

Shanghai Autotec International Corp



Shanghai
Headquarter

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Autotec Group in Numbers

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Autotec Europe

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Products Overview

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Products

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Sourced Products

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R&D, Production and Logistics

Company in numbers



1994 Established as Service Trade Company



2002 First Factory



2004 First EU Company



245



40 Millions

+11%



10 Automatic Production Lines

3 for OE



2 Laboratories



58%	After Market	41%	59%
42%	OEM	62%	38%



Wenzhou Autotec Factories
All Relays
All Thermostats
All Switches

Shanghai Autotec Factory & Headquarter
All E.M. Sensors
All «taylormade» sensors

Qualified Suppliers
All Other Products

TS 16949:2009





2002 Starting Business Relation



2003 100% Testing | All relays in our Italian facility



2004 Established as Service Trade Company between ALT and ATC



19



4,6 Millions **+5%**



1 Automatic Testing Line

3 Testing Lines



1 Laboratory

 	19%	After Market	4°	3°	1°	2°
	81%		3°	2°	4°	1°



Advantages:



Better Communications



Technical Support



Shorter Lead Time



Personalization



2 Warehouse
Tot. 3.000 sqm.

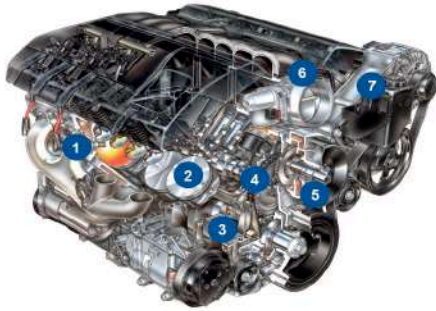
M.O.Q.

Small Quantities Available



**UNI EN ISO
9001:2015**

Engine Sensors System



Sensors System



1 Manifold Absolute Pressure (MAP Sensor) & TMAP



2 Crankshaft Position Sensor



3 Camshaft Position Sensor



4 Oil Pressure Switch



5 Coolant Temperature Sensor



6 Thermostat



7 Air Temperature Sensor



8 Radiator Fan Switch



10 Flasher Unit



Distributed by:
AUTOELTRIC

9 Wheel Speed Sensor (ABS Sensor)



11 Relay



Distributed by:
AUTOELTRIC

12 Timer & Smart Relay



Distributed by:
AUTOELTRIC

Manifold Absolute Pressure Sensor



Manifold absolute pressure sensors are employed in the air intake manifold to measure the engine load by detecting the sub pressure as well as the turbo charge pressure. The sensor generates a signal that is proportional to the amount of vacuum in the intake manifold. The pressure measurement allows a calculation of air to fuel ratio.

 Produced in Shanghai Plant

Sensing Method	Range	Accuracy	Thermal Range	Response Time
Piezoresistive silicon strain gauged	10-115 kPa or 50-300 kPa (for diesel engine)	±1,5% or ±3,5% (for diesel engine)	-40°C ÷ 125°C	1ms or 20ms (for diesel engine)



Engine intake manifold



Failure consequences: A rich fuel condition, which may cause spark plug fouling. Loss of power and/or fuel economy due to retarded timing and an excessively rich fuel ratio.

	EUROPE Last 3 Years	EUROPE Last Year	WORLD Last 3 Years	WORLD Last Year
After Market (5 types in EU)	12.000	3.000	253.499	78.430
OE (2 type)			110.400	

OE Customers:



Mega Motor



北汽银翔
BAIC YINXIANG

Crankshaft Position Sensor



The CRK sensor provides the ECM with crankshaft position so that it can determine the correct injection and ignition sequence. The relationship between camshaft (CAM) and crankshaft (CRK) signal is very important for proper ignition sequencing to occur.

 Produced in Shanghai Plant

Sensing Method	Range	Accuracy	Signal Output	Thermal Range
Magnetic Hall	Min. 1,65V, 416R Min. 0,5V, Max 4,5V	±10% ± 1%	1,65VAC ÷ 2,65VAC 0VAC ÷ +0,5VAC 4,5VAC ÷ +5VAC	-40°C ÷ 180°C



Crank pulley / flywheel.



Failure consequences: irregular car functions, engine vibration, intermittent stalling.

