)
- 3.2 HybridSystem (by Drive Motor Power Ratio)
 - 3.2.1 Micro Hybrid (12V Start-Stop System)
 - 3.2.2 Light Hybrid (48V System)
 - 3.2.3 Moderate Hybrid (ISG Structure)
 - 3.2.4 Full Hybrid (HEV, PHEV)
 - 3.2.5 Summary
- 3.3 Technology Roadmap of Hybrid Vehicle Industry Chain
 - 3.3.1 Battery
 - 3.3.2 Electric Drive System
 - 3.3.3 Motor Controller
 - 3.3.4 Transmission
 - 3.3.5 Hybrid System Control Strategy
- 3.4 Development Trend of Hybrid Technology

4 GLOBAL HYBRID VEHICLE MARKET

- 4.1 Overall Electric Vehicle Market
- 4.2 Micro Hybrid Market (12V Start-Stop System)
- 4.3 Light /Moderate Hybrid Market (48V+BSG/ISG System)
- 4.4 Full Hybrid Market (HEV, PHEV 150V+)
- 4.5 Summary
- 4.6 Hybrid Vehicle Market in Main Countries or Regions
 - 4.6.1 Japan
 - 4.6.2 USA
 - 4.6.3 Europe

5 CHINESE HYBRID VEHICLE MARKET

- 5.1 Overall Electric Vehicle Market
 - 5.1.1 Overview
 - 5.1.2 Electric Passenger Vehicle
 - 5.1.3 Electric Commercial Vehicle
- 5.2 Micro Hybrid Market (12V Start-Stop System)
- 5.3 Light/Moderate Hybrid Market(48V+BSG/ISGSystem)
- 5.4 Full HybridMarket (HEV, PHEV 150V+)

6 GLOBAL AND CHINESE HYBRID SYSTEM SUPPLIERS

- 6.1 Johnson Controls
 - 6.1.1 Profile
 - 6.1.2 Operation
 - 6.1.3 Hybrid Business Strategy
 - 6.1.4 Hybrid Products and Technical Solutions
 - 6.1.5 Hybrid Customers
 - 6.1.6 New Energy Layout in China
- 6.2 Continental AG
 - 6.2.1 Profile
 - 6.2.2 Operation
 - 6.2.3 Hybrid Business Strategy
 - 6.2.4 Hybrid Products and Technical Solutions
 - 6.2.5 New Energy Layout in China
- 6.3 Delphi
 - 6.3.1 Profile
 - 6.3.2 Operation
 - 6.3.3 Hybrid Business Strategy

