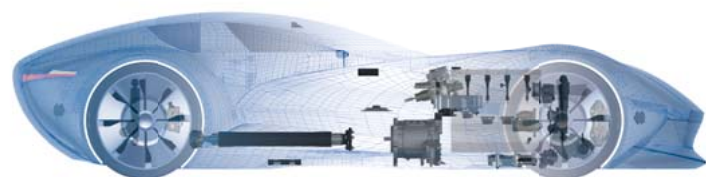
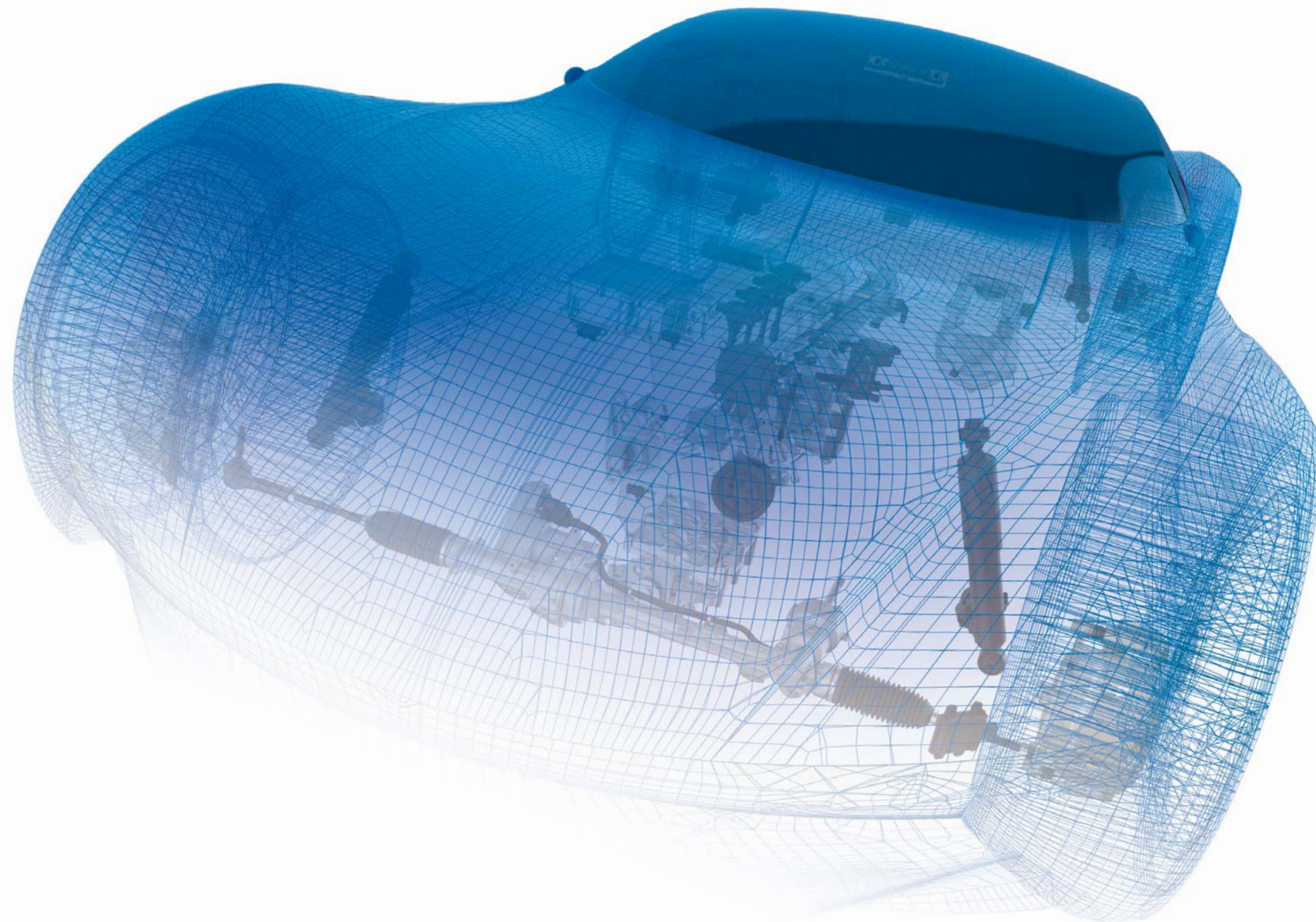