	EUROPE Last 3 Years	EUROPE Last Year	WORLD Last 3 Years	WORLD Last Year
After Market (19 types EU)	21.350	2.090	273.617	100.757
OE (6 types)			1.243.400	634.000

OE Customers:



Mega Motor



CRQUSE 启停



北汽银翔
BAIC YINXIANG



菱电科技

Camshaft Position Sensor



The CAM sensor provides the ECM with camshaft position so that it can determine the correct injection and ignition sequence. The relationship between camshaft (CAM) and crankshaft (CRK) signal is very important for proper ignition sequencing to occur.

 Produced in Shanghai Plant

Sensing Method	Range	Accuracy	Signal Output	Thermal Range
Hall	Min. 0,5V, Max. 4,5V	± 1%	0VAC ÷ +5VAC 4,5VAC ÷ +5VAC	-40°C ÷ 180°C



Near the timing chain cover



Failure consequences:
Poor engine performances,
intermittent stalling.

	EUROPE Last 3 Years	EUROPE Last Year	WORLD Last 3 Years	WORLD Last Year
After Market (23 types EU)	22.800	1.700	485.685	293.060
OE (6 types)			892.000	335.000

OE Customers:



Knock Sensor



When an ignition system with advance electronic control is optimized for best performance and economy, it can, under some conditions, be set sufficiently far advance to cause a condition known as "knocking". Under these conditions premature high-rate combustion ("detonation") takes place, which, because of the rapid pressure increase, can quickly cause physical damage to vulnerable structures within the combustion chamber, such as the piston crown. For this reason it is desirable to operate an electronically controlled ignition as close to the knock limit as possible.

Trough the know sensor signals the ECM reduces the cylinder pressure or reduce the combustion temperature.

Sensing Method	Range	Accuracy	Thermal Range	Response Time
Piezoelectric accelerometer	5-10Khz up to 1000g	N.A.	-40°C ÷ 150°C	Depends on the resonant frequency



Cylinder head.



Failure consequences: pinging noise from the engine during acceleration, increase fuel consumption, engine damage.

	EUROPE Last 3 Years	EUROPE Last Year	WORLD Last 3 Years	WORLD Last Year
After Market (92 types EU)				
OE (4 types)			303.008	230.008

OE Customers:



Mega Motor



五菱汽车



北汽银翔
BAIC YINXIANG



菱电科技

Oil Pressure Switch



Oil pressure switches are typically used as an actuator which directly activates the oil warning light in driver dashboard when the oil pressure in the engine will fall below the preset critical level or brings a signal to the ECU (engine control unit), so to be warned about low pressure of engine oil and prevent damage to the engine.

 Produced in Wenzhou Plant #1

Sensing Method	Range	Accuracy	Thermal Range	Response Time
Thermistor (NTC)	0,4bar ± 0,1 bar	±8%	-40°C ÷ 150°C	10 sec.



In the cylinder block of the engine or in the oil filter housing as well as at some engine types can be found in the engine head.



Failure consequences: reduced lifetime of the engine, engine lock-up.

	EUROPE Last 3 Years	EUROPE Last Year	WORLD Last 3 Years	WORLD Last Year
After Market (61 types EU)	450.000	126.000	2.080.770	845.730
OE (2 types)			248.768	101.701

OE Customers:



Coolant Temperature Sensor



The coolant temperature sensor measures the temperature of the engine coolant and interfaces with the electronic engine control module. It provides feedback to the ECM regarding the temperature of the coolant at a single point on the engine.

 Produced in Wenzhou Plant #1

Sensing Method	Range	Accuracy	Thermal Range	Response Time
Thermistor (NTC)		±10%	-40°C ÷ 160°C	10 sec.



On the front of the engine block, close to the thermostat.



Failure consequences: Engine overheating, reduced engine lifetime.

	EUROPE Last 3 Years	EUROPE Last Year	WORLD Last 3 Years	WORLD Last Year
After Market (92 types EU)	295.000	90.000	2.561.319	951.601
OE (5 type)			897.000	349.517

OE Customers:



Thermostat



It is a component which senses the temperature of a system so that the system's temperature is maintained near a desired *setpoint*. Thermostat accelerates engine warm-up and regulates the engine's operating temperature.

 Produced in Wenzhou Plant #2

Sensing Method	Range	Accuracy	Thermal Range	Response Time
Bimetal Mechanical Expanding Vax		±2%	-40°C ÷ 150°C	10 sec.



Generally near the engine and the upper hose that runs from the radiator.



Failure consequences: bad fuel economy, increasing engine wear.

