

Press release on the business development in the 1st half of 2008 and outlook for the MAHLE Group

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1. Business environment/economic situation in the automotive industry

Development of the business environment: lowest level for six years

In the second quarter of this year, the global economic climate deteriorated significantly and reached its lowest level for six years. The decline results primarily from the unfavorable assessment of the current situation, as well as from negative expectations for the next six months.

While the situation in North America in the first half of the year turned out to be considerably more unfavorable, a slight recovery is forecast for the second half of the year. While the climate indicator in France, Italy, and Spain fell at an above-average pace, it still appeared relatively stable in Germany, Austria, and Switzerland. In Asia, Korea and Hong Kong were particularly affected by the slowdown.

Healthy economic situation in the automotive industry as a whole

Passenger cars and light commercial vehicles: varied development in the individual markets

As a result of the weakening of the economic situation in most countries, the current forecast for the worldwide production of passenger cars and light commercial vehicles for this year must be reduced by 1.3 million units (-1.8 percent) in comparison with the original estimate. Nevertheless, the current forecast for this year—71.6 million passenger cars and light commercial vehicles—exceeds last year's value by 1.4 million units (+2.0 percent). The reason for this is the above-average growth in production to date in Asia and South America, which will be weaker for Asia in the second half of the year, however.

Europe

While a slight increase of +2.0 percent was originally anticipated in the production of passenger cars and light commercial vehicles in Europe, the current forecast suggests a further rise of 0.7 percent to 22.6 million units. This latest value exceeds the previous year's volume by 0.6 million units. This development is caused by the new and expanded automobile plants in this region working at a high level of capacity as a result of the booming demand in Central and Eastern Europe, as well as by the successful model policies pursued by some Western European automobile manufacturers.

Around 6 million passenger cars and light commercial vehicles are expected to be produced in Germany this year, as the country is benefiting from consistently strong exports and a slowly advancing domestic market. Production in Germany will thus slightly exceed the production volume for 2008 originally expected in the previous year. In addition, the automobile manufacturers in Turkey and France will be able to increase their production at an above-average rate. However, of the large European manufacturing countries, Spain, Sweden, and Italy will fail to achieve last year's volume.

NAFTA region

The increased fuel prices and the financial crisis in the USA are now having a substantial impact. From today's perspective, it is expected that the number of passenger cars and light commercial vehicles manufactured in North America in 2008 will be at least 10 percent below last year's value and 8.6 percent below the original forecast, at 13.5 million units. The previously popular but high-consumption large sport utility vehicles (SUVs) and pickup trucks are suffering the most from this unexpectedly heavy decline. In contrast, small, low-consumption vehicles and engines have been hardly affected by the dramatic market decline. Asian suppliers in particular are benefiting from this changing consumer behavior. The German manufacturers have also been able to maintain their position so far, but are

struggling to make profits with exports from Europe as a result of the exchange rate developments.

MERCOSUR region

In contrast, the production of passenger cars and light commercial vehicles in South America is currently expected to reach 4.1 million units in 2008, significantly higher than in the previous year. As a result of the economic upturn in Brazil, a rise of 0.5 million units (+13.7 percent) in comparison with 2007 is anticipated for this year. The current planning is thus 6.7 percent above the level expected last year for 2008. Besides Brazil, Argentina is also making an increasing contribution to the positive development in South America.

Asia/Pacific

The market for passenger cars and light commercial vehicles in Asia also continued its positive development at an above-average pace to date. An increase in production of 1.8 million units (+6.7 percent) in comparison with 2007 to 29.5 million is currently expected for 2008. Against a backdrop of worldwide economic turbulence, the current forecast, however, is 0.2 million units (-0.7 percent) below the high level expected last year for 2008. China is making the biggest contribution to the growth in Asia, with a rise of 1.2 million units in production (+15.7 percent) to 9.1 million units. Above-average production increases of 0.2 million units are also expected in both India and Korea. Stagnation at last year's level is forecast for Japan. However, for the Asian region as a whole, it is doubtful whether the growth dynamics of the first six months will retain their stability in the second half of the year, since the latest demand figures no longer confirm the positive trend of the first half of the year.

Economic situation for heavy commercial vehicles better than expected so far

Despite the deteriorating economic conditions, a further rise in commercial vehicle production is still anticipated as a result of the high transport requirements, particularly in Asia and Eastern Europe, and the orders on hand for 2008. Although an increase of 58 thousand units in the production of medium-weight and heavy commercial vehicles to 3,017 thousand was originally anticipated for 2008, it is currently expected that production this year will reach 3,148 thousand units, exceeding the previous year's value by 189 thousand (+6.4 percent).

