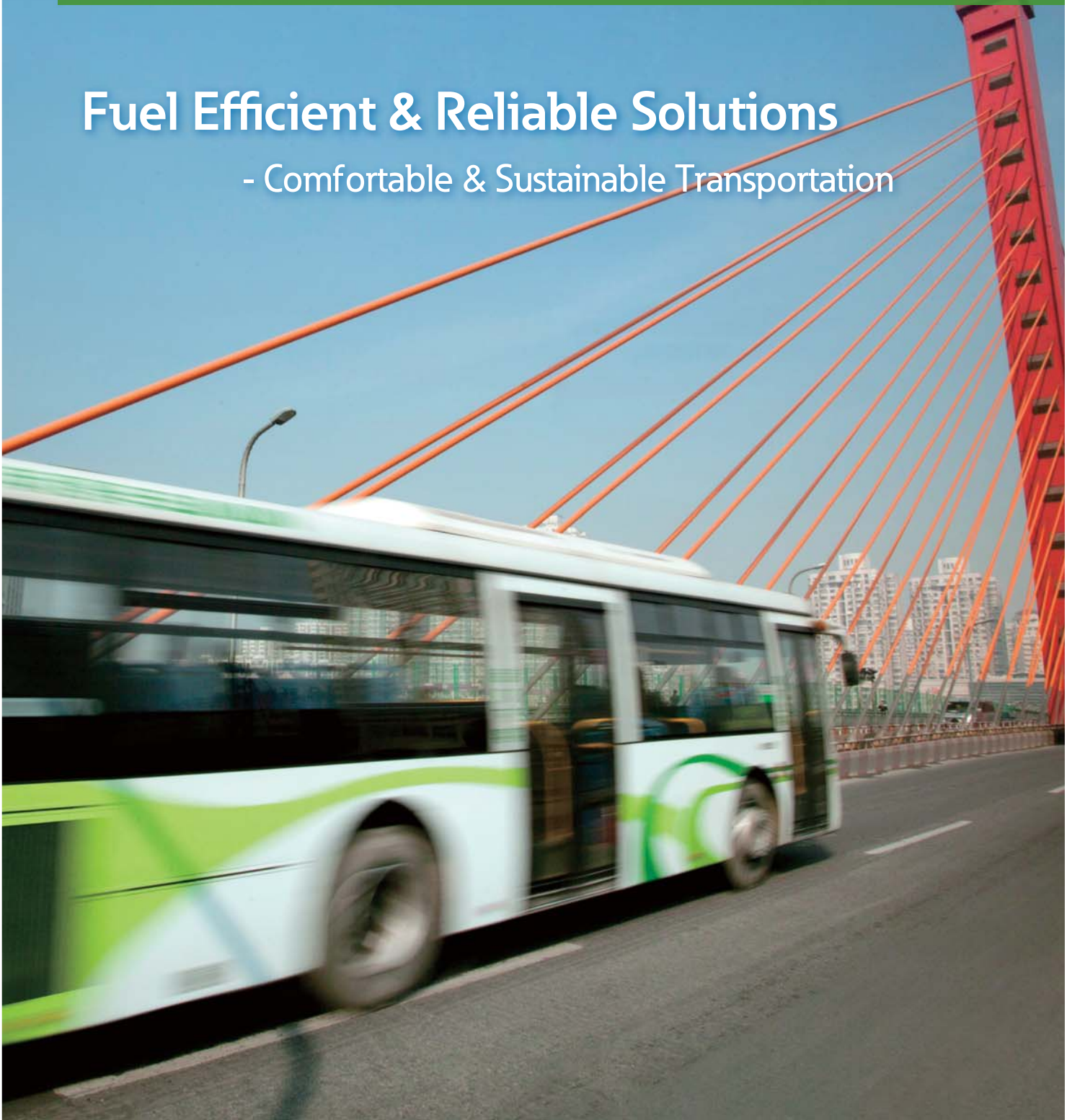


Solutions For Bus & Coach Market

Fuel Efficient & Reliable Solutions

- Comfortable & Sustainable Transportation



EATON

Powering Business Worldwide



Aerospace



Commercial Vehicles

The Power of EATON

Eaton is a diversified power management company providing energy-efficient solutions that help our customers effectively manage electrical, hydraulic and mechanical power. With 2012 sales of \$16.3 billion, Eaton is a global technology leader in electrical products, systems and services for power quality, distribution and control, power transmission, lighting and wiring products; hydraulics components, systems and services for industrial and mobile equipment; aerospace fuel, hydraulics and pneumatic systems for commercial and military use; and truck and automotive drivetrain and powertrain systems for performance, fuel economy and safety.

Innovative Technologies

Eaton's innovative technologies help customers manage electrical, hydraulic and mechanical power, Our 100-year-old global strength in power management helps our customers control cost and reduce their energy requirements as energy becomes more difficult and costly to find, refine and use.

Eaton acquired Cooper Industries plc. in 2012. Eaton has approximately 103,000 employees and sells products to customers in more than 175 countries.

Sustainability

Eaton has been recognized for our commitment to sustainability.

- Ranked among Fortune Magazine's World's Most Admired Companies in the Industrials sector;
- One of Corporate Responsibility Magazine's 100 Best Corporate Citizens, 2008 - 2012;
- One of Ethisphere Magazine's World's Most Ethical Companies, 2007 – 2012;
- Cited in China's Business Watch magazine's China Green Company Top 10 and Fast Company Top 100;
- Named one of Carta Capital Magazine's Most Admired Companies in Brazil, 2008 – 2011;
- Named among India's Best companies To Work For, *Economic Times and Great Places to Work Institute - 2012.*



Powering Business Worldwide



Electrical



Hydraulics

Our areas of business

Electrical

