

IMPULSE

MAHLE

Mobility
magazine
for the
workshop

02 // 2019
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360° SERVICE

Into the future — worry free

OUR HEART BEATS FOR THERMAL MANAGEMENT

Behr Hella Service
to become MAHLE

YOU MAKE THE WORLD BETTER

Doing good
with MAHLE

CATCHING THE DRIFT

Booming popularity of drifting worldwide





From professional to professional,

To get ahead, you need to think ahead. We've successfully developed from a traditional parts supplier into the world's largest systems solution provider for the powertrain—regardless of the drive concept. Beginning in 2020, following the full integration of Behr Hella Service, we'll also be providing a complete thermal management portfolio.

Parts, workshop equipment, diagnostics, and services—we offer comprehensive OE competence in the aftermarket from a single source. This is the fuel for the success of your workshop and the main topic in this issue of MPULSE.

And while we're on the subject of "fuel": our new TechPRO® Digital ADAS makes calibrating assistance systems much easier and reduces the whole process to three minutes. Find out how on page 32. If speed's your thing, check out our articles on drifting, the legendary Solitude race-track, and the innovative Four Motors racing team with its bioconcept cars.

Of course, this issue also contains technical tips, info on new products, and glimpses behind the scenes at MAHLE Aftermarket.

We hope you enjoy reading this issue and that it gives you fresh perspective for your work!

Olaf Henning
Corporate Executive Vice President and
General Manager MAHLE Aftermarket

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360° SERVICE

