INNOVATIONS FOR ECO-FRIENDLY MOBILITY
Unique Applications

Ideal Cost/Benefit Ratio

Tailored Products

Customer-Oriented Solutions
There is only one solution that fits your needs. You will find that solution within the Eberspächer product range. Anywhere in the world, wherever you need us, Eberspächer can provide any service or solution, beginning with prototype development, up to large-scale, industrial production series.

From conventional mufflers to highly complex emission control systems, we provide solutions precisely tailored to your requirements for passenger cars, sports cars, and SUV applications.

Our custom solutions match all standards and local market specifications. “Eberspächer Smart Technical Solutions” combine top specialists and skillfully trained personnel with the efficiency and dependability of a medium-sized shareholder-managed business and integral environmental principles as part of our corporate mission.
Perfect mechanical, thermal and chemical coordination of the various components in the exhaust system and the engine – that is the secret of the success of Eberspächer’s exhaust specialists. More than 95% of pollutants can be eliminated using modern Euro-6b and Euro-6c systems technologies. And noise emissions are also reduced dramatically. Moreover, we’re headed towards futre trends.

For this reason, we keep allocating about 9% of our net profits to global development projects. Ongoing product and process optimization allow attractive part prices, which our customers have proved to appreciate just as much as the undisputed quality of our products.

As one of the world’s leading specialists for exhaust technology, we help vehicle manufacturers worldwide to achieve their ambitious aims. Our exhaust systems actively contribute to increase sustainable mobility throughout the planet. With our Euro-6 systems (or LEV, ULEV and SULEV) for markets in Europe and the USA up to Euro 3 – 5 solutions for emerging markets, we are in a position to cover the entire range of passenger cars worldwide.
PRODUC TS & APPLICATIONS

FOR CONTEMPORARY USE

EXHAUST-GAS AFTERTREATMENT:
The locally differing exhaust emissions regulations are becoming increasingly strict, and they continue to be the main driving force for exhaust emission treatment technology. The present big challenge in this field is the achievement of compliance with Euro 6c and “Real Driving Emissions” (RDE) requirements, which for instance involves quite different procedures for diesel and Otto engines.

INSULATION:
Thermal insulation has always been a requirement for components used to clean exhaust gas. Basically, this has always been a standard requirement for protection of the elements adjacent to Otto engines. However, the same specifications have been also applied to diesel engines in order to shorten the time for the gas cleaning system to switch on after a cold start. Moreover, this has had the additional benefit to prevent gas cleaning components from cooling off whenever the engine would run slower or idle. Special, new insulation systems became a must as a result of the complexity of the relevant “hot-end” geometries. In some extreme cases, this thermal insulation is applied both inside and outside and even combined with soundproofing solutions, which is the so called thermal-acoustic insulation.

OTTO ENGINE:
For Otto engines, a thicker coating of noble metal (corrosion-resistant) on the catalytic converter is a sufficient and efficient way to reach a higher limit value. However, this can be very expensive and, therefore, you need to step up the efficiency of catalytic converters to a higher extent. This can be done, for instance, by optimizing the flow on the substrate. A new concept resides with the limitation of the number of particles additionally to the previous control of particle size. Particularly for Otto direct injection engines, the question is the extent to which particle reduction can be achieved through measures within the engine. Eberspächer has the necessary know-how to develop and manufacture all relevant systems for cleaning and processing exhaust gas to EU6. Further, advanced development projects have been initiated in this field.

DIESEL ENGINE:
Eberspächer is a leader in the field of exhaust gas cleaning technologies for diesel engines. With the enforcement of Euro 6c, the previous system architecture underwent extensive changes: Selective catalytic reduction of nitrogen oxides (SCR) is required for an increasing number of applications. Because of temperature issues, gas cleaning components must be installed in significantly greater proximity to the engine, which, in turn, requires additional insulation. Exhaust gas recirculation systems are getting consistently more complex.