Product Guide

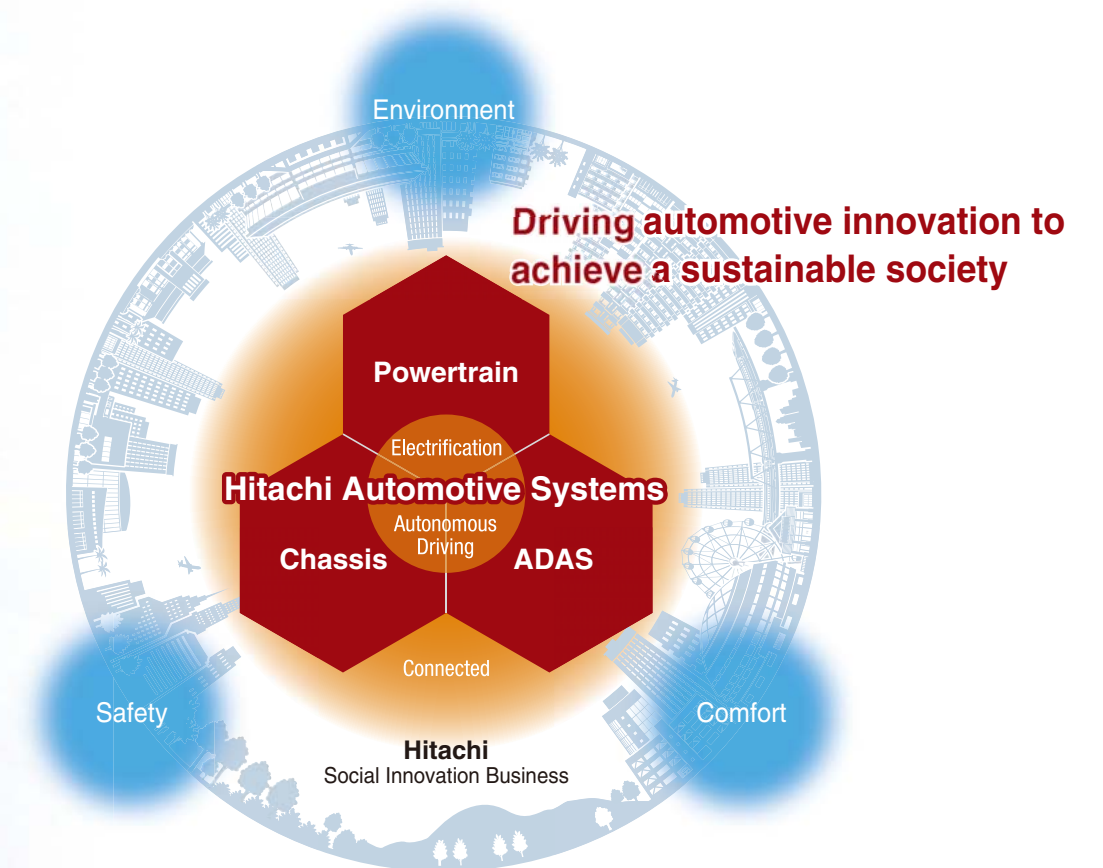
www.hitachi-automotive.co.jp/en/



By delivering our products and system solutions throughout the world, we can realize an affluent society by creating new value for people, vehicles and society.

Vehicles are evolving as a means of mobility by offering increased social value in areas such as the environment, safety, and comfort. Leveraging our competitive edge in mechatronic control technologies, Hitachi Automotive Systems is providing ever-greater value through our core business areas of powertrain systems, chassis systems and advanced driver assistance systems (ADAS). At the same time, we are developing and introducing new technologies to support the critical technical fields of electrification and autonomous driving.

