Product solutions for commercial vehicles.
Shaping change with an eye to the future.
The ElringKlinger Group.
Experience mobility – Drive the future.

As an independent and globally positioned supplier, the ElringKlinger Group is a powerful and reliable partner to the automotive industry. Be it optimized combustion engine, hybrid technology, or electric motor – we offer innovative solutions for all types of drive system in commercial vehicles and passenger cars. In doing so, we are making a committed contribution to sustainable mobility.

Our lightweighting concepts help to reduce the overall weight of vehicles. As a result, vehicles powered by diesel or gasoline engines consume less fuel and emit less CO₂ while electric trucks and cars benefit from an extended range. Developing cutting-edge battery and fuel cell technology as well as electric drive units, we were among the frontrunners when it came to positioning ourselves as a specialist in the field of e-mobility.

At the same time, we are committed to evolving our sealing technology in response to the increasing complexities associated with modern-day combustion engines. Our shielding systems are designed to ensure high-end temperature and acoustics management throughout the vehicle. Dynamic precision parts developed by ElringKlinger can be used in all types of drive system. Additionally, the Group’s portfolio includes engineering services, tooling technology, and products made of high-performance plastics, which is also marketed to industries beyond the automotive sector.

These efforts are supported by a dedicated workforce of more than 10,000 people at 45 ElringKlinger Group locations around the globe.

Detailed information on ElringKlinger’s product solutions is available in the respective technical brochures or on our website.
ElringKlinger worldwide.

North America

**CANADA**
Leamington

**USA**
Plymouth
Southfield
Buford
Fremont
Fort Wayne

South America

**MEXICO**
Toluca

**BRAZIL**
Piracicaba

Africa

**SOUTH AFRICA**
Johannesburg

Battery technology
PEM fuel cell stacks
Electric drive units
Lightweight components
Plastic modules
Thermal and acoustic shielding systems
Trucks, vans, buses: commercial vehicles move the world and are a vital part of the flow of people and goods. And like the rest of the automotive industry, the commercial vehicle segment is also experiencing profound change. Some of the pressing issues are fuel efficiency, electric mobility, payload optimization, digitalization, networking, and safety. The automotive supply industry is being called on to provide intelligent and innovative concepts. The boundaries of what is feasible are being pushed back further and further. ElringKlinger has tackled these new challenges in good time and offers cutting-edge solutions in all product segments.

E-mobility is picking up speed. We have been active in this area for around 20 years, which is why we are able to provide technically mature, production-ready components and systems for battery and fuel cell technology. We also offer complete electric drive units for all vehicle categories. At the same time, lightweight designs are gaining ground in commercial vehicles, in the drivetrain, bodywork, or chassis area. The aim is to achieve a lower weight while delivering greater functionality and more extensive design scope – so that commercial vehicles with further reduced CO₂ emissions per ton-kilometer can make an important contribution to achieving climate targets.

ElringKlinger also has its finger on the pulse when it comes to sealing and shielding technology. For example, our cylinder-head gaskets and sealing systems are supremely reliable even under the toughest conditions and offer outstanding functional reliability. Thanks to our ElroShield™ Active shielding system, we are helping to significantly reduce carbon dioxide and nitrogen oxide emissions. Other ElroShield™ systems ensure optimum thermal and acoustic management in a wide range of application locations.

**OUR GOAL IS TO DEVELOP SUSTAINABLE MOBILITY WORLDWIDE.**
When it comes to e-mobility our aspirations are very high: to drive innovations, set benchmarks, and shape technological change with effective product solutions in premium quality. This also applies in particular to the commercial vehicle segment. E-mobility is absolutely essential for goods and passenger transport if we want to meet ambitious environmental protection and climate targets. In this context, an efficient energy storage system is considered a key technology.

We see ourselves as a development partner and supplier of complete systems. Since 2011, ElringKlinger has been manufacturing numerous components for lithium-ion batteries in cost-effective serial production, e.g., various cell contact systems and module connectors. We produce complete battery modules based on different cell formats. Thanks to other high-end products such as cell housings, module connectors, pressure equalizing elements, and battery enclosures, we are capable of developing entire battery systems according to individual customer requirements and putting them into serial production.