EXHAUST GAS RECIRCULATION:
An alternative way of reducing nitrogen oxides is represented by the recirculation of an accurately dosed part of the exhaust gases, which is filtered, cooled and added to combustion air of the engine. Again, the newest rules and regulations have required upgraded innovations. For more accurate metering and rapid reaction to the engine dynamics, a special electric valve developed by Eberspächer conveys exhaust gases away from the low-pressure part of the exhaust system and into the combustion air of the engine. In order to benefit from possible synergies, Eberspächer can design some functions and components of its electric-operated acoustic valve to be shared by this electric-operated gas recirculation valve.

SCR CATALYTIC CONVERTER SYSTEMS:
Eberspächer’s SCR systems operate with urea as a reducing agent. Urea dissolved in water is chemically converted into ammonia in the exhaust pipe. In the SCR catalytic converter, ammonia reacts with nitrogen oxides and transforms them into nitrogen and water vapor. In order to achieve maximum reaction efficiency, the urea aqueous solution is injected upstream of the catalytic converter and evaporated by means of optimal mixing units designed by Eberspächer and customized for each individual application. These mixers are designed to achieve a very high evaporation degree and at the same time allow smooth exhaust gas flow in order to
ensure throughout low back-pressure and nearly no effect on engine dynamics and CO₂ balance in terms of fuel consumption.

The new close-coupled systems are also required because very efficient, turbocharged diesel engines produce less exhaust gas heat than the older engine generations. In this field, Eberspächer has accomplished a great step ahead in technology which will be implemented in series production already this year: SCR-on-DPF, where SCR and DPF are combined in one single component. This means particle filters coated with an SCR layer. These SDPF systems are not only designed to achieve compliance with the new Euro-6c limits, but also the “Real Driving Emission” to be introduced soon. By avoiding the third monolith, the back-pressure generated by exhaust gas is reduced and more benefits are obtained in terms of packaging, weight and overall vehicle cost.
PRODUCTS & APPLICATIONS

FOR CONTEMPORARY USE

LIGHTWEIGHT DESIGN TO COMPLY WITH PRESENT AND FUTURE CO₂ LIMITS:
The exhaust system can play a major part in reducing a vehicle weight. Exhaust systems greatly impact CO₂ emissions. From 2015 onwards, the latter will be limited to a fleet’s average of 130 g/km and 95 g/km from 2020 onwards. Eberspächer is presently engaged in more projects for the decoupling of the exhaust gas system from the vehicle or “Extra Lightweight” solutions. While we already run the production of mufflers with partially reduced wall thickness in series production (so called Tailored Blanks), we are still working on further weight reduction, as for instance Tailored Tubes. So far, we have reached a weight reduction of over 10% or 2.5 kg for series productions. However, we still plan to save another 50% weight. This will result in reduced fuel consumption, which means a decrease of CO₂ emissions too!

ALTERNATIVE MATERIALS AND METHODS:
We have a long background in titanium machining and fabrication for small or special series: For instance, welding must be performed with argon shielding gas to protect the weld seams from brittleness and achieve maximum durability at the same time. Certain material combinations, i.e. precision castings together with steel, require special welding processes. In this framework, we also introduced the laser hybrid welding process in our series production method.

SOUND DESIGN AND ACTIVESILENCE®:
We already mentioned Eberspächer’s electric-operated acoustic valve. This represents a simple way to emphasize the engine and vehicle dynamics through sound dynamics as well. High-end automobile manufacturers already use these techniques to deploy the actual sound energy (especially of their otto engines) to enhance the image of the company.

ActiveSound was already introduced by Eberspächer at five automobile manufacturers, where it was used for various applications prevalently but not only in relation to diesel engines. Modern diesel engines now feature outstanding soundproofing performance mainly due to diesel particulate filters. In other words, the exhaust gases carry very little acoustic energy. They say that diesels don’t make a sound. At the same time diesel vehicles are “more fun to drive” thanks to their high torque already at low rpm and their broad speed range. Thanks to the ActiveSound system acoustic has become more valuable and tailpipe noise can be freely used to obtain optimized sound dynamics, for instance for sports cars to accentuate a sonorous beat. So, it doesn’t take long for an automobile manufacturer to improve or enhance its typical Sound Branding by simply running the respective customized software. A clever approach from Eberspächer!