Europe

As a result of the positive economic development in Eastern Europe and the accompanying increasing demand for transport capacity, the European manufacturers of commercial vehicles will expand their production by 41 thousand units in comparison with the previous year, in contrast with the originally anticipated decline of 11 thousand. The rise of 30 thousand units in commercial vehicle production in Central and Eastern Europe is primarily attributable to the Russian manufacturers, which account for 14 thousand units, as well as to a statistical change for vehicles produced in Poland, accounting for 12 thousand units. The Western European manufacturers in Germany (+3 thousand units) as well as in the Netherlands, Sweden, and France, each with an increase of 2 thousand units, are also benefiting to a limited degree from the high level of demand in Eastern Europe.

NAFTA region

The significant decline in economic growth in the USA is having an unexpectedly strong impact on the production of medium-weight and heavy commercial vehicles in the NAFTA region. While the original forecast suggested a rise of 82 thousand units in production in comparison with the poor figures for 2007 connected with the exhaust gas legislation, a decline of

38 thousand units is currently expected. The current forecast thus falls almost 25 percent short of the originally anticipated production volume. This means that the production of trucks in North America will almost be halved in comparison with 2006. This affects heavy commercial vehicles in the weight class >16 tons to a disproportionately high degree.

MERCOSUR region

In South America, the economic upturn, supported by both increasing exports and the solid domestic economy, has led to a significant rise in commercial vehicle production. Production is currently expected to grow by 11 thousand units in comparison with the previous year to 210 thousand. Commercial vehicle production in the MERCOSUR region will thus exceed the previous year by 5.5 percent and the original expectation by as much as 13.9 percent.

Asia/Pacific

In Asia, commercial vehicle production will also develop more positively overall in 2008 than expected last year. As a result of the continued positive economic development, particularly in the first half of the year, the production of commercial vehicles this year should reach 1,795 thousand units, exceeding both the previous year and the originally anticipated production volume by around 11 percent (almost 180 thousand units). The increase in Asia's production is driven by China, whose commercial vehicle production is expected to increase by 200 thousand units (+24.6 percent) to 1,017 thousand. While commercial vehicle production in Korea should grow by 8.3 percent in comparison with the previous year to 57 thousand units, a decline of 5.4 percent in production to 425 thousand units is anticipated this year for Japan. Likewise, commercial vehicle production in India is currently expected to reach 287 thousand units, falling short of both the previous year's value, by 2.4 percent, and the original forecast, by 5.7 percent. As in the passenger cars and light commercial vehicles segment, however, it is not yet certain whether the level of demand in Asia as a whole will be sustained during the second half of the year.

2. Business development in 2008 and outlook

In the first six months of 2008, the MAHLE Group increased its sales by 7.3 percent to EUR 2,668.6 million (EUR +181.1 million in comparison with the previous year). The most substantial contribution was made by first-time consolidations, which accounted for EUR 173.4 million. Changes in euro exchange rates, primarily against the U.S. dollar and Korean won, had a negative impact on reported sales amounting to EUR 97.5 million (-3.9 percent). Organic growth amounted to EUR 102.9 million (+4.1 percent).

As expected at the planning stage, the operating profit of the MAHLE Group did not reach the level of the previous year. At Group level, the profit fell just short of the previous year's value for the first half of the year, primarily as a result of adverse effects on profit caused by increases in material prices, unfavorable changes in exchange rates, and the impact of first-time consolidations. Despite growth in sales and productivity increases, which were better than planned, the profit could only be maintained at a level just below that of the previous year. From a regional perspective, the positive contributions to profit made by Europe, Asia, and South America could not completely offset the decline in profit in North America. The full effect of restructuring measures that will result in plant closures in Canada and the USA will not be noticed until 2009/2010.

The number of employees at the reference date rose by 4,268 (+9.2 percent) in comparison with the previous year to 50,729. The growth corresponded to the increase in sales adjusted for currency exchange rate effects. 2,698 additional employees (+5.8 percent) came from the companies included in the consolidation group for the first time, particularly Promec (now MAHLE Componentes de Motor de México), MAHLE Hirschvogel Forjas/Brazil, MAHLE Mopisan/Turkey, and MAHLE India Pistons. Excluding the effects on the consolidation group, the staffing level at the reference date rose by 1,570 employees (+3,4 percent), with an increase in all regions apart from North

America (-223 employees). The number of Group employees in Germany grew from 9,091 in the previous year to 9,280.