	EUROPE Last 3 Years	EUROPE Last Year	WORLD Last 3 Years	WORLD Last Year
After Market (199 types EU)	230.000	40.000	1.038.916	55.536
OE (2 types)			775.000	120.500

OE Customers:



Mega Motor



北汽银翔
BAIC YINXIANG

Air Temperature Sensor



It monitors the temperature of the air entering the engine. The engine computer needs this information to estimate air density so it can balance air air/fuel mixture. Colder air is more dense than hot air, so cold air requires more fuel to maintain the same air/fuel ratio. The PCM changes the air/fuel ratio by changing the length (on time) of the injector pulses.

 Produced in Wenzhou Plant #1

Sensing Method	Range	Accuracy	Thermal Range	Response Time
Thermistor (NTC)		±10%	-40°C ÷ 160°C	10 sec.



Air Intake Manifold.



Failure consequences: rich fuel mixture (excessive fuel consumption) hence elevated CO emissions.

	EUROPE Last 3 Years	EUROPE Last Year	WORLD Last 3 Years	WORLD Last Year
After Market (27 types EU)		5.000	20.064	17.850
OE (2 types)			19.604	19.604

OE Customers:



Radiator Fan Switch



It activates the electric-blower (fan), forcing the passage of air through the radiator and causing the reduction of cooling fluid temperature. It can also activate warning lamps or alarms. This alerts a driver of possible overheating in the cooling system.

 Produced in Wenzhou Plant #1

Sensing Method	Range	Accuracy	Thermal Range	Response Time
Thermistor (NTC)		±5°C	-40°C ÷ 150°C	10 sec.



In the cooling circuit, usually at or near the radiator, and operates with the temperature variation.



Failure consequences: High fuel consumption, power loss, overheating. Warning light Engine Check. Difficulties starting the engine. Increased emissions.

	EUROPE Last 3 Years	EUROPE Last Year	WORLD Last 3 Years	WORLD Last Year
After Market (92 types EU)	120.000	20.000	609.812	208.961
OE				

ABS Wheel Speed Sensor



They are used to measure the rotation of wheel or the speed of vehicle. ABS sensor is required on all the four wheels so that the signals generated by them can be used by the ECU to adjust the braking force on the wheels.

 Produced in Wenzhou Plant #1

Sensing Method	Range	Accuracy	Thermal Range	Response Time
Hall or Magnetic	0,5-1,7mm	±7%	-40°C ÷ 150°C	



Along with the wheel hub.



Failure consequences: Lighting of the ABS control lamp, storing of an error code, locking of the wheels during braking, pseudo control, failure of other systems.

	EUROPE Last 3 Years	EUROPE Last Year	WORLD Last 3 Years	WORLD Last Year
After Market (152 types EU)		1.800	19.600	17.100
OE (2 types)			396.930	346.130

OE Customers:



Mega Motor

Relay



A relay is an electrically operated switch. Relays use an electromagnet to mechanically operate a switch. Relays are used where it is necessary to control a circuit by a separate low-power signal, or where several circuits must be controlled by one signal.

 Produced in Wenzhou Plant #2

Sensing Method	Range	Accuracy	Thermal Range	Response Time
	From 10A to 200A	N.A.	-40°C ÷ 150°C	10 ms



Harness and cables



Failure consequences: false contacts or interruptions of circuit.

	EUROPE Last 3 Years	EUROPE Last Year	WORLD Last 3 Years	WORLD Last Year
After Market (531 types EU)	5.675.000	2.093.000	9.083.000	2.842.000
OE				

DISTRIBUTED IN EUROPE BY



Oxygen Sensor



Oxygen Sensor installs in exhaust manifold (in front of and rear three-way catalytic converter), used to monitor the oxygen content in the exhaust gas of engine and feed back the signal voltage to ECU , so as to adjust the amount of Fuel injection, make the air-fuel ratio reach the best status (14.7), improve the combustion efficiency and reduce the emission of harmful gas (such as: CO, HC and NOx).

 Produced in Shenzhen Plant

Sensing Method	Working temperature			
zirconia part sensing the oxygen content in the exhasut	more than 350 °C			



Front of and rear of three-way catalyst.



Failure consequences: Trouble light on; fuel consumption increased, emission of harmful gas increased; may cause damage to the expensive three-way catalyst.