The ActiveSilence® system starts where the ActiveSound system ends. In this case, the tailpipe noise is consistently recorded by microphones so that our active system can generate an anti-noise able to cancel the reference frequencies. This brings new acoustic value to downsizing concepts such as high-torque, three- or four-cylinder engines or engines with cylinder deactivation and additionally allows muffler volume savings. This leads in turn to weight and back-pressure reduction and consequently a better CO₂ balance.
“Think globally, manufacture locally”: Eberspächer follows this principle, which has become indispensable particularly in the automotive industry. The fact that expectations and the resulting solutions sometimes differ significantly from those in traditional automotive markets is not only clear, but a matter of course. We aim at building a bilateral channel to reach a perfect merge of “Design and Manufacture to cost” concepts.

LOCAL CUSTOMER APPLICATIONS:
For example, we upgraded the existing exhaust system in a customer application in one of the BRIC markets as compared to the previous competitor’s component using our design-to-cost concept: The tailpipe noise was reduced by as much as 5 dB, which made the vehicle compliant to the statutory noise limits. Weight and back-pressure were reduced by approximately 30%, which decreased fuel consumption and improved the CO₂ balance. To make this possible, we redesigned and optimized the architecture of both mufflers using our simulation software and successfully applied the new concepts in a local production unit. Moreover, we adapted all raw materials to the new and differing market scenarios to the extent allowed by the specification.

Emerging markets such as Brazil, Russia, India or China are also following the same emission limit trends as in Europe, USA and Japan. Traditional mufflers are no longer adequate for this task. Normally, compliance with Euro 4 with a certain size and exhaust system is a must and Euro 5 is upcoming. For this reason, regardless of lean design and lean manufacturing, we have been mapping our entire production chain also in our units in Pune, India or Togliatti, Russia: mufflers, catalytic converters, particulate filters as well as all other components, including those for domestic markets, are produced and assembled in accordance with global quality standards.

LOCALIZATION ON THE CLASSIC MARKETS OF EUROPE AND USA:
The success of an automobile manufacturer in terms of production and sales in the new markets definitely depends on its collaboration with its suppliers. Eberspächer walks hand in hand with its customers. We apply the same quality standards for new and traditional markets, our production units implement the same standards and procedures. Although we try as much as possible to procure raw material locally. The extent of automatic production systems may also vary and be less for certain markets, unless they are related to quality-relevant issues.

We just started a unit in Shanghai that is the leading site for the entire Far East with a leading-edge production plant equipped with welding robots and a canning line for final assembly of catalytic converter monoliths inside their housings. This site will produce both components and systems for the Chinese domestic market and all neighbor countries. The applicable exhaust gas limitations range between Euro 3 and Euro 5, depending on the reference customer and its target markets.
Exhaust technology will continue to be subjected to very strict regulations. Packaging, acoustics, thermodynamics, durability, a variety of versions, lightweight, CO₂ reduction, shorter development time, cost savings: all these factors are decisive for ensuring our success and that of our customers. Therefore we are constantly working on optimizing our development methods and designing new, innovative and highly effective solutions for future applications.
INNOVATIONS

LIGHTWEIGHT CONSTRUCTION AND HEAT RECOVERY

EXTRA-LIGHT CONSTRUCTION:
We have started a separate development unit in our Competence Center for High Performances and Lightweight Construction. This new unit will deal exclusively with the overall issues of lightweight constructions. Innovative solutions, including the construction concepts for extra-light exhaust gas systems with up to 50% weight saving as compared to traditional systems, are forefront solutions that are bound to result into series production within a medium-long term period.

The use of extra-thin, textured sheets will enable the realization of rigid and strong muffler shells. Tailored tubes and the innovative ActiveSilence® actuator made of carbon fibers will further facilitate the pursuing of this weight-reduction task.

HEAT RECOVERY:
Eberspächer’s engineers are conducting intensive work on the fact that over 30% of unused heat dissipates out the tailpipe of exhaust systems, which is a key factor in terms of CO₂ targets in exhaust gases and CO₂ emissions.