For the second half of the business year, MAHLE expects a considerable slowdown in the rate of growth. While Europe, Asia, and South America were able to more than offset the decline in sales in North America in the first six months and contributed to positive organic growth of 4.1 percent, all indicators, at least for Europe and Asia, show weakening production figures in the second half of the year for most of our major customers. With an expected stable exchange rate of 1.50 between the euro and the U.S. dollar, we anticipate a slight decline in sales for the previous consolidation group in the second half of the year. However, as a result of the acquisition projects undertaken in the first half of the year, particularly MAHLE Hirschvogel Forjas and Amafilter in the Industrial Filtration business division, acquisition-related growth will also be recorded in the second half of the year. MAHLE therefore expects to achieve Group sales of approximately EUR 5.3 billion (2007: EUR 5.1 billion) for the whole 2008 business year, which would represent sales growth of around 5 percent.

Additional factors adversely affecting profit are expected to influence the development of revenue in the second half of the year. Besides the fact that no improvement in profit is expected in North America in the short term, the leveling off of sales will also adversely affect profit in the other regions of the world. In addition, dramatic price increases in the steel and resin segments will be seen in the second half of the year, which will adversely affect profit by a figure in the tens of millions as a result of the insufficient absorption of costs by our customers.

3. Development of the MAHLE Group

The significant milestones in the development of the MAHLE Group in the first half of 2008 were:

1. On January 22, 2008, MAHLE confirms the acquisition of the majority of the shares in the engine components manufacturer Mopisan in Turkey
MAHLE has acquired a majority share of 60 percent in the Turkish engine components manufacturer Mopisan. Mopisan has two production plants in Turkey, in Konya and Izmir, which primarily manufacture pistons and cylinder components for the independent aftermarket. In the future, these plants will act as specialist plants for the production of engine components for this market segment. More than 1.5 million pistons were produced last year. In 2007, the company achieved sales of around EUR 24 million, with 580 employees. The majority acquisition of Mopisan supplements MAHLE's flexible production capacities geared toward small lots for pistons, piston pins, and cylinder liners. The company, which will operate in the future as MAHLE Mopisan Izmir A.S. and MAHLE Mopisan Konya A.S., is thus becoming an important building block of MAHLE's growth strategy in the independent aftermarket for engine components.
2. On May 21, 2008, MAHLE confirms the founding of a majority joint venture with Hirschvogel in Brazil
The Brazilian subsidiary MAHLE Metal Leve S.A. and Hirschvogel Umformtechnik GmbH have founded the joint venture MAHLE Hirschvogel Forjas S.A. in Brazil. The joint venture is being created from the existing company Forjas Brasileiras S.A. in Queimados near Rio de Janeiro. The existing shareholders are the Brazilian Adler family (76.8 percent), Hirschvogel Umformtechnik GmbH (15.4 percent), and MAHLE Brockhaus GmbH (7.8 percent). MAHLE will hold 51 percent of the shares in the new company and Hirschvogel 49 percent. The company will be fully consolidated within MAHLE. The company employs approximately 600 people and achieved sales of 196 million reais (approx. EUR 75

million) in 2007. MAHLE Hirschvogel Forjas S.A. is the third largest forge in Brazil and manufactures connecting rods, components for injection systems, and other components for the automotive industry.

3. On May 27, 2008, MAHLE confirms the anti-trust authorities' approval of the joint venture Bosch Mahle Turbo Systems

Robert Bosch GmbH and MAHLE GmbH have founded a 50/50 joint venture for the development, production, and sale of exhaust gas turbochargers. The European anti-trust authorities have approved the founding of the joint venture. "Bosch Mahle Turbo Systems GmbH & Co. KG" has commenced business on June 2, 2008. The company's head office in Stuttgart will house the development, administration, and sales activities. Initially, around 100 employees will work here, with half drawn from each of the parent companies. Series production of exhaust gas turbochargers will begin in 2011 at existing locations in St. Michael ob Bleiburg/Austria, and Blaichach (Immenstadt)/Germany. Up to 500 employees will manufacture major parts and components of a high quality and assemble exhaust gas turbochargers. These will be used in passenger cars and light commercial vehicles, in both gasoline and diesel engines.