	EUROPE Last 3 Years	EUROPE Last Year	WORLD Last 3 Years	WORLD Last Year
After Market	265,840	100,500	879,036	357,823
OE				100,000

OE Customers:



NOx Sensor



Using zirconia (ZrO₂) thick film technology, DANRUI NOx sensors are capable of measuring NOx density in motor vehicle exhaust gas. Attached directly to vehicle exhaust pipes, these NOx sensors allow precise measurements of NOx concentration in exhaust gas for extended periods.

 Produced in Wuhan Plant

Sensing Method	Range	Accuracy	Thermal Range	Response Time
Electrochemistry sensor	0~100ppm 100~1500ppm	Within 10 PPM (0~100ppm); within 10 % (100~1500ppm)	-40°C ÷ 125°C	≤ 1200ms



SCR Exhaust gas Purification System



Failure consequences:
Wrong working condition may results in uncontrollable urea dosage of SCR Exhaust gas Purification System, and may causes engine stop.

	EUROPE Last 3 Years	EUROPE Last Year	WORLD Last 3 Years	WORLD Last Year
After Market (5 types in EU)	12,000	8,000	24,000	18,000
OE (2 type)			20,000	20,000

OE Customers:



EGR Valve



Exhaust Gas Recirculation (EGR) is a nitrogen oxide (NOx) emissions reduction technique used in petrol/gasoline and diesel engines. EGR works by recirculating a portion of an engine's exhaust gas back to the engine cylinders. This dilutes the O2 in the incoming air stream and provides gases inert to combustion to act as absorbents of combustion heat to reduce peak in-cylinder temperatures. NOx is produced in a narrow band of high cylinder temperatures and pressures.

 Produced in Wenzhou Plant

Sensing Method	Range	Accuracy	Thermal Range	Response Time
Piezoresistive silicon strain gauged			-40°C ÷ 125°C	



On top of inlet manifold



Failure consequences: A poor engine performance, if it's stuck open cause poor idling, engine misfiring and stalling. If the valve is stuck closed, a nitrogen oxide builds up resulting in knocking and incorrect engine timing.

	EUROPE Last 3 Years	EUROPE Last Year	WORLD Last 3 Years	WORLD Last Year
After Market (5 types in EU)	210.000	80.000	265.490	100.430
OE (2 type)				

OE Customers:

Brake Light Switch



It is the simple mechanical type mounted close to the brake pedal arm. When the pedal is depressed, the switch automatically closes to turn on the brake lights. The other type of switch works hydraulically and is operated by the pressure of fluid in the pipes when the brake is applied.

Brake Wear (Pad) Sensor



It is used to warn the user and/or owner of a vehicle that the brake pad is in need of replacement. The main area of use for this is on motor vehicles with more than three wheels.

PDC Park Distance Control Sensors



They are proximity sensors for road vehicles designed to alert the driver to obstacles while parking. These systems use either electromagnetic or ultrasonic sensors.

EGT Exhaust Temperature Gas Gauge Sensor



An exhaust gas temperature gauge (EGT gauge) is a meter used to monitor the exhaust gas temperature of an internal combustion engine in conjunction with a thermocouple-type pyrometer. By monitoring EGT, the driver can get an idea of the vehicle's air-fuel ratio.

Ignition Coil



An ignition coil (also called a spark coil) is an induction coil in an automobile's ignition system that transforms the battery's low voltage to the thousands of volts needed to create an electric spark in the spark plugs to ignite the fuel. Some coils have an internal resistor, while others rely on a resistor wire or an external resistor to limit the current flowing into the coil from the car's 12-volt supply.

Electrical Thermostats



A thermostat is a component which senses the temperature of a system so that the system's temperature is maintained near a desired set-point. A thermostat can often be the main control unit for a heating or cooling system, in applications ranging from ambient air control, to such as automotive coolant control.

Development Platform



**Pro/E, Catia, UG
Design**



EDA Design



**Hall,
MAP Program**



**Thermal
Duability Test**



**High-Low
Temp. Cycle
Test**



Spray Test



**Thermal
Shock Test**



**Vibration
Test**



**Electrical
interference
generator**



**Salt Spray
Test**



Drop Test

**Product Lines
10**

3 OEM Lines



3 Lines



4 Lines



OE Production Line,
Shanghai



OE Production Line,
Shanghai

Introduction of

KEBODA[®]
Creating Value , Sharing Progress



Shanghai **KEBODA** Technology

- Headquarter
- Electronics Manufacturing Center
- Electronic research and development Center