Eaton is a leader in electrical power distribution, power quality systems, industrial automation and control products and services. The electrical segment provides technology-driven solutions that serve the critical needs of the industrial, utility, commercial, residential and information technology markets.

Vehicles

The commercial vehicle business is a global leader in the design, manufacture and marketing of powertrain systems and other components for commercial vehicle markets. Key products include manual and automated transmissions, clutches, hybrid power and emission treatment systems.

Eaton's automotive business manufactures key products such as superchargers, engine valves, valve train components, cylinder heads, locking and limited-slip differentials,

fuel emissions, and safety controls, transmission and engine controls, spoilers, exterior moldings, plastic components and fluid connectors.

Hydraulics

Eaton is a leading manufacturer of systems and components for use in mobile and industrial applications. Markets include agriculture, construction, mining, forestry, utility, material handling, machine tools, molding, power generation, primary metals, and oil and gas.

Aerospace

Eaton is a worldwide leader in the design, manufacture and marketing of a comprehensive line of reliable, high-efficiency systems and components for hydraulic, motion control and fuel applications.



Automotive



Bus & Coach



Eaton's Vehicle Group Introduction

Eaton's Vehicle Group is a global technology leader in the development of advanced automotive and commercial vehicle technologies that help the customers in 5 target segments manufacture and market vehicles that run cleaner, more efficiently and overall perform better.

We serve our customers in 5 target segments

Automotive:	Passenger Car, SUV, Van, Light truck
Bus & Coach:	City Bus, Intercity Coach, School Bus.
Linehaul:	On-highway trucks
Vocational:	Agriculture, Construction, Fire Service, Heavy Haul, Livestock, Logging, Military, Mining, Off-Road, Oil Field, Recreational, Refuse, Rescue, Yard Tractor.
Pick-up & Delivery:	City Delivery.