One of ElringKlinger’s core areas of expertise is to combine a large number of different components to produce a reliably functioning assembly. This capability is in demand above all in the area of battery technology and represents our decisive advantage when it comes to implementing complete energy storage systems.

The lithium-ion battery module from ElringKlinger (48 V standard) allows the flexible construction of a battery system with a system voltage of up to 800 V, which is very important in particular in respect of the peak loads that occur in the commercial vehicle segment. Our own development of a “cell supervision circuit” (CSC) and a profound understanding of the individual cells in combination allow systematic cell balancing, which achieves a long service life at system level and therefore also conserves resources. The modular structure also allows us to respond flexibly to customer needs and to readily integrate customer-specific battery management systems (BMS). Another benefit of our module is that hybrid components like the integrated pressure plate reduce weight and have a positive effect on the range of the vehicle.

ElringKlinger has everything in place to manufacture battery modules in cost-effective serial production.
Innovative, reliable, and all from a single source: battery technology from ElringKlinger.
Alongside battery technology, fuel cell technology is the foundation for the electromobility solutions of the future. One of the particular strong points of vehicles with PEM fuel cell drive technology is their long range. Fuel cells can also be used as range extenders for battery-powered commercial vehicles or cars. In this area ElringKlinger relies in particular on its own stacks, patented designs for metal bipolar plates, end and media modules, and casings. Automated serial processes for metal shaping and plastic injection molding, automated stacking, ultra-modern joining and coating technologies, and an in-house tool and die workshop mean that we are very well equipped to tackle the industrialization of fuel cell products.

PEMFC stacks offer a high power density and highly dynamic provision of power. ElringKlinger has longstanding expertise in this field; thanks to our own development capabilities and component/stack production, we can respond flexibly to customer requirements. Another advantage is that our PEMFC stacks are trialled and approved in our own test facilities in accordance with customer specifications and with simulation of system conditions. Stacks engineered by ElringKlinger for integration into customer systems are available with an electrical output of 2 to 150 kW. They can also be supplied with optional peripheral components and system functionalities integrated into the end plate module – for simplified design and cost streamlining of the fuel cell system.

If the hydrogen for the PEMFC is produced by electrolysis from electricity generated from a renewable source, the mobility solution can be completely emission-free.
PEMFC stacks consist of alternating stacks of membrane electrode assemblies and bipolar plates. The porous layers in between serve to distribute the gas and transfer the electrical current. The bipolar plate separates the media and distributes them to the stack. It also ensures uniform cooling of the stack and transfers the electrical current to the adjacent cells. Metal bipolar plates offer benefits in respect of cost efficiency, power density, and the cold-start capability of the fuel cells.

Using high-precision, progressive tools suitable for large-scale production, ElringKlinger is already producing bipolar plates in a fully automated, interconnected manufacturing process.

Fuel cell stacks have to be permanently braced with a uniform contact pressure over the entire surface of the cell. This is done using end modules consisting of a clamping system and media modules where necessary. Production-ready end modules for PEMFC are hybrid assemblies consisting of metal components and high-performance plastics that meet all requirements while offering excellent dimensional stability. As in the case of the media modules, they have to be mechanically stable, chemically resistant, and as light as possible. A special benefit is that by integrating parts of the system technology directly on the stack in the form of a media module, the system is simplified considerably.

Using injection molding processes, ElringKlinger produces highly complex end modules that meet the strictest tolerance specifications.
As regards the development and integration of electric drive systems, our customers benefit from the combined expertise of ElringKlinger and our strategic partner hofer powertrain. We offer solutions for serial production through to small batches for the luxury segment. Our portfolio includes system integration, electric machines, power electronics, control software, transmissions, thermal management/cooling, and safety concepts.