Wenzhou **KEBODA**

- Auto Electrics



Zhejiang **KEBODA**

- Engine Parts
- Auto electronics
- Equipment(R&D,M)



Chongqing **KEBODA**

- Automotive Sensor(FLS)
- AGS



KSK(JV)

- Wiring Harness



KEM(JV)

- Solenoid Actuator

Forecast: US\$ 760 Million
Next 2019

Business Units Overview

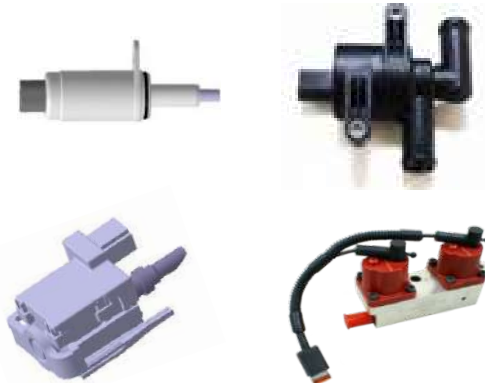
Auto Electronics

- HID Ballast
- Fuel Pump Controller
- DC/DC Inverter
- CV Break ECU



Auto Electrics

- AVS Actuator
- Latching Mechanism
- Liquid Control Valve
- Check/Regulator Valve



Engine Parts

- Electric Fuel Pump
- Mechanical Fuel Pump
- Pre-heater, Clamp
- Electronic Throttle Body
- Fuel Pump Module
- Variable oil Pump



Main Customers

Overseas customers



Mercedes-Benz



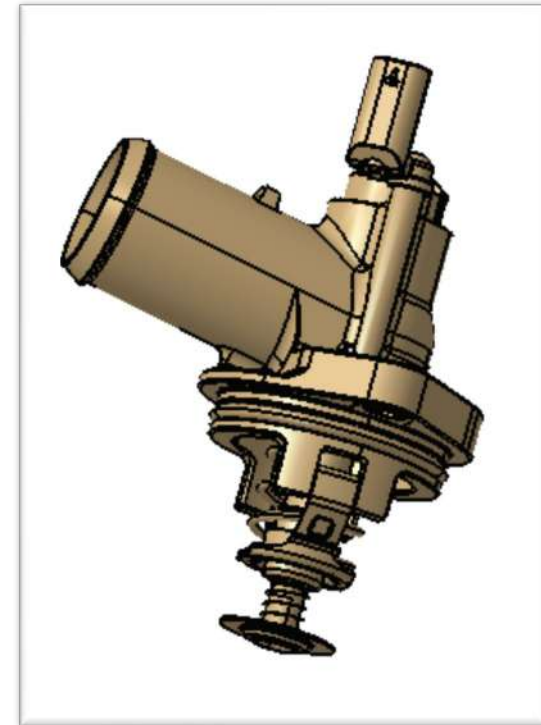
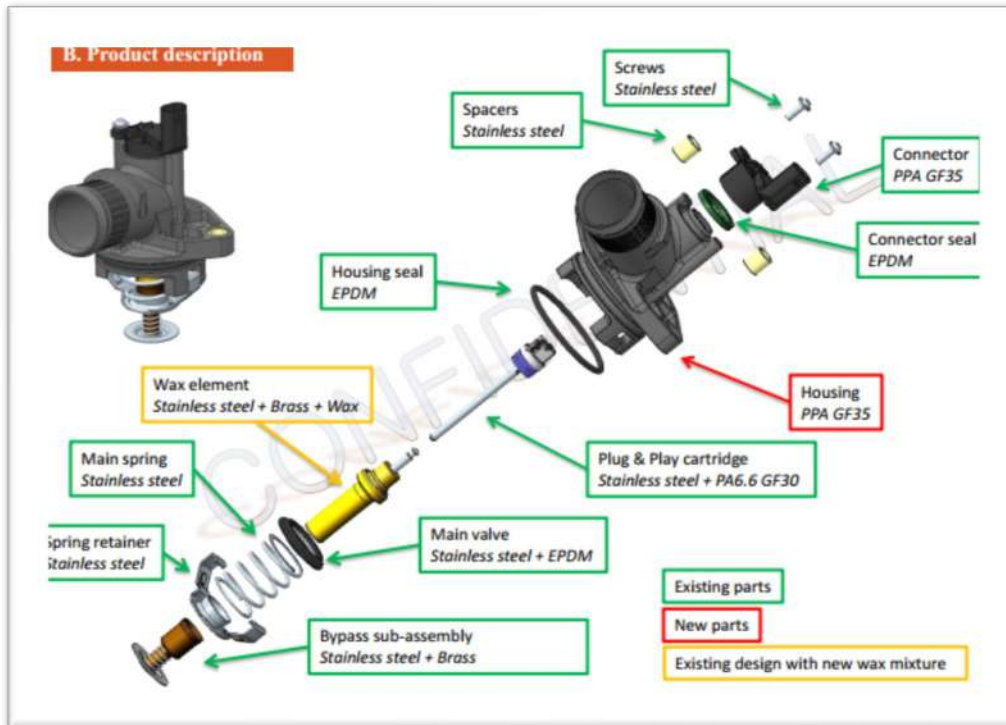
Domestic Customers