4. On June 9, 2008, MAHLE confirms the acquisition of Clemex Mexico S.A. de C.V.

MAHLE has acquired all the shares in Clemex Mexico S.A. de C.V. and its subsidiary in Lerma, Mexico. For the time being, the company will continue to be operated under the name Clemex Mexico S.A. de C.V., until it is fully integrated into the MAHLE Group at the beginning of 2009. It manufactures bearings and bushings for the automotive aftermarket and for original equipment for automobile manufacturers. The company employs approximately 400 people and achieved sales of USD 16 million (approx. EUR 10.3 million) in 2007. All employees are being taken on by MAHLE.

5. On June 26, 2008, MAHLE opens the new R&D center in Brazil

MAHLE has opened a new, state-of-the-art research and development center in Jundiaí (near São Paulo) in Brazil. The brand-new complex for research and development includes laboratories and test benches spread across a developed area of 16,800 m². MAHLE has operated a research and development center in Santo Amaro near São Paulo since 1978, which was originally set up for the development of pistons and bearings. Over the years, activities for piston rings, filters, and valve train products, as well as MAHLE engineering services, were added. As the capacities on the existing premises were no longer adequate, a completely new research and development center was built, incorporating both the existing and new activities. Strict environmental protection constraints were taken into account in the planning, construction, and operation of the new building, as the premises are situated in the Japi Mountains conservation area. The architecture combines sophisticated leading-edge technology with environmental friendliness. The building consists of several rings instead of floors, and thus fits harmoniously into the surrounding landscape. This means that all laboratories could be installed at ground level. The R&D center has assumed responsibility for all of the MAHLE Group's research and development activities in South America, as well as the design and sales departments. In addition, activities connected with the use of second- and third-generation biofuels are based in Jundiaí as a focal point of research. The customers are both local and international vehicle and engine manufacturers. Around 260 people are employed there, primarily engineers, researchers, and qualified technicians.

6. On July 1, 2008, MAHLE confirms the acquisition of the Thuringian pump manufacturer ENTEC

MAHLE has acquired all the shares in ENTEC GmbH in Thuringia. ENTEC is a developer and manufacturer of controlled oil pumps for combustion engines and is therefore an important building block for the future of the MAHLE Liquid Management Systems product line. In its current organization, ENTEC develops controlled oil pumps on customer order and produces prototypes and small lots for special applications and motorsport. These brought in sales of about EUR 7 million in the 2007 business year, generated with a total of about 60 employees. In addition, licenses for controlled pumps have been issued to contract manufacturing companies for large lot orders. While development is currently concentrated in the Crock/Thuringia location, production principally takes place at the Brattendorf/Thuringia location. Development trends in modern generations of combustion engines are focused strongly on the topic of significant reductions in fuel consumption, especially in light of imminent CO₂ regulations and legislation. In the future, controlled oil pumps will make significant contributions in this area, since they can be precisely tuned to provide only the amount of oil that is needed at different engine operating points. Potential fuel savings due to optimization of the entire oil circuit system, using controlled oil pumps, range at up to three percent. In the medium and long term, MAHLE plans to demonstrate the high growth potential for controlled oil pumps in its own production facilities.

7. On August 1, 2008, MAHLE confirms the acquisition of Amafilter Group Holding BV

The MAHLE Industrial Filtration business division has signed an agreement for the acquisition of Amafilter Group Holding BV with its headquarters in Alkmaar, Netherlands. The Amafilter Group expects estimated sales of EUR 80 million for 2008 and employs around 450 people. MAHLE acquired 100 percent of the shares and integrated the

company into the MAHLE Group on September 1, 2008. The company manufactures integrated filtration solutions for process technology. In the future, the Amafilter Group will operate under the name MAHLE Industrial Filtration. The company has production plants in the Netherlands, England, France, Italy, and the USA, and thus complements the existing production plants of the MAHLE Industrial Filtration business division perfectly. It is also an excellent fit with the existing business division in terms of its product portfolio and customer structure. In the next few years, MAHLE plans to achieve significant sales growth as a result of utilizing the enhanced product range and additional production capacities, particularly in the growth markets of foodstuffs, energy technology, oil and gas, and chemicals. MAHLE already plans to achieve sales of more than EUR 200 million in the Industrial Filtration business division in the coming year, 2009.

4. New MAHLE corporate exhibition

On September 17, MAHLE inaugurates its new corporate exhibition—MAHLE INSIDE—at the Group's headquarters in Stuttgart Bad Cannstatt/Germany.