THERMOELECTRIC GENERATOR [TEG]:
This aerospace technology uses TEG modules to convert temperature differences between two surfaces directly into power. These modules are still rather expensive but further development will help to reduce module cost as well as to improve their power density, in a similar way as this happened with solar modules. “Power” is another similarity with photovoltaic systems: the size of the relevant surface is directly proportional to amount of power generated. The core of the process is the installation of the pressure-sensitive honeycomb TEG modules in the exhaust gas systems in such a way to ensure the occurrence of maximum temp differences on the surface of the modules. At the same
time, the compression force used to provide efficient contact with the modules shall not cause any damage to the sensitive TEG modules. This task is made even more challenging due to the small installation space available inside or underneath a vehicle. Regardless of the foregoing adversities, we are presently going through the trial phase of the first units and expect to generate some 200–500 watts for passenger cars depending on relevant application and installation space. Converted to CO₂ emissions, this means about 2–3 g CO₂-Reduction per km.

EXHAUST HEAT EXCHANGER:
Accounting for cold-start emissions at -7° degrees Celsius during test cycles, this issue gains a totally new dynamics. This has encouraged and promoted some pre-development projects that we are presently testing and analyzing on test benches. A special Exhaust heat exchanger designed to convey the exhaust heat back to the engine after gas cleaning provides for a faster and optimal operating point. High-efficiency, turbo-charged engines generate a heat deficit that can be interiorly compensated by a heat Exhaust heat exchanger.
67 LOCATIONS IN 27 COUNTRIES

EUROPE

USA

ASIA
GLOBAL PRESENCE

EBERSPÄCHER REACHES VERY FAR TO BE CLOSE TO CUSTOMERS

Fashioning the future. On a global level. Protecting the environment is a challenge that knows no boundaries. Therefore vehicle manufacturers the world over rely on close, ongoing cooperation with the exhaust specialist Eberspächer. In numerous countries, Eberspächer provides support directly at its customers’ production facilities. And around half of the total Eberspächer turnover is generated with exports or production abroad.

Every Eberspächer exhaust system is tailor made. Close cooperation with the customer is therefore very important – including at international level. More than 6000 Eberspächer’s employees are active worldwide to supply complete exhaust gas systems or parts thereof to many countries by means of Just-in-Sequence supplies to the final assembly chain. Eberspächer production network encompasses worldwide sites in Europa, Asia, North and South America. These sites are supplemented by our development centers in Esslingen, Unna and Detroit, plus various engineering offices with Resident Engineers. In this way, we ensure that every detail conforms to customer requirements, even in the earliest stages of product development.
GLOBAL PRESENCE

MANY ROADS LEAD TO EBERSPÄCHER – THEY ARE SHORT WORLDWIDE

The company network of the Eberspächer Group of Companies extends around the globe. Currently, 67 locations in 27 countries cover the key markets of the international automotive industry. Centers for research and development, purchasing, sales, customer service and production are mostly located in the direct vicinity of our customers. Assembly plants on four continents border directly on the factory gates.

Eberspächer supports this global presence with special focus on the new emerging economies of China, India, Russia and Brazil too. It is important for our joint success to demonstrate presence on location and to speak with international and local customers about requirements of exhaust technologies and implementation in the individual markets.

Our new Russian sites in St. Petersburg and Togliatti along with the Chinese factories of Shanghai, Dalian and Changchun we have come even closer to customers in order to match even more the needs of the markets and the customers.