E-Thermostat with



Thermostat adjusts the coolant volume across the radiator according to the coolant temperature, and change the coolant cycle. By this way the cooling system adjust the engine temperature, make the engine work in a good condition.

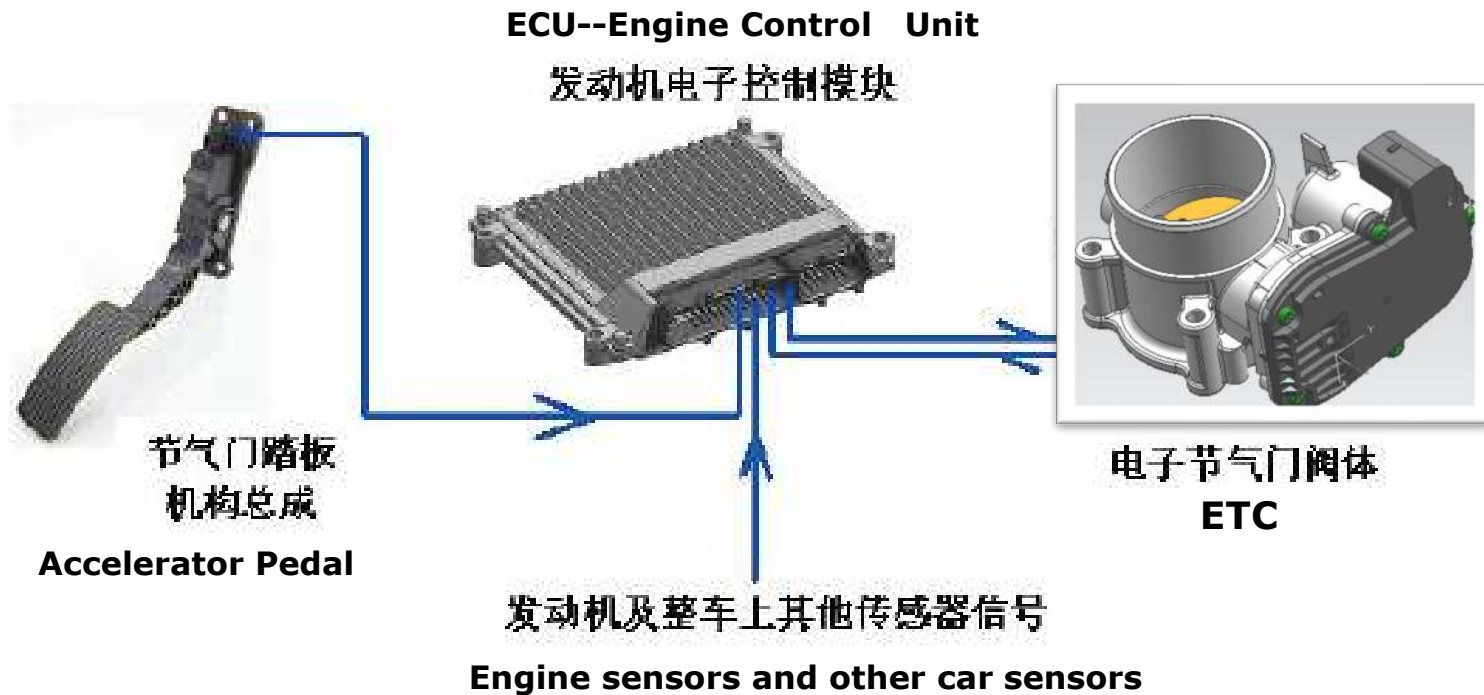


Next 2019

Electrical Throttle Control with **KEBODA**[®]

Creating Value, Sharing Progress

ETC is used in car engine, the main function is controlling the intake volume into the engine, by this way, it controls the engine speed and output power. The valve plate in ETC is closed normally, and the ETC has two feedback signals.