For ElringKlinger this means that we can work with our customers to realize optimum end-to-end solutions that meet their specific requirements. Our expertise in battery and fuel cell technology, processes, and manufacturing methods paired with the engineering capabilities of hofer powertrain means that we reach the desired goal quickly and efficiently. By taking a holistic approach to the entire energy conversion chain in the vehicle, all the potential in respect of costs, quality, and system behavior can be exhausted.

An EDU (electric drive unit) consisting of electric motor, transmission, and power electronics delivers the most energy-efficient result for the entire system. In addition, we can also implement multiple variations, from a single component to a highly integrated unit. We have a suitable electric axle for every category of commercial vehicle. In this area, too, our customers benefit from the synergies between two acknowledged specialists for the development and global series production of alternative drive technology.

E-mobility: electric drive units.
Delivering end-to-end solutions.
We offer systems tailored to very specific customer requirements as well as standard solutions designed and continually refined by our engineers.
Lightweight components.
Mobility made easy.

In the automobile industry lightweight construction is one of the key technologies used to shape the mobility of today and the future. Every gram counts when it comes to extending the range of electric cars, and in the case of conventional drive systems or hybrid technology, reducing fuel consumption and CO₂ emissions. In the commercial vehicle segment, lightweight designs result in improvements in efficiency, because not only is fuel consumption reduced but the load capacity is also improved, allowing a higher payload to be transported. “Lower weight with greater functionality and better design options” is ElringKlinger’s recipe for success. Whether we are producing components for the drivetrain, body, or chassis, we use lighter materials (glass-fiber-reinforced plastics, thermoplastics, thermosetting polymers, organo sheets, and aluminum) in combination with cutting-edge production processes. In addition, the design can be optimized by integrating several functions and reducing the overall number of parts.

Whether cockpit cross-car beams, transmission mounts, door modules, battery housings, oil pans, or cam covers – innovative lightweight construction solutions from ElringKlinger show what they are capable of in everyday use: superior quality, performance, and functional reliability.
Lightweight components in plastic: multi-functional, strong, and economical.

INTELLIGENT LIGHTWEIGHTING
BY ELRINGKLINGER

- Reduced use of materials
- High cost effectiveness
- Integration of numerous functions
- Function check of complete module
- Improved NVH characteristics
- Design flexibility

- Quality benefits
  (smaller tolerance ranges, no rework)
- Shorter development cycles
- Safe and easy installation
- Recycling capability
Metal-elastomer cylinder-head gaskets.
Rugged, highly effective, and safe.

Metal-elastomer cylinder-head gaskets from ElringKlinger are used mainly in the engines of commercial vehicles and in large engines (in power plants, ships, etc.). Innovative drive concepts call for innovative sealing technology, as there are many challenges to be tackled in this field of engineering. These include in particular higher combustion pressures, compression homogenization, higher thermal loads, and more stringent emission standards. Our metal-elastomer system ensures an absolutely reliable seal even at ignition pressures of up to 290 bar, engines rated at more than 2,000 kW, and mileages of 1.5 million kilometers and more.

The high ignition pressures in engines without bushings or with slip-fit bushings, low bolt forces, and a low number of bolts can be managed, for example, by means of compression homogenization. The distribution of sealing pressure between combustion chamber and fluid area can therefore be pushed further and further in the direction of the combustion chamber. For gas seals, special steel bead structures are used that ensure a uniformly high sealing pressure. Liquid sealing is done using elastomer sealing lips that allow a reliable media seal at a much lower sealing pressure level.
Metaloflex® metal layer cylinder-head gaskets.
Perfection – even under high pressure.

In modern gasoline and diesel engines in cars, vans, and commercial vehicles, but also in electric cars with range extenders, Metaloflex® metal layer cylinder-head gaskets show what they are capable of. Engine downsizing, lightweight construction, selective cylinder deactivation, and hybrid technology are associated with lower wall thicknesses, lower rigidity of components, higher temperatures, and increasing ignition pressures that call for highly efficient and customized sealing concepts.