Linehaul



Vocational



Pick-up & Delivery

Global Headquarters: Galesburg, Michigan, USA

Asia Headquarters: Shanghai, China

European Headquarters: Turin, Italy

South American Headquarters: Sao Palo, Brazil

15,000 employees worldwide

49 manufacturing, engineering, research & development, sales and administration locations on six continents.

Regional Innovation Centers located in the USA, Czech Republic, China and Engineering Center in India.

Recent awards

- Nissan Global Innovation Award (2012) for TVS® Supercharger Technology
- Best New Supplier (2012) – PACCAR China
- Supplied Components for Ward's Auto World's "10 Best Engines" Award Winners (1994 - 2013)

EATON

Solution in Bus & Coach Segment

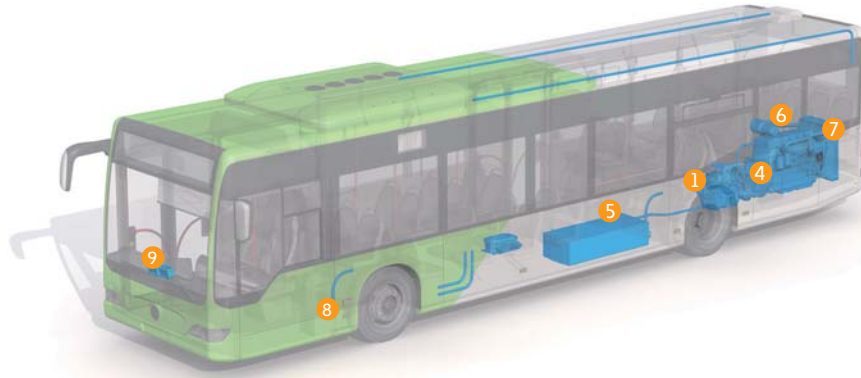
Eaton offers industry-leading innovation and unmatched expertise in supplying integrated solutions that enhance efficiency and fuel economy, performance, reliability and safety. These solutions span the entire spectrum of vehicles and applications.

Eaton's solutions for the bus and coach segment are uniquely designed to enhance the operational efficiency and on-time demands of moving people.



Application 1: City Bus

- 1 Transmission: UltraShift® PLUS PV
- 4 Clutch: 365mm / 395mm / 430mm Diaphragm Clutches
- 5 Hybrid HEV
- 6 Engine valve
- 7 Valve train & Valve actuation
- 8 Hydraulics Products
- 9 Switches / Sensors



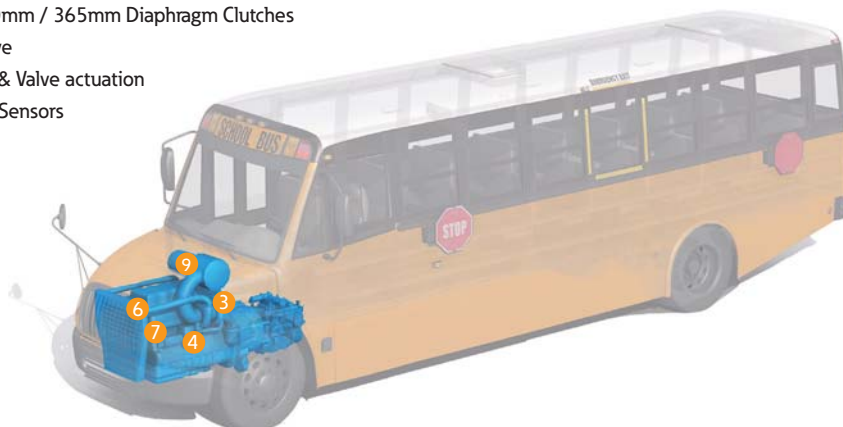
Application 2: Intercity Coach

- 2 Transmission: 6406 / 8406
- 4 Clutch: 395mm / 430mm Diaphragm Clutches
- 6 Engine valve
- 7 Valve train & Valve actuation
- 8 Hydraulics Products
- 9 Switches / Sensors