“Think globally, act locally” – this is the key to successful international collaboration.
[ The global presence of Eberspächer exhaust technology ]

**Brazil**
São Paulo

**USA**
Northport/AL
Wixom/MI
Belvidere/IL
Novi/MI
Brighton/MI
Greenville/NC
Gen Mar/MI

**South Africa**
Pretoria
Port Elizabeth
East London

**Germany**
Esslingen
Neunkirchen
Unna
Schwäbisch Gmünd
Wilsdruff/Dresden
Sindelfingen
Emden

**France**
Elsancourt/Paris
St. Michel

**Italy**
Turin
Castelalto

**Russia**
Moscow
Togliatti
St. Petersburg

**Sweden**
Trollhättan
Nyköping
Gothenburg

**Czech Republic**
Rakovník

**China**
Shanghai
Dalian
Changchun

**India**
Pune

**Japan**
Tokyo

**South Korea**
Seoul
Hwaseong
Every Eberspächer exhaust system is tailor made. Despite this, all our processes up to production undergo the same rules and requisites all around the world. The versatility in Eberspächer’s manufacturing network is almost unlimited: All solutions can be realized, from fully automated production for large series through partially automated production for small series to flexible production for special series.

Other resources include our prototype production, with several locations in Germany, and the specialists from our subsidiary Prototechnik, who enhance and bring value the corporate manufacturing expertise with their specific know-how in extra-light constructions and high-performance exhaust systems for racing vehicles.
It really goes without saying that the search for safer processes is a dynamic task involving very frequent dealing with material and process-related challenges. Therefore, if you want to be and remain competitive, you need to keep looking for better, safer, and durable solutions and implement them within your process chain.

**LASER WOBBLING:**
So far, the central plates of the muffler baffles have been welded to the muffler sleeve using MAG-Slot welding. However, this technique required a suitable slot in the muffler sleeve, in order to join sleeve and plate together. Laser wobbling techniques already in use for bodywork can be also applied for the production of muffler baffles, although in this case no C-clamp can be used. Welding or laser heads with integrated optics can be stationary or mobile, installed on a carrier with an automatic robot. Differently than for MAG-welding, here the contour of the welding head must be adjusted to that of the muffler.

By letting the laser beam, the welding bead length can be extended to obtain a bond cross-section increase by 3 folds.

The benefits as compared to the conventional system are obvious:
- No need for a slot in the muffler sleeve
- No complex clamping technology needed
- Use of a welding head to increase the pressure up to 100 kg (220.4 lb) on the sleeve
- No cut-out between the central plate and the sleeve thanks to the pressure on the sleeve
ALL IN ONE:
This techniques takes advantage of the benefits of spinning, forming and other established production processes to obtain a totally new concept. In our case, the new all-in-one concept integrates some important benefits of the following production processes:

- Cost-effective muffler solutions thanks to the spinning technique
- Compact solutions with strongly resonant outer surfaces, same as for half-shell exhaust mufflers
- Crosswise mufflers application in the automotive branch is increasing and offer require a pipe across the sleeve. Moreover, typical platform projects require extensive flexibility in terms of the number and position of the pipe connections due to the differences between diverse engines.
- Spun mufflers with welded end plate are adjustable by linear expansion without using any other tool.

The concept behind this solution is the modification of a muffler concept with laser-welded sleeve and plate. Both parts of the sleeve are adjustable both wall thickness and material wise in order to match other requirements, as for instance optics. Both parts can accommodate simple pipe connections with optimized resistance and adjustable by number, position and diameter without having to use and purchase any other special tool.
22 | PASSENGER CAR EXHAUST TECHNOLOGY

PROCESSES

PERMANENT PROGRESS IN PROCESS TECHNOLOGIES

THE HIGHEST STANDARD OF STATE-OF-THE-ART MEASURING TECHNOLOGY

CONVENTIONAL GAGES:
Conventional gages have been state-of-the-art technology until recently. However, they had some cons in terms of stocking and maintenance costs, lack of flexibility when used with model variants and lastly the production of attributive measuring results. In fact, conventional gages could not be used for more complex measuring tasks.

OPTICAL MEASURING:
What originally began as a vision has proved, after persistent searching, to be the ideal solution. For commercial vehicle exhaust systems as well as complex systems for passenger cars, an optical measuring unit is mounted on a robot and used to digitize or measure the complete exhaust system. Our European production locations have already implemented automatic optical measuring systems and we will do the same in our American and Asian sites starting 2014 and continuing step by step.