In recent decades, MAHLE has developed from a piston manufacturer to a globally established automotive supplier. In the past ten years alone, sales increased from EUR 1.9 billion to EUR 5.1 billion, and the number of employees worldwide grew from 21,000 to 48,000. The product portfolio has been greatly expanded and now includes five product lines and six profit centers.

This structure and product variety could not be portrayed adequately in the old MAHLE “Piston Museum”, which was located in part of a building on the grounds of the MAHLE Headquarters. When the Piston Museum had to make room for the new computing center about two years ago, the decision was made to construct a completely new building for the purpose of a corporate exhibition. With representatives from the Corporate Management Committee, the Supervisory Board, the press, and the MAHLE Foundation, the new corporate exhibition will be officially dedicated on September 17 amid festivities. For the employees of the Stuttgart location, an open house was held on September 13, giving the opportunity to tour the new corporate exhibition MAHLE INSIDE.

On the ground floor of the new MAHLE INSIDE building, visitors are presented with an overview of the Group's locations, the MAHLE Foundation, and the ownership structure. A 15-meter high wall, extending from the ground floor to the roof, is dedicated to the employees. A photo display with about 400 pictures sets an impressive scene of the people of MAHLE.

The staircase invites you to take a trip through time and moves stage by stage through the nearly 90 years of MAHLE history—from a small workshop

to a global corporation. The first floor holds functional representations of various engine technologies as well as modules and complete systems from the MAHLE product lines. On the second floor, the individual components of the complete systems are on display. This is where the entire range of products of the MAHLE Group is showcased. Selected historical products can also be seen. On the third and top floor, the allure of motorsport comes alive. After all, motorsport and MAHLE have been closely connected for decades.

MAHLE INSIDE is primarily open to MAHLE employees, customers, and those interested in technology. It is not a public museum with fixed opening times, but can be toured by external groups upon request.

5. Preview of the IAA 2008

MAHLE presents a whole range of product innovations at this year's IAA in Hanover:

- MonoXcomp[®] pistons—New steel pistons for commercial vehicle engines for reducing thermal load
- Scraper ring made from sheet metal for reliable removal of any oil carbon deposits on the piston
- High performance thanks to piston pins with PVD coating
- Composite camshaft for a weight saving of up to 50 percent as well as for integrating additional functions such as camshaft oil separation or balance shafts
- New valve alloys with a reduced nickel content for a cost saving of more than 30 percent in some cases
- Innovative EGR management with charge air valve to reduce the raw emissions of diesel engines
- Electrically driven cone stack separator to separate oil from crankcase ventilation blow-by gas
- BlueDrain system – Environmentally friendly, automatic low-maintenance water disposal system for diesel fuel filters

MonoXcomp® pistons—New steel pistons for commercial vehicle engines for reducing thermal load

Bolted pistons have been the state of the art for large engines since the '60s. MAHLE is now using its decades of experience and has developed a steel piston for engines in commercial vehicles with this reliable bolting technology.

In coming years, the requirements for commercial vehicles and their components, such as pistons, will increase further, especially with regard to thermal load. That is why in 2005, MAHLE began the development of a new generation of pistons consisting of a crown and piston skirt bolted together. MAHLE engineers are looking back on 45 years of experience with this mature joining technology for large engines. The new MonoXcomp® pistons meet the highest requirements for peak cylinder pressure, temperature resistance, and oil consumption.

Since the compression height of pistons for commercial vehicles is significantly lower than those of large engines, the MonoXcomp® piston concept distributes the required elastic elongation between all the components. At the same time the number of components is reduced to three.

Stretch bolt and a screw thread are integrally formed on the piston crown. The thrust sleeve has the nut thread and an elastically deformable part with a contact zone to the piston skirt. The piston skirt has an integrally formed stretch collar, and can deform in its interior like a disc spring.

A specifically set elasticity within the bolt joint of the MonoXcomp® piston ensures that there is always sufficient bolt force, and that the contact surfaces are always closed, even at high speeds. This prevents wear at the contact surfaces.

The multi-piece design allows an inner and large outer cooling gallery to be formed, which has a positive effect on the cooling of the entire piston crown and especially the bowl rim, which is subject to high loads. The wall thicknesses can also be more precisely specified, especially between the cooling channels and the combustion chamber. Hence, the maximum piston temperature and the piston mass are subject to lower variations.

The different materials for the piston crown, piston skirt, and thrust sleeve allow the material potentials to be utilized optimally.