6.3.4 Hybrid Products and Technical Solutions

6.3.5 New Energy Layout in China

6.4 Bosch

6.4.1 Profile

6.4.2 Operation

6.4.3 Hybrid Business Strategy

6.4.4 Hybrid Products and Technical Solutions

6.4.5 New Energy Layout in China

6.5 Schaeffler

6.5.1 Profile

6.5.2 Operation

6.5.3 Hybrid Business Strategy

6.5.4 Hybrid Products and Technical Solutions

6.5.5 New Energy Layout in China

6.6 Valeo

6.6.1 Profile

6.6.2 Operation

6.6.3 Hybrid Business Strategy

6.6.4 Hybrid Products and Technical Solutions

6.6.5 New Energy Layout in China

6.7 GKN

6.7.1 Profile

6.7.2 Operation

6.7.3 Hybrid Business Strategy

6.7.4 Hybrid Products and Technical Solutions

6.7.5 Layout in China

6.8 Corun

6.8.1 Profile

6.8.2 NiMH Battery Business

6.8.3 Hybrid Business Strategy

6.8.4 Hybrid Products and Technical Solutions

7 GLOBAL AND CHINESE HYBRID VEHICLE MANUFACTURERS

7.1 Toyota

7.1.1 Profile

7.1.2 Operation

7.1.3 Hybrid Business Strategy

7.1.4 Hybrid Technology

- 7.1.5 New Energy Layout in China
- 7.2 Volkswagen
 - 7.2.1 Profile
 - 7.2.2 Hybrid Technology
 - 7.2.3 New Energy Layout in China
- 7.3 General Motors
 - 7.3.1 Profile
 - 7.3.2 Hybrid Technology
 - 7.3.3 New Energy Layout in China
- 7.4 Mitsubishi Motors
 - 7.4.1 Profile
 - 7.4.2 Hybrid Technology
 - 7.4.3 New Energy Layout in China
- 7.5 Volvo Cars
 - 7.5.1 Profile
 - 7.5.2 Hybrid Technology
 - 7.5.3 New Energy Layout in China
- 7.6 BMW
 - 7.6.1 Profile
 - 7.6.2 Hybrid Technology
 - 7.6.3 New Energy Layout in China
- 7.7 BYD
 - 7.7.1 Profile
 - 7.7.2 Operation
 - 7.7.3 Hybrid Business Strategy
 - 7.7.3 Hybrid Technology
- 7.8 Geely
 - 7.8.1 Profile
 - 7.8.2 Operation
 - 7.8.4 Hybrid Business Strategy
 - 7.8.3 Hybrid Technology
- 7.9 SAIC
 - 7.9.1 Profile
 - 7.9.2 Operation
 - 7.9.3 Hybrid Business Strategy
 - 7.9.4 Hybrid Technology
- 7.10 GAC
 - 7.10.1 Profile
 - 7.10.2 Operation

7.10.3 Hybrid Business Strategy

7.10.4 Hybrid Technology

Selected Charts

SELECTED CHARTS

Operating Principle of HEV

Operating Principle Diagram of HEV at Low and Moderate Speed

Operating Principle Diagram of HEV at General Speed

Operating Principle Diagram of HEV at Full Speed

Operating Principle Diagram of HEV While Slowdown/Energy Regeneration

Operating Principle Diagram of HEV While Parking

Classification of Hybrid Vehicles

Structure Comparison of Three Hybrid Power Systems

Performance Comparison of Three Hybrid Power Systems

China's Oil Consumption, 2010-2014

Fuel Consumption Loss Ratio of Traditional Fuel Vehicles

Standards for Fuel Consumption of Passenger Vehicle in the World's Major Countries/Regions, 2015-2025E

Trend of Laws and Regulations on Average Fuel Consumption of Passenger Vehicle in China, 2010-2020E

Laws and Regulations on Fuel Consumption or CO₂ Emission of Passenger Vehicle in the World's Major Countries/Regions (including Estimates), 2011-2025E

Major Fuel-efficient Vehicles in Made in China 2025

Rate of Fuel Saving of Energy-saving and Emission Reduction Technologies

Constant Improvement in Vehicle Electrification

Major Development Opportunity for Vehicle Low-voltage Electrification

Price/Performance Ratio of Vehicle Energy-saving and Emission Reduction Technology Roadmap

Models on the Catalogues of First Three Batches of New Energy Vehicles Exempt from Purchase Tax

Standard of Subsidies for 10m-above Urban Public Bus Demonstration & Promotion, 2009-2012 (RMB10k/Vehicle)

Standard of Subsidies for Public Service-oriented Passenger Vehicle and Light Commercial Vehicle Demonstration & Promotion, 2009-2012 (RMB10k/Vehicle)

Standard of Subsidies for Electric Passenger Vehicle in China, 2013-2015

Standard of Subsidies for Electric Bus in China, 2013-2015

Standard of Subsidies for Battery Electric Passenger Vehicle and Plug-in Hybrid (including Range-extended) Passenger Vehicle, 2016

Standard of Subsidies for Battery Electric/Plug-in Hybrid Bus, 2016

Standard of Subsidies for Fuel-cell Vehicle Promotion & Application, 2016

Requirements on Electric Mileage of New Energy Vehicle in China
Central Financial Subsidies for Electric Passenger Vehicle in China, 2013-2019E
Central Financial Subsidies for New Energy Bus and Truck, 2013-2019E
Standard of Subsidies for Energy-saving and New Energy Public Bus Operation, 2015-2019E
Electric Vehicle Promotion Plans and Progress of Chinese Cities (Clusters), 2013-2015
Electric Vehicle Promotion Plans in China (Public Transport & Private Consumption), 2014-2015
Number of Electric Vehicles under Promotion Plans in Chinese Cities (Clusters), 2014
Structural Diagram of Series Hybrid System
Comparison of Range-extended and Plug-in Hybrid Systems
Structural Diagram of Parallel Hybrid System
Technical Solutions for Parallel Hybrid System (P0-P4)
Parallel Hybrid System- P2 System Principle and Boundary
Structural Diagram of Series-Parallel Hybrid System
Evolution of Hybrid System
Structure Comparison of Start–Stop, BSG, and ISG
Structural Diagram of Separated Starter/Generator Start-Stop System
Bosch Separated Starter/Generator Start-Stop System Solutions
Structural Diagram of Integrated Starter/Generator Start-Stop System
Operating Principle Diagram of Valeo i-Start System
Mazda SISS Smart Start-Stop System
Operating Principle Diagram of Mazda SISS Smart Start-Stop System
Schematic Diagram of 12V System Upgraded to 48V System
12V Architecture and 48V Architecture
Functional Block Diagram of 48V ISG (Micro/Mild Hybrid)
Functional Block Diagram of 48V BSG (Micro/Mild Hybrid)
Global Core Participants in 48V System
Diagram of Mild-hybrid ISG Motor Architecture
Full-hybrid P2 System Architecture
Plug-in Full-hybrid P2 System Architecture
Technical Performance Parameters of Fuel/Hybrid/Plug-in Hybrid Vehicles
Costs of 12V/48V/Full Hybrid/Plug-in System Solutions
Main Parts of Hybrid Vehicle
Automotive Energy Storage Battery Technology
Automotive Start-Stop Battery Technology
Cost Structure of Lithium Battery
Price Trend of LiFePO₄ Battery in China, 2011-2018E
Global Price Trend of EV Power Lithium Battery