Application 3: School Bus

- 3 Transmission: 4505 or 5206
- 4 Clutch: 330mm / 365mm Diaphragm Clutches
- 6 Engine valve
- 7 Valve train & Valve actuation
- 9 Switches / Sensors



Product & Introduction

Transmission



USP PV (with retarder option)

Eaton's UltraShift® *PLUS* automated transmissions offer the performance and versatility of a manual transmission with the simplicity of automatic designs. They reduce wear and tear on the driveline, prevent drivetrain damage, and enhance vehicle performance and maneuverability. Eaton's UltraShift® *PLUS* PV transmission makes buses easier to drive by providing a simplified driver interface and unmatched low-speed control and stability—even on the most extreme duty cycles. Eaton's UltraShift® *PLUS* PV offers these performance benefits while offering significant value to end users, including reduced maintenance costs, simplified service requirements, and up to 19 percent fuel economy improvements vs. conventional automatics.



6406 / 8406 (with retarder option)

The superior shift quality of Eaton's six-speed transmission family leads to high productivity and superior ride comfort for driver and passengers. And the largest overall ratio in its class assures that the right amount of torque is provided in any situation. The transmissions are Euro 4 pass-by-noise compliant; the highly reliable synchronizers with Eaton friction material feature long life and are designed for the life of the transmission.

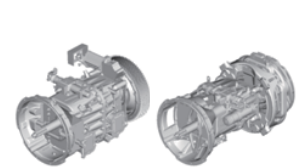
Apart from the perfect shifting quality, fuel-saving vehicle operation and low operating costs are the other benefits of the six-speed transmission family, which was especially designed for all medium-duty applications including buses and intercity coaches.



4505

The world class shift quality of Eaton's five-speed transmission family leads to high productivity and superior ride comfort for driver and passengers. The transmissions are Euro 5 pass-by-noise compliant. The highly reliable synchronizer with Eaton friction material features long life and full serviceability.

Apart from the perfect shifting quality, fuel-saving vehicle operation and low operating costs are the other benefits of the five-speed transmission family, which was especially designed for buses.



5206 (with retarder option)

The superior shift quality of Eaton's six-speed transmission family leads to high productivity and superior ride comfort for driver and passengers. And the largest overall ratio in its class guarantees that the right amount of torque is provided in any situation. The transmissions are Euro 4 pass-by-noise compliant. The highly reliable synchronizers with Eaton friction material feature long life and require only a minimum of service.

Apart from the perfect shifting quality, fuel-saving vehicle operation and low operating costs are the other benefits of the six-speed transmission family, which was especially designed for all medium-duty applications including buses. The 5206 is also available with electromagnetic retarder.

Clutch

Eaton Clutches

Eaton is a leading worldwide supplier of medium and heavy-duty clutches to the commercial vehicle industry. Eaton clutches are unmatched in terms of reliability, durability and performance.

Eaton offers clutches for the full life cycle of the vehicle. Whether it is the OEM specification, aftermarket replacement or remanufactured, all Eaton clutches adhere to the strict OE standards and include genuine components

Diaphragm Spring clutches - For global bus applications, Eaton offers both Push and Pull type diaphragm spring clutches that are available in 330 to 430 mm sizes and 450 to 2250 Nm torques. Eaton's diaphragm clutch unique design helps increase the transmission synchronizer durability with spring dampers offering protection against harmful torsional vibrations and pre-damper reducing the idling noise