Furthermore, by leveraging the technologies of the Hitachi Group such as Internet of Things (IoT), Artificial Intelligence (AI), and information and security technologies, Hitachi Automotive Systems will provide systems solutions for connected cars to support a next-generation mobility that will create a more prosperous society with greater connectivity between humans, cars, and society.



Moving Forward

Powertrain Systems (Engine)

In order to meet increasingly stringent environmental regulations around the world, there is a need to efficiently convert fuel into kinetic energy, and reduce emissions of gases such as CO₂. We have developed engine technologies such as direct injection and valve timing control that greatly increase the efficiency of internal combustion engines. In addition, we use simulation and analysis technologies to continually refine our components, improve engine thermal efficiency, and produce clean engines with a reduced environmental burden.

Control Systems



Engine Control Unit for DI



Engine Control Unit for PFI



Control Unit for CVT



On Mission Control Unit for CVT



Control Unit for Four-speed Automatic Transmission



In-pan Transmission Control Module

Intake / Exhaust Systems



Multi Function Mass Air Flow Sensor



Airflow Sensor



Differential Pressure Sensor



Hall Effect Type Revolution Sensor



Pressure Sensor



Electronic Throttle Body



Electronic Throttle Body for Diesel

Fuel Systems



High-Pressure Fuel Pump



Injector for DI



Injector for PFI



Plug Top Coil

Ignition Systems

Engine Components and Subsystems



Piston for DI



Piston for PFI



Cooling Channel Piston



Valve Timing Control System



VTC Solenoid Valve



Electromotive VTC



Variable Valve Event and Lift (VEL)



VCR Actuator



Variable Displacement Vane Pump (Front Cover Integrated Type)



Variable Displacement Vane Pump (Chain Drive Type)



Water Pump (Single Bearing Type)



Water Pump



MCV



Balancer (Oil Pan & Oil Pump Integrated Type)



Balancer (VDVP Integrated Type)



Chain Case Module (Oil Pump & Water Pump Integrated Type)



Water Pump (with Housing Type)

Electrical Equipment Systems



Planetary Gear Reduction Starter



Twin Axial Gear Reduction Starter

CVT: Continuously Variable Transmission
DI: Direct Injection
MCV: Multi-waterways Control Valve
PFI: Port Fuel Injection
VCR: Variable Compression Ratio
VDVP: Variable Displacement Vane Pump
VEL: Variable valve Event and Lift
VTC: Valve Timing Control

Powertrain Systems (Electric)

In recent years, vehicle electrification has seen remarkable progress, due in part to environmental regulations on zero-emission vehicles. In addition to Hybrid Electric Vehicles (HEV), Plug-in Hybrid Electric Vehicles (PHEV), and Electric Vehicles (EV), Mild Hybrid Vehicle systems using 48 Volt electricity are starting to appear. Vehicle electrification systems will prove essential for meeting environmental regulations. In addition to the main electric powertrain components of electric motors and inverters, we are developing other technologies to maximize eco-friendliness and driving performance.