HOW IT WORKS:
Optical measuring units are fitted with a stripe-light sensor and attached to a robot of suitable reach. Depending on the application, only the sensor is mounted in the robot or an additional ground track used. Turntables can also be used. A stripe-light sensor comprises a stripe-light projector and one or two laterally mounted cameras. Stripe-light projection is an optical measuring procedure in which surfaces undergo contact-less 3D digitizing, after which they are measured. Discrepancies are recorded, filed and returned to the production system. Main advantage: All production tolerances can be quickly corrected to fit within design values.

The advantages are obvious:
- Best suited for highly complex 3D measurements
- High traceability, as all measurements are saved in form of electronic data and kept available on request at any time.
- Very flexible for the measurement of different components
- Low retooling costs
- Can be reused in subsequent projects
- Start-up curves are quickly possible
STANDARD VIRTUAL PLANNING

STANDARDIZATION:
Our flexibility and ability to perform changes and adjustments are directly related to our assessed and validated modular production systems that ensure consistent product and process quality. Our modular production system translates into highly scalable production quantities and rapid reaction to volume changes thanks to the use of standard and flexible production units.

Another advantage of our production equipment is its global availability. The modular construction concept provides throughout global suitability of production processes despite different requirements of the individual production sites and locations. Moreover, our modular production plants undergo a continuous improvement process with validated innovation that are progressively integrated in the existing systems. So, we maintain our production know-how at a consistently high level of efficiency.

DIGITAL FACTORY PLANNING FOR OPTIMAL PRODUCTION CONCEPT:
For the development of optimal production concepts we implement targeted simulation systems that account for material flows, relationship between individual production modules, and road networks in order to yield real-time representation of the actual transportation costs. Digital factory planning results into a comprehensive optimization of all production flows and transportation routes in and out of the factories. At the same time, mobile TV-cameras allow the display of the first 3D production layouts. We then use networked online planning to represent the volume flows between local and global production sites. This combines with the possibility to perform ongoing optimization of our production concepts. During the final industrialization, the outcome of these simulations and deployed for the planning of the various production clusters.
WORLDWIDE

HIGHLY MOTIVATED EMPLOYEES

CUSTOMER UNDERSTANDING

ACTIVE HIGH-PERFORMANCE PARTNER

PROCESS RELIABILITY
It is this particular mix of customer understanding, corporate responsibility and highly motivated employees that makes Eberspächer a very special partner to have and the leader in the field of exhaust technology. Adopting the customers’ viewpoint doesn’t just mean knowing their expectations. We want to go further and match your demands already in the first project phases.

For our customers, we are therefore an active partner that equally understands their requirements and knows about the market, the required products and the legal regulations. To this end, we compare proven technologies with the latest innovations as early as the implementation process – worldwide.

In this process, the focus always remains on the developed, customer-specific “design” – the product solution. The reliability and assurance of product features is of the utmost importance. This also refers to the process reliability of the delivery scope through to the end of production. These aren’t meaningless phrases – for us, they stand for entering into a genuine, long-term partnership.
Values

Good Ideas Fuel a Partnership

Eco-friendly technologies are the key argument in the passenger cars sector. Manufacturers that already meet future statutory requirements will secure an important lead over competitors. Moreover, it is clear that the requirements for emission restrictions will tighten around the world, especially in view of increasing mobility in the emerging markets of Asia and South America.

The list of demands on material and functions is a long one, and the available development time is short in most cases. That’s why we think far ahead: The availability of technical systems and processes for series production is our priority from the early research stages.

Uniform development methods and standardized tools allow our employees to exchange their know-how worldwide and implement customer requirements everywhere.