430mm Pull type



395mm Push type

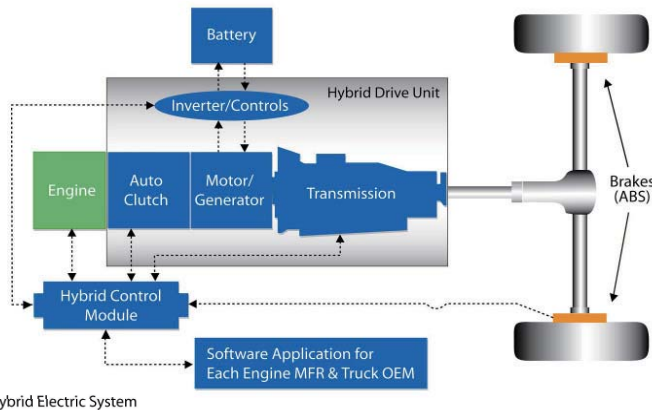


365mm Pull type



330mm Push type

Hybrid HEV



Partners Eaton Hybrid Electric System

Hybrid HEV

Eaton's hybrid electric system is well suited for applications that require frequent starts and stops such as city bus applications. The system provides up to 30 percent fuel savings and significantly reduces emissions while maintaining performance and functionality.

Eaton's medium-duty hybrid electric system uses an automated transmission with a parallel hybrid system. It incorporates an electric motor/generator located between the output of an automated clutch and input of the transmission. Using Eaton's patented hybrid system controls, the system recovers and stores energy normally lost during braking into batteries. When electric torque is blended with engine torque, the stored energy is used to improve fuel economy and vehicle performance for a given speed.

System Benefit*

- Up to 30 percent fuel savings* using Eaton's patented hybrid solutions.
- Regenerative braking recharges batteries leading to reduced braking and engine wear.
- System can provide an electric boost for hills and rapid acceleration when needed.

*Dependent on duty cycle, driver behavior and operating conditions.

Engine Valves, Valve train and Valve Actuation

Engine valve



Eaton is known throughout the world for its expertise in engine air management. Our design and developmental results database support the most comprehensive system analysis in the world. Focusing on efficient system has helped reduce emission and improved fuel economy. Global valve facilities share Eaton proprietary technology to produce a complete range of original equipment and aftermarket valves.

Eaton produces more than a million engine valves per day for nearly every automaker and engine manufacturer in the world.

Valve train & valve actuation (rocker arms, lifters, lash adjusters)



For over 100 years, Eaton has been the only producer of both valve and valve actuation products. System expertise and engineering excellence are the

reason Eaton's valve actuation technologies have been chosen by OEM's worldwide to improve fuel economy and overall engine performance. Manufacturing facilities on three continents produce over 100 million hydraulic actuation devices annually.

Eaton has pioneered innovations in Variable Valve Actuation technology for over a quarter of a century and today Eaton can offer an extended portfolio product able to fit various customer demands.



Hydraulics

Hydraulics Products

Hydraulics and Fluid Conveyance

Eaton offers complete fan drive cooling system solutions from simple to complex designs. Electric -hydraulic system designs provides the means to meet the increasing higher global emissions regulations in efforts to reduce nitrous oxides levels. Cooling on demand system design reduces fan noise, saves engine power and fuel by providing cooling needs as required. Available hydraulic cooling system components include fixed and variable displacement pumps, motors, control valves, manifolds reservoirs, filters, hoses, fittings, adaptors, steel tubing and electronic controllers. Eaton has a full line of hydraulic vane and gear pump designs to meet the needs of power assist mechanical steering systems.



STC Connectors:

Eaton offers the broadest range of threadless connectors in the industry. The patented STC technology is the benchmark threadless connection for mobile equipment OEMs. The STC design and direct porting capability offer significant design flexibility. The connector's visual latch verification provides the safest assurance that male and female halves are aligned properly. STC connectors are available in sizes 1/4" to 1" and qualified with a wide range of Eaton hoses.