Hybrid Vehicles / Electric Vehicle Systems



Motor for HEV



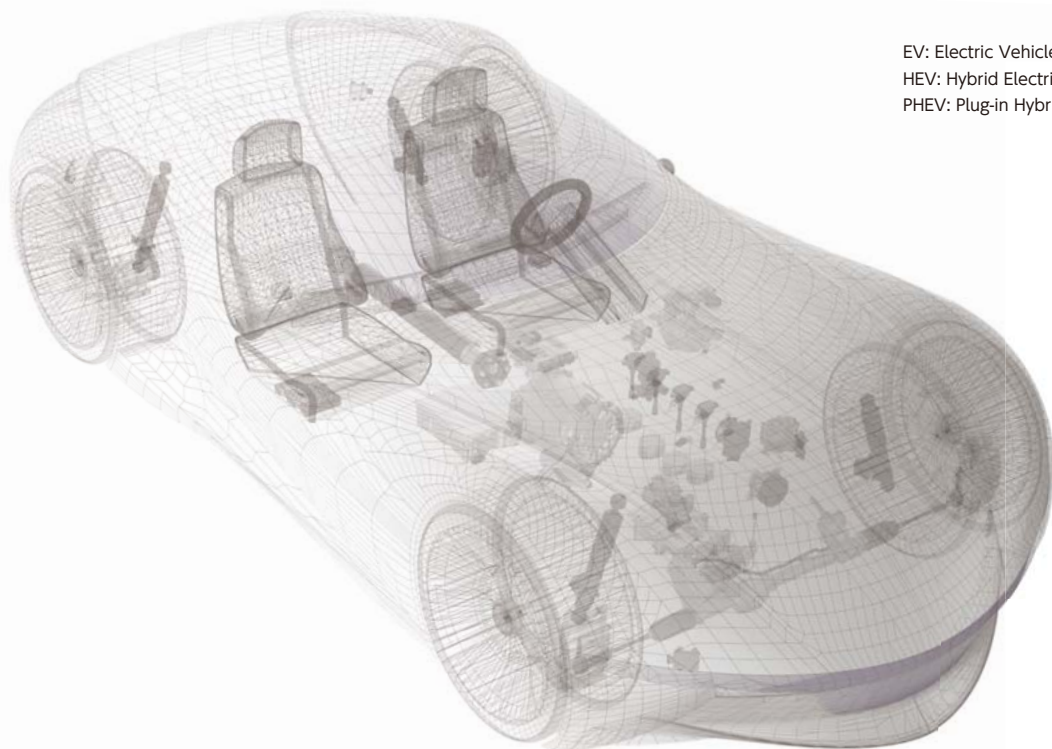
Inverter for EV



Inverter for HEV / PHEV / EV



Inverter for HEV / PHEV / EV



EV: Electric Vehicle
HEV: Hybrid Electric Vehicle
PHEV: Plug-in Hybrid Electric Vehicle

Advanced Driver Assistance Systems

Expectations are increasing for safe, comfortable, and highly efficient autonomous driving systems that can eliminate accidents, reduce driver workload, and resolve traffic congestion, thereby helping to achieve a smart mobility society. In order to realize a safe and secure autonomous driving system, we are developing a sensor fusion system that can detect the surrounding situation by integrating sensor data from sources such as stereo cameras and radars. Data from this system is used by our autonomous driving ECU to make instantaneous decisions on acceleration, deceleration, and lane-changing.

Autonomous Driving Systems / 360 Degree Sensing Systems



Stereo Camera



Millimeter-wave Radar
(Mid-range)



ADAS ECU



AD ECU
(Prototype)

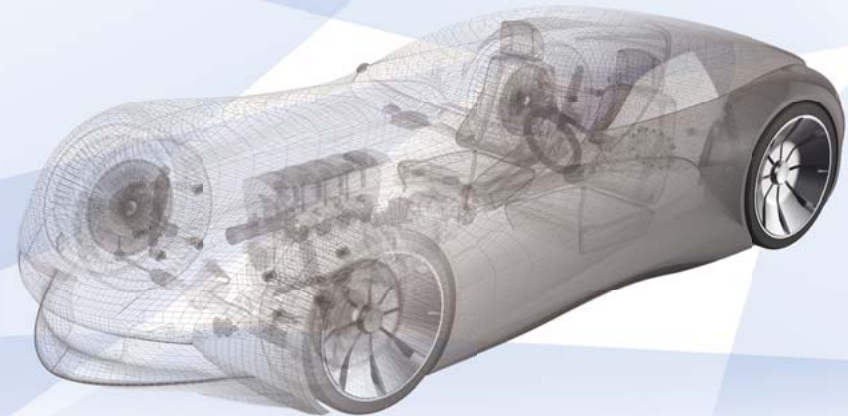


Central Gateway



Map Positioning Unit

AD: Autonomous Driving
ADAS: Advanced Driver Assistance System
ECU: Electronic Control Unit



Chassis Systems

Chassis products determine the basic functions of automobiles - moving, turning and stopping.