Application Structure of Lithium Battery in China, 2014
Global Shipments of Lithium Battery by Demand, 2010-2018E
Market Share of Global Small Lithium Battery Companies, 2014
Market Share of Global Electric Passenger Vehicle Battery Companies, 2014
Output of Auto by Models and Battery, 2015
Market Share of Major Battery Companies, 2015H1
Shipments of Major Battery Companies, 2015H1 (MWh)
Global Market Share of Ni-MH Battery in Main Applications, 2014
Global Small Ni-MH Battery Shipments and Market Size, 2010-2015
Global Large Ni-MH Battery (for HEV) Shipments and Market Size, 2010-2015
Operating Principle Diagram of Hybrid Vehicle E-drive System
Evaluation Matrix for Different-Motor Technologies
Power Distribution Unit of Toyota Prius
Toyota THS III Single Planetary Gear Set Structure
E-drive System Structure of GM Volt
Planetary Mechanism Powertrain of Ford
Full Hybrid System of Geely
Single-axle Parallel Core Assembly Technology of Honda
P-II-Dual Clutch Single-axle Parallel System of Changan Automobile
Mercedes-Benz S500eL Plug-in Hybrid (7-spd Automatic Gearbox + Emotor)
BMW 530Le (2.0T+8AT+E-motor)
Power Dividing Mechanism of BYD Qin
Structure of SAIC EDU gen1 E-drive Gearbox System
SAIC EDU gen1 E-drive System Structure and EDU Parameters
Honda Fit (1.3T+6DCT)
Structural Diagram of Inter-axial Coupled E-drive System
Inter-axial Coupled E-drive System of Volvo S60L Plug-in
Inter-axial Coupled E-drive System of BMW i8 Plug-in Hybrid
Voltage class of Different Hybrid Systems
Transmissions Adopted by OEMs for Hybrid Vehicles
Diagram of A Mild Hybrid System Control
Global Electric Passenger Vehicle Sales in Major Countries/Regions, 2013-2015
Global Monthly Sales of New Energy Vehicles (EV&PHEV), 2014-2015
Sales of Global Top20 Electric Passenger Vehicles, 2013-2015
Global Electric Passenger Vehicle (EV&PHEV) Sales, 2011-2020E
Global Sales of New Vehicles Originally Carrying Start-Stop System, 2014-2020E
Global OEMs' Start-Stop System Promotion Plans
Global Auto Model (Carrying 12V Start-Stop System and 48V System) Sales, 2018/2020/2025E