420 Variable Piston Pump



Gear Pump (26 series)



Piston Motor



Cyclone Reservoir



Filters



Fuel Solutions:

Eaton offers a full range of products approved for biodiesel use or in high temperature engine applications. Eaton engineering has tested and qualified several hose products including an exciting new development, GH100 ESPT for use with B5, B20 and even B100. Testing included extensive hot fuel circulation tests at 125 C and 150 C to validate material properties including tensile, elongation, hardness, volume swell and burst, with various fuels including SME, RME and ULSD in order to deliver to our customers the highest quality solution and best overall value. Eaton is committed to supporting sustainable industries such as biodiesel fuels, and biodegradable oils for engine, wind power, water power and over the road use, with the highest quality products

Hose & Hose Fittings:

For years Eaton has been an industry leader in developing new hydraulic hose solutions. Eaton's hydraulic hose products are suitable for nearly any application, pressure level and type of fluid. Whether it's a hydraulic wheel chair lift, a hydraulic fan drive or other auxiliary hydraulic applications, Eaton has fluid conveyance solutions. Additionally our strong manufacturing and distribution capabilities allow us to provide product in a timely fashion to nearly any part of the world



Walterscheid Metric Tube Fittings:

Eaton's Walterscheid metric tube fittings are engineered to meet and exceed DIN 2353 and ISO 8434-1 in the sizes and configurations required for demanding vehicle applications. Walterscheid tube fittings are built to exacting tolerances, offer best-in-class pressure capabilities, and our new exclusive "Guardian Seal" plating technology on carbon steel products. Walterscheid tube fittings manufactured with Guardian Seal™, meet the need for higher corrosion protection required in the most challenging environments. Walterscheid, driven to deliver improved equipment utilization, reduce replacement costs, maintain that original equipment appearance and provide the highest quality leak-free solutions in the industry.

Electrical



Switches / Sensors

Eaton offers multiplexed systems, sensors and switches, designed for the most extreme and difficult mission applications.

Fittings:

Eaton fittings are manufactured to meet all SAE, DIN, DOT and other industry requirements using high quality materials. Eaton fittings are available for low and high pressure hoses – include crimp and reusable in a variety of end connectors.



A/C and Refrigeration Products:

Eaton offers engineered components and assemblies for a wide range of A/C and refrigeration systems. Hose materials range from barrier to nylon veneer. A real standout is GH134 hose that offers the lowest permeation rating of any multi-refrigerant hose. Tested to SAE J2064 and beyond, the GH134 hose reduces greenhouse emissions while retaining excellent flexibility and kink resistance.



Quick-Disconnect Couplings:

Eaton's broad line of quick-disconnect couplings ranges from pneumatic couplings to complex hydraulic constructions. The Eaton line includes Hansen and Gromelle brands that offer a full range of hydraulic, pneumatic, and fluid transfer couplings meeting a variety of SAE and ISO specifications.



Serving 5 Key Vehicle Segments - Sharing one focus

Powering Vehicles Efficiently, Reliably, and Safely



Bus & Coach

Solutions designed to enhance operational efficiency and on-time demands of moving people.



Linehaul

Products focused on increasing fuel economy, reliability, performance and safety.



Vocational

Products focused on enhancing productivity, reliability and safety for vocational applications, including construction, cement transport, refuse and utility.



Automotive (Passenger Cars)

Products engineered to increase fuel economy, performance and reliability of passenger cars, SUVs and light-duty trucks.



Pick-up & Delivery:

Solutions engineered for the frequent start-stop cycle of delivery trucks to enhance fuel efficiency, productivity and safety.

Eaton is a leading diversified power management company

Eaton provides reliable, efficient and safe power management for a growing number of industries.

Understanding and helping our customers succeed

- Listening and understanding requirements and business drivers
- Delivering solutions with value propositions to solve critical business needs

Knowing what's important to our customers and integrating that knowledge into the fabric of our business

- ...to deliver innovative, quality products
- ...to respond fast
- ...to provide dedicated customer service and support around the globe

Our strength is global reach with local responsiveness and support

- Customers served in more than 150 countries
- Diverse channels ensure reliable availability and support
- Design and engineering teams provide support for standard products and custom solutions
- Eaton experts offer efficient product and application training

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