Eberspächer engineers have a feel for technological trends and can correctly assess the future potential of innovative ideas. The focus here is on products and solutions that contribute decisive advantages for coming vehicle generations and strengthen our position as a technological and quality leader. Part of Eberspächer’s corporate culture is to promote innovations across the company in a targeted manner – to your advantage.
CUSTOMERS IN THE FIELD OF EXHAUST TECHNOLOGY FOR PASSENGER CARS:
- Alfa Romeo
- Aston Martin
- Audi
- BMW
- Cadillac
- Chevrolet
- Chrysler
- Citroën
- Dacia
- Fiat
- Ford
- General Motors
- Hyundai
- Infiniti
- Jaguar
- Kia
- Maserati
- Mercedes-AMG
- Mini
- Nissan
- Opel
- Peugeot
- Porsche
- Range Rover
- Renault
- Seat
- Volkswagen
- Volvo

KEY PERFORMANCE INDICATORS OF THE GROUP OF COMPANIES:

Sales in millions of euros (out of which export quotas in percentages)

<table>
<thead>
<tr>
<th>Year</th>
<th>Sales in millions of euros</th>
<th>Export quota in percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>2,826.5</td>
<td>60.0%</td>
</tr>
<tr>
<td>2011</td>
<td>2,590.5</td>
<td>58.9%</td>
</tr>
</tbody>
</table>

Research and development expenditure in millions of euros

<table>
<thead>
<tr>
<th>Year</th>
<th>Research and development expenditure in millions of euros</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>134.0</td>
</tr>
<tr>
<td>2011</td>
<td>120.1</td>
</tr>
</tbody>
</table>

Capital investments in fixed assets** in millions of euro

<table>
<thead>
<tr>
<th>Year</th>
<th>Capital investments in fixed assets in millions of euro</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>114.1</td>
</tr>
<tr>
<td>2011</td>
<td>109.5</td>
</tr>
</tbody>
</table>

** without changes in the consolidated Group

Number of employees*

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>7,348</td>
</tr>
<tr>
<td>2011</td>
<td>6,331</td>
</tr>
</tbody>
</table>

* average number of employees, including trainees
We are a family-run company that assigns prominence to its ability to remain self-sufficient. For this reason, we focus on sustainable growth targets. In doing so, we first and foremost place our trust in our employees: teamwork, responsibility and personal involvement are a priority for the entire Group. We promote sharing and cooperation as well as dependable internal and external relationships at all levels. Partnership is our key for mutual success and we particularly emphasize loyal, respectful tolerant behaviors and mutual trust. That has been the start line of our successful Group life for about 150 years.
PARTNERSHIP

CONSISTENCY AND RELIABILITY

Founded in 1865, we have been a family-owned and managed company with the lean structures of a medium-sized company for five generations. We can determine the strategic orientation, the priorities and points of emphasis in our daily work ourselves. In this, we place our trust in lasting business relationships. Passion, a sense of proportion and a clear growth strategy, are the engine driving the development of the entire Group.

Today, Eberspächer is one of the leading system suppliers for exhaust technology, vehicle heaters and bus AC systems. We are also an expert and innovative partner to the global automotive industry in the field of automotive electronics and networking with automotive bus systems worldwide. Pioneering products from Eberspächer improve the performance of passenger cars and commercial vehicles around the world and perceptibly enhance comfort and safety. Thinking business-wise – acting responsibly.

This made Eberspächer great. We were always prepared to develop further and bring innovative products and solutions to new markets. Our global presence now requires the same global structures and processes as in a large corporation. Nevertheless, we have preserved the virtues of being a medium-sized company: dynamism, flexibility and a generous share of pragmatism.

1865

Eberspächer forms a workshop for metal-framed roof and wall glazing.

1931/33

Production of mufflers and heaters begins.

1953/54

Pre-heaters for the VW Beetle go into series production. The 1 millionth muffler leaves the factory.

1995

Introduction of the modular Hydronic product family: a comprehensive range of pre-heaters for passenger cars and commercial vehicles.
1996
Series production of close-coupled catalytic converters with especially high efficiency.

2005
At the IAA, Eberspächer presents a completely new type of technology for sound absorption and design, based on anti-noise principles.

2010
BU Prototechnik joins the family business Eberspächer.

2013
The company is represented in four continents with 67 locations in 27 countries.

BUSINESS UNITS OF THE EBERSPÄCHER GROUP:

- [Exhaust Technology]
- [Fuel Operated Heaters]
- [Electrical Heaters]
- [Air Conditioning]
- [Tools & Services]
- [Automotive Electronics]