By coordinating and harmonizing the chassis with various control technologies, we can count on improved safety and comfort.

In order to aim for an even higher level of safety, the core elements of brakes, steering, and suspension have been electrified and subjected to electronic control. We created a system that completely integrates all aspects of vehicle motion. The aim of this system is to improve motion performance by responding in real-time to changes in the state of tires, road surface and the vehicle itself, as well as to achieve autonomous driving, which requires coordinated driving control.

Steering Systems



Electric Power Steering System
(Belt Drive Rack Assist Type)



Electric Power Steering System
(Pinion Assist Type)



Manual Steering Gear
for Column Assist EPS



Rack & Pinion Power Steering Gear
(Speed Sensitive Type)



Electric Power Steering Control Unit
(Column Assist Type)

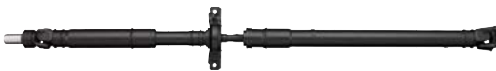


Power Steering Pump
(Variable Displacement Type)



Variable Displacement Power Steering
Pump for Heavy-duty Truck

Drive Power Transmission Systems (Propeller Shaft)



Impact Absorbable CVJ Type



Direct Connection Interface (DCI) Joint Type



Rubber Coupling Type (with Lobro Joint)



CFPR Tube Type



Aluminum Tube Type

CFRP: Carbon Fiber Reinforced Plastics
EPS: Electric Power Steering

Suspension Systems



Shock Absorber



Suspension Strut



Suspension Unit



Mono Tube Shock Absorber



Aluminum Shock Absorber



Frequency Reactive Damper



Hydraulic Type Height Adjustment
Suspension System



Air Suspension Strut



Semi-Active Suspension System



Hydraulic Cylinder
for Roll Control



Self Levelizer



Air Levelizer



Air Compressor
for Height Adjustment



Control Unit
for Height Adjustment

Brake Systems



Disc Brake Caliper



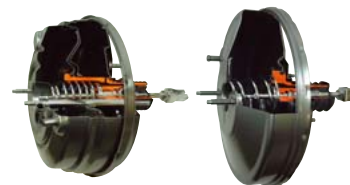
Disc Brake Caliper
for Motorcycle



Electric Parking Brake



Brake Master Cylinder



Vacuum Booster



Electrically-Driven
Intelligent Brake

Control Unit for Other Purposes



Anti-Lock Brake System



Electronic Stability Control
(ESC)



Electric 4WD
Control Unit

Aftermarket Products / Applied Technology & Industrial Equipment

Over many years, Hitachi Automotive Systems has developed and cultivated advanced automotive technologies that have extensive secondary applications in the world around us. For instance, from our manufacturing technologies, we have derived anti-vibration and hydraulic components, home appliance technologies that support modern lifestyles, and industrial equipment and social infrastructure including railcar components, anti-seismic products, and many other useful technologies. Moving forward, we will continue to pursue secondary applications for our technologies in order to realize a more comfortable society.



Aftermarket Products & Maintenance Accessories



Brake Pads



Brake Rotor



Shock Absorber



Power Steering Gear



Power Steering Pump



Water Pump



Fuel Pump



Injector



Electronic Throttle Body



Air Flow Sensor



Ignition Coil



Hitachi Diagnostic Monitors



Ignition Coil Checker



Battery Checker



Portable Power Source (12V, 24V)

Applied Technology & Industrial Machinery

Railcar Components



Vertical Damper



Horizontal Damper



Yaw Damper



Yaw Damper between the Car



Variable Damper System



Leveling Valve

Anti-seismic Products



Seismic Isolation Oil Dampers



Anti-vibration Oil Dampers

ATSUGI Hydraulic Press



Toggle Type Vibration-proof Damper



Vibration-proof Damper for Housing