Global Sales of Main Available Plug-in Hybrid Passenger Vehicles, 2010-Jan-Oct 2015
Global Sales of Energy-saving and Electric Vehicles (EV/PHEV/HEV), 2009-2015
Global HEV/PHEV/EV Sales by System Voltage, 2018/2020/2025E
Global Moves of Technical Policies on Electric Vehicle and Market Share Forecast by Region
EV/PHEV Sales in Japan, 2013-2015
HEV Sales in Japan, 2013-2015
EV/PHEV Sales in the United States, 2013-2015
HEV Sales in the United States, 2011-2015
Sales Ranking of New Energy Vehicles (EV&PHEV) by Model in the United States, 2015
Automotive Start-Stop System (OEM + AM) Shipments in Europe, 2014-2020E
Sales of Vehicles Originally Carrying Start-Stop System in Europe, 2014-2020E
EV/PHEV Sales in Europe, 2013-2015
HEV Sales in Europe, 2013-2015
Sales Ranking of New Energy Vehicles (EV&PHEV) by Model in Europe, 2015
Car Ownership and Output & Sales in China, 2010-2018E
EV Output & Sales in China, 2010-2015
Electric Vehicles (EV&PHEV) Output in China, Jan-Dec 2015
Electric Vehicles (EV&PHEV) Sales in China, 2011-2020E
Conventional Hybrid Vehicle (HEV) Sales in China, 2012-2020E
Electric Passenger Vehicle (EV&PHEV) Sales in China, 2011-2020E
Electric Passenger Vehicle (EV&PHEV) Sales in China, Jan-Dec 2015
Electric Commercial Vehicle Output in China, Jan-Dec 2015
EV Promotion Plans in China, 2014-2015
Electric Bus Output in China, Jan-Dec 2015
Battery Electric Truck Output in China, Jan-Dec 2015
Electric Commercial Vehicle (EV&PHEV) Sales in China, 2011-2020E
OEM Start-Stop Battery System Shipments and Penetration in China, 2013-2018E
Ratio of Auto Brands Carrying Start-Stop Battery in China
Market Size of Lead-Acid Battery for Start-Stop System in China, 2013-2018E
Performance Parameters of Three Plug-in Hybrids (BYD Tang, BMW X5 and Volvo SC90)
Chinese OEMs' Hybrid Vehicle Development Plans
Sales of Four Toyota Hybrid Models (Domestically-made), Jan-Dec 2015
China's Energy-saving and Electric Passenger Vehicle (EV/PHEV/HEV) Imports, Jan-Dec 2015
China's Full Hybrid Vehicle (HEV/PHEV) Sales, 2012-2020E
Main Financial Indices of Johnson Controls, 2011-2015

Revenue Breakdown of Johnson Controls by Division, FY2013-FY2015

Automotive Start-Stop Battery Performance Parameters and Technical Solutions of Johnson Controls

Mild-hybrid Vehicle Battery Performance Parameters and Technical Solutions of Johnson Controls

Hybrid Vehicle High-voltage Battery System Performance Parameters and Technical Solutions of Johnson Controls

Plug-in Hybrid Vehicle and Battery Electric Vehicle Battery Performance Parameters and Technical Solutions of Johnson Controls

Johnson Controls' Automotive AGM Lead-Acid Battery Factories in China

Johnson Controls' Battery Business and Capacity in China

Main Financial Indices of Continental, 2011-2015

Revenue Breakdown of Continental by Division, FY2014

48V Mild-hybrid System Composition of Continental

Technical Comparison of Three 48V Systems of Continental

Performance Parameters of Continental's BSG (Belt Starter Generator) Motor

48V System and High-voltage System of Continental

Expected Rate of Fuel Saving of Start-Stop/48V+BSG/HEV+BSG Systems of Continental

Third-generation Drive Motors of Continental

Main Financial Indices of Delphi, 2011-2015

Revenue Breakdown of Delphi by Division, FY2013-FY2015

Delphi's Global Hybrid Vehicle Design Center

Delphi's Global Hybrid Vehicle R&D and Manufacturing Center

Electric Vehicle Products and System Portfolios of Delphi

High-voltage Connectors of Delphi

Delphi's High-voltage/Shielded Wiring Harness Assembly

Delphi's High-voltage Electrical Control Center

Delphi's Wireless Charging System

Delphi's Integrated 48V Mild-hybrid Controller

Delphi's High Voltage Inverters

Delphi's Portable On-board Chargers

Delphi's AC Charging Sockets

Delphi's DC Charging Sockets

Delphi's GDi Engine Management System

Main Financial Indices of Bosch, 2011-2015

Revenue Structure of Bosch by Division, FY2012-FY2014

Structural Diagram of Bosch-PSA Hydraulic Hybrid Powertrain System

Comparison of Solid-state Lithium Batteries and Liquid Lithium Batteries of Bosch