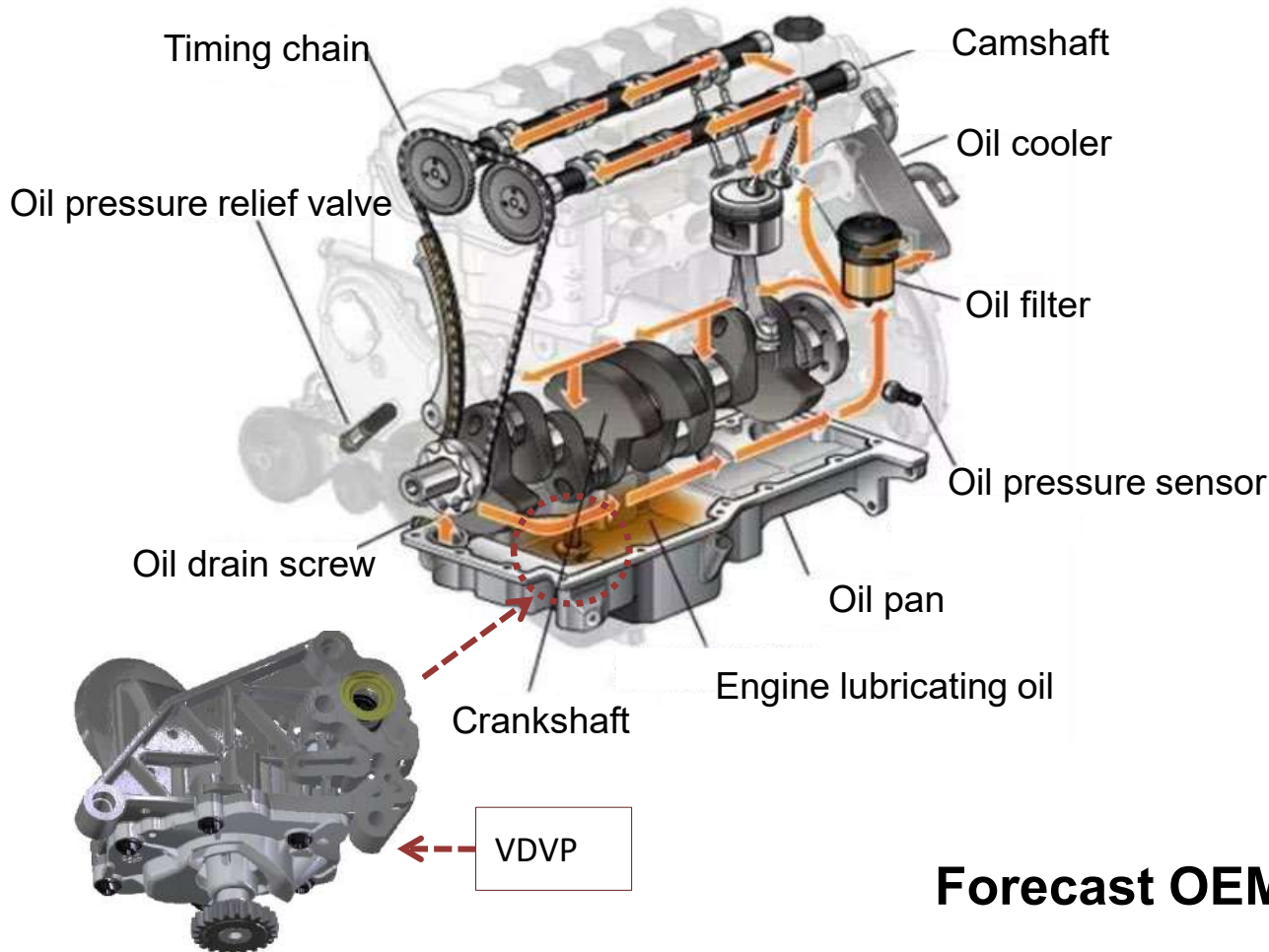


Next 2019

Variable Displacement Oil Pump with



The role of oil pump is to provide pressure lubricating oil to the engine lubrication system to protect the normal operation of the engine movement, reduce friction, improve the service life of the engine.



**Forecast OEM: 1 Million pcs/Year
Next 2019**



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