With the metal layer sealing system the engine components on the circumference of the combustion chamber are elastically pre-stressed by a stopper. This helps reduce the sealing gap oscillations caused by the force of the gas and at the same time prevents excessive deformation of the full beads. ElringKlinger offers the full range of technologies. These include coined (embossed) stoppers, with a distinction being made between stopper patterns in the functional layers (serpentine, dimple) and the carrier plate (honeycomb), as well as laser-welded stoppers, folded stopper layers, and segmented stoppers – for maximum functional reliability in cars and commercial vehicles.
For the various sealing jobs in engine, transmission, exhaust gas system, and auxiliaries (e.g., compressors or pumps), but also for the bodywork and chassis areas, ElringKlinger offers efficient, specifically tailored sealing systems. Additional functions like heat shields, strainers, sensors, and pre-assembly elements can be integrated.
This highly effective sealing system engineered by ElringKlinger is based on elastomer-coated and uncoated metal carrier materials. One of the major advantages is that various metals can be combined with different types of elastomer to be matched exactly to the respective requirements. The Metaloseal® type “L” (line sealing) can be used at almost all points of use. Our Metaloseal® M metal ring gaskets produce a reliable seal even under the toughest mechanical and thermal loads and where space is very tight.

Soft materials (mica, graphite) are combined with selected steels. Even in the case of very challenging applications, reliable sealing solutions can be achieved that meet the most stringent leakage requirements. Volumesoftseal™ F flat gaskets are characterized by high media resistance, dimensional stability, and reliability. Due to their lower bolting force requirement, Volumesoftseal™ V volume sealing rings represent an excellent alternative to spiral wound gaskets, for example.
Metal-elastomer and elastomer gaskets

Metal-elastomer gaskets are used for highly stressed components like transmission and engine components, covers, oil pans, radiators, or battery storage systems. ElringKlinger is capable of connecting various materials to a metal or plastic carrier so that the most suitable material can be deployed for each point of use and a reliable, durable seal can be achieved. The crucial advantage is that with our metal-elastomer sealing systems, no elaborate preparatory work whatsoever is necessary on the customer parts they will be fitted to.

In principle, elastomer gaskets can be used on all sealing points in the drivetrain or battery system. Optimum functioning at low sealing pressures is achieved by specifically tailored profile geometries of a wide range of designs.

Metal-elastomer gasket for the crankcase, consisting of various metal segments connected via the elastomer sealing lip.
ElringKlinger offers four different systems to seal off the control unit of automatic and dual-clutch transmissions, depending on component features and operating parameters: Metaloseal®, Metaloprint®, metal/soft material, and plastic transmission control plates. They have to withstand high hydraulic pressures and often severely fluctuating thermal loads. Possible add-on functions are filters, baffles, or restrictors to improve the controllability of the transmission.

Automatic transmissions with an increasingly higher number of gears are gaining ground and necessitate the use of composite pistons. A special feature of ElringKlinger composite pistons is their extremely smooth surface, which allows very gentle gearbox control. The gear shifts are very precise and result in outstanding driving comfort. Here too we offer system expertise from a single source: material development, simulation, design, surface treatment, and rubber injection molding.
Topseal™ housing components

Topseal™ by ElringKlinger – a combination of elastomer seal and topographic (height-profiled) metal housing cover – is a substitute for multi-part sealing systems and therefore simplifies handling in the assembly line and helps reduce weight. The individual topography is determined analytically depending on the respective parameters. This achieves a homogeneous compression over the entire sealing surface even in the areas between bolts or in the case of large bolt spacing. Although Topseal™ is used mainly on the engine and transmission, electrical components can also be protected from environmental influences.

Dynamic sealing systems made of high-performance plastics

Whether rotary shaft seals, spring-loaded seals, backing rings, piston rings, guide elements, or injection-molded parts comprising several components, in a large number of application points the product solutions of our subsidiary ElringKlinger Kunststofftechnik GmbH in PTFE, PTFE compounds, PEEK, or Moldflon® provide more design flexibility and cost-effectiveness.
ElroShield™ Active.
The hot shielding solution for optimized exhaust gas values.