Bosch Seeo Solid-state Lithium Battery Cell and Module
Competitive Matrix of Next-generation Battery Tech Companies
Main Financial Indices of Schaeffler, 2011-2015
Revenue Structure of Schaeffler by Division, FY2013-FY2015
Structure of Schaeffler's P2 Hybrid System
Actual Picture of Schaeffler's P2 Hybrid System
Schaeffler's Two-gear Low-voltage Bridge: Coaxial Design
Main Financial Indices of Valeo, 2011-2015
Valeo's Five Major Product Lines for Improving Fuel Economy
Main Parts for Valeo's 12V i-StARS Start-Stop System
Valeo's i-BSG Hybrid System
Main Parts for Valeo's 48V Mild-hybrid System
Valeo's Hybrid Technology Roadmap
Valeo's Hybrid Powertrain System Parts Produced in China
Main Financial Indices of GKN, 2011-2015
GKN eAxles Hybrid Driveline
Equity Diagram of Corun PEVE Automotive Battery
Equity Diagram of CHS
Hybrid Vehicle Sales of Toyota, 1997-2015
Technical Characteristics of First/Second/Third-generation Prius Hybrids
Toyota 2.4L FR Automotive Hybrid Transmission L210
Parameters of Prius Hybrid Systems
Prius THS-II Hybrid System Structure
Power Distribution Unit of Prius THS-II Hybrid System
Operating Principle Diagram of Toyota Series-Parallel Hybrid System
Toyota Hybrid System- Ni-MH Battery Pack
Toyota Hybrid System- Drive Motor
Toyota Hybrid System- Regenerative Brake
Toyota Hybrid System- Power Control Unit
Toyota Hybrid System- Gasoline Engine
Toyota Hybrid System- Power Split Device
Toyota Hybrid System- Power Generator
Toyota Hybrid System- Power Electronic Control System
Prices of Toyota Fuel Vehicles and Hybrids in China
Sales of Four Toyota Hybrid Models (Domestically-made), Jan-Dec 2015
Golf GTE PHEV- P2 Hybrid System
Golf GTE PHEV- Powertrain
Structural Diagram of Hybrid Electric Module of Golf GTE PHEV
Structural Diagram of Golf GTE PHEV

Structural Diagram of Audi A3 e-tron Hybrid System
Main Parts of Audi A3 e-tron Hybrid System
Main Parts of Audi A3 e-tron Power System
Audi A6 L e-Tron Plug-in Hybrid
Volkswagen C Coupe GTE Plug-in Hybrid
Structural Diagram of GM Cadillac CT6 Plug-in Hybrid System
GM Cadillac CT6 Plug-in Hybrid- e-CVT Transmission
GM Cadillac CT6 Plug-in Hybrid- Battery Module Unit
Structural Diagram of GM Volt Plug-in Hybrid System
Structural Diagram of 2016 GM Voltec Powertrain System
Structural Diagram of GM Volt Power Distribution System
Diagram of GM Voltec/Toyota THS Hybrid System Power Distribution Mechanism
Structural Diagram of 2016 Chevrolet Volt Electric Drive Axle
Operating Principle Diagram of GM Voltec Hybrid System
Suppliers and Places of Origin of Core Parts for 2016 Chevrolet Volt
Structural Diagram of Outlander Plug-in Hybrid System
Structural Diagram of Outlander Power System
Structural Diagram of Volvo T8 Hybrid Powertrain
Comparison of Volvo SX60 T8 Hybrid and Mercedes Benz GLC 350e Hybrid
BMW ActiveHybrid
Structural Diagram of BMW IMA Hybrid Powertrain
BMW 5 Series with Power Batteries Mounted in the Rear of Vehicle
Structural Diagram of BMW i8 Plug-in Hybrid System
Car Output and Sales of BYD, 2010-2015
Revenue, Net Income and Gross Margin of BYD, 2007-2015
Structural Diagram of BYD Qin DM Second-generation Hybrid System
Engine Compartment Layout of BYD Qin
Electric Mileage and Fuel Consumption: BYD Qin VS. Toyota Prius
Structural Diagram of BYD Qin Plug-in Hybrid System
Structural Diagram of BYD Tang Electric Drive System
Structural Diagram of BYD Tang Front Axle Drive Unit
BYD Tang with Battery System Mounted in the Middle of Chassis
Structural Diagram of BYD Tang Rear Axle Electric Drive Unit
Car Output and Sales of Geely, 2010-2015
Revenue and Net Income of Geely, 2009-2014
Car Output and Sales of SAIC Motor, 2010-2015
Revenue and Net Income of SAIC Motor, 2010-2014
Structural Diagram of SAIC Roewe e550 Plug-in Hybrid System
Structure of SAIC Roewe 550 Plug-in Powertrain

Schematic Diagram of Gen 1 EDU Electric Drive Transmission Indigenously Developed by SAIC

Structural Diagram of Gen 1 EDU Electric Drive Transmission System Indigenously Developed by SAIC

Comprehensive Performance Parameters of SAIC EDU Electric Drive Transmission
Operating Principle and Performance Parameters of Engine, ISG Motor, and TM Motor of SAIC Roewe 550 Plug-in

SAIC Roewe 550 Plug-in Power Control Unit

Main Parts of SAIC Roewe 550 Plug-in Power System

Suppliers of Main Parts for SAIC Roewe 550 Plug-in

Car Output and Sales of GAC Group, 2010-2015

Revenue and Net Income of GAC Group, 2011-2015

New Energy Vehicle Lineup of GAC Group

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