The MonoXcomp[®] piston has recently passed through internal release stages. For example, bowl rim temperatures were measured on MonoXcomp[®] pistons that were 50 to 70 degrees Celsius lower than for typical pistons—under the same boundary conditions. Many customers have already recognized this potential. For some customer projects, the series production development has already begun.

Innovative EGR management with charge air valve to reduce the raw emissions of diesel engines

With optimal exhaust gas recirculation, the raw emissions of diesel engines can be significantly and sustainably reduced. An innovative, fast-switching charge air valve specifically affects the pressure ratios in the charge air line.

The exhaust gas standard EU VI and the US 2010 emissions limits for diesel engines in commercial vehicles are targeting a future decrease in nitrogen oxide and particle emissions of more than 97 percent. These limits can be met only by achieving low raw emissions, due to the limited conversion rates of modern exhaust gas treatment systems.

Externally cooled exhaust gas recirculation is extremely efficient for engine-internal reduction of nitrogen oxide (NO_x) emissions. However, small pressure differentials between the exhaust and intake sides, as well as

pressure drops in the exhaust gas recirculation, prevent high EGR rates. MAHLE has therefore developed a technology that allows high EGR rates with optimal reliability and, at the same time, low fuel consumption.

Innovative charge air valve

The charge air valve consists of a continually rotating flap in the charge air line, above the inlet location for the exhaust gas recirculation. The flap is driven by an electric motor. Because the recirculating exhaust flow does not impinge on it, there is no relevant risk of contamination.

Closing the valve briefly causes a temporary loss of pressure in the charge air line. This increases the pressure differential between the exhaust gas and charge air line, and a significantly greater mass flow of exhaust gas can be mixed into the charge air.

The flap is freely controllable, and can thus be opened or closed as a function of the speed or the intake valve control times. In this manner, the innovative MAHLE charge air valve increases the EGR rate, and thus reduces both specific nitrogen oxide emissions and fuel consumption. Depending on the design of the turbocharger system, the charge exchange work and the peak cylinder pressure are reduced.

According to successful tests in various commercial vehicle engines, MAHLE has begun series production development of the innovative charge air valve. Meanwhile, MAHLE is developing a charge air valve that controls two air flaps with just one electric motor. The vehicle and engine manufacturers will thereby have a product that is optimized for cost and package constraint, to fulfill current and future emissions standards.

BlueDrain system – environmentally friendly, automatic low-maintenance water disposal system for diesel fuel filters

Modern injection systems for diesel engines require more and more effective wear protection. In addition to highly efficient particle and water separation in the fuel filter, automatic disposal of the separated water is increasingly important. That is why MAHLE has developed the BlueDrain system for diesel fuel with a high water content, which will be available in the future as both a stand-alone system and an integrated system unit in MAHLE fuel filter modules.

Due to local influences, the water content of diesel fuel varies around the world. In some regions, the contaminant particle content in the fuel is up to fifteen times that of Western Europe, and the water content can be greater by a factor of one hundred. This is why MAHLE fuel filter modules, besides having a high particle separation rate, are equipped with a high-efficiency water separation system that effectively protects injection systems from damaging effects such as corrosion, cavitation, reduced lubricity, and microbial growth.

Filter modules with automatic water disposal do not just reliably separate out the water. They also dispose of it in the environment in a controlled manner. For typical systems, it is necessary to check the water level in the fuel filter regularly, and to dispose of the separated water manually as required; the new MAHLE BlueDrain system takes care of everything automatically. This is especially important since fuel filters are often located in hard-to-reach places; incorrect operation is thus prevented. The BlueDrain system thereby simplifies vehicle maintenance significantly, and saves frequent manual water disposal for commercial vehicles, or a visit to the service station for passenger cars.

Since the content of hydrocarbons of the water to be disposed must generally be <2 ppm, it flows through the BlueDrain cleaning unit with activated carbon,

patented by MAHLE, which adsorbs hydrocarbons reliably, even for strongly emulsified fuel content. Due to the excellent adsorption capacity of activated carbon, future standards are also guaranteed to be fulfilled, and only about 150 milliliters of activated carbon, for example for a heavy duty application, are needed for the cleaning unit, which is defined as the component's service life.

An intelligent actuation and safety concept determines the current operating condition and guarantees safe systems function. Advantages of the MAHLE BlueDrain system, compared with other functional principles, are the low cost of the replaceable cleaning unit, and its suitability for both pressure and suction side applications.