The commercial vehicle segment is pursuing a strategy of innovation and is constantly working on further improving fuel consumption and exhaust gas values, the aim being to raising sustainability levels. ElringKlinger is also setting standards in this segment with cutting-edge products. For example with our new shielding system ElroShield™ Active, which can make a significant contribution to reducing carbon dioxide and nitrogen oxide emissions.

What is special about the new product is that as an active system ElroShield™ Active is fitted with heating elements that are usually operated in a capacity range of between 1 kW and 5 kW. This allows the desired operating temperatures of exhaust gas aftertreatment components to be precisely controlled, and the “light-off” temperature can be reached sooner, for example. ElroShield™ Active is composed of a unidirectional insulating material that has heating elements on the exhaust gas component side. For mechanical protection, including against environmental influences, a metal coating is applied to the outside. The shielding system can be designed so flexibly that it can be used at any position in the exhaust gas system through to the cold end. In addition, it can be integrated into existing, conventional shielding parts. ElroShield™ Active is suitable for operating temperatures up to 800°C.
ElroShield™ D, M and S.
Shielding for all applications.

Thermal and acoustic management in modern commercial vehicles with a combustion engine or hybrid drive system is complex. Tightly packed components, engine encapsulation, and high temperatures in the engine compartment, underbody area, and exhaust system due to minimal cooling air flows, catalytic converter technology, and exhaust gas turbochargers impose rigorous demands on the shielding technology used. There are also numerous temperature-sensitive components that need to be protected from heat. At the same, high temperatures are actually necessary in certain areas, especially for optimum exhaust gas aftertreatment and for shorter cold-start phases. In the underbody area, aerodynamic aspects also have to be considered. Through its ElroShield™ systems, ElringKlinger offers the right shielding technology for each point of use in the entire vehicle and therefore helps save fuel and reduce emissions and noise for improved comfort, safety, and environmental protection.
ElroShield™ D from ElringKlinger is used to meet exacting requirements for thermal and acoustic management and in areas where system temperatures need to be kept constant. It consists of a metal carrier layer plus an ElroTherm™ silicate fiber material. The “D” stands for “direct”, because the silicate nonwoven used allows direct contact to the surface of the components to be protected. The shielding part is extremely light, in addition to offering highly efficient thermal protection and outstanding acoustic absorption at parts exposed to high temperatures. It can be used at working temperatures of maximum 1,100°C.

ElroShield™ M is suitable for a large number of applications up to a working temperature of 1,100°C. This model consists of several layers (metal, insulating material) that are specifically matched to the respective application. As well as the primary thermal protection function, acoustic or electromagnetic add-on functions can be included. Complementary components like gaskets, cable clips, and fixing and joining elements can also be integrated. ElroShield™ S is the single-layer variant of this shielding system and is used primarily in areas where there is less need for thermal shielding and for low-temperature applications, e.g., in the underbody area.
Dynamic precision parts.
Drive train components for the most exacting standards.

We are constantly developing and refining our product range on the basis of our core areas of expertise. For example with dynamic precision parts for the drive train of cars with electric motor, hybrid technology, or combustion engine. These include, for example, disk carriers, planetary carriers, or brake disk carriers. They are cost-effective, ready to install, in the highest quality and offer a weight reduction of up to 50 percent. Standard wall thicknesses and very large wall thicknesses of more than 5 mm are possible. Another advantage is the extensive choice of application-specific materials.

In the case of drive train components, too, we are focusing on reliability from a single source from the design through simulation to manufacture – for the ultimate in precision and functional reliability.

HTMC FROM ELRINGKLINGER

When it comes to manufacturing our dynamic precision components, “High Torque Mechanical Connection” (HTMC) technology, specially designed by ElringKlinger, plays an important role. This is a particularly efficient and cost-effective mechanical connection for high torques. Thanks to the mechanical positive locking connection, welding processes can be avoided and there are also no thermal effects on the component.

Planetary carrier from ElringKlinger, realized as a sheet-metal-molded part. For highest precision in combination with significant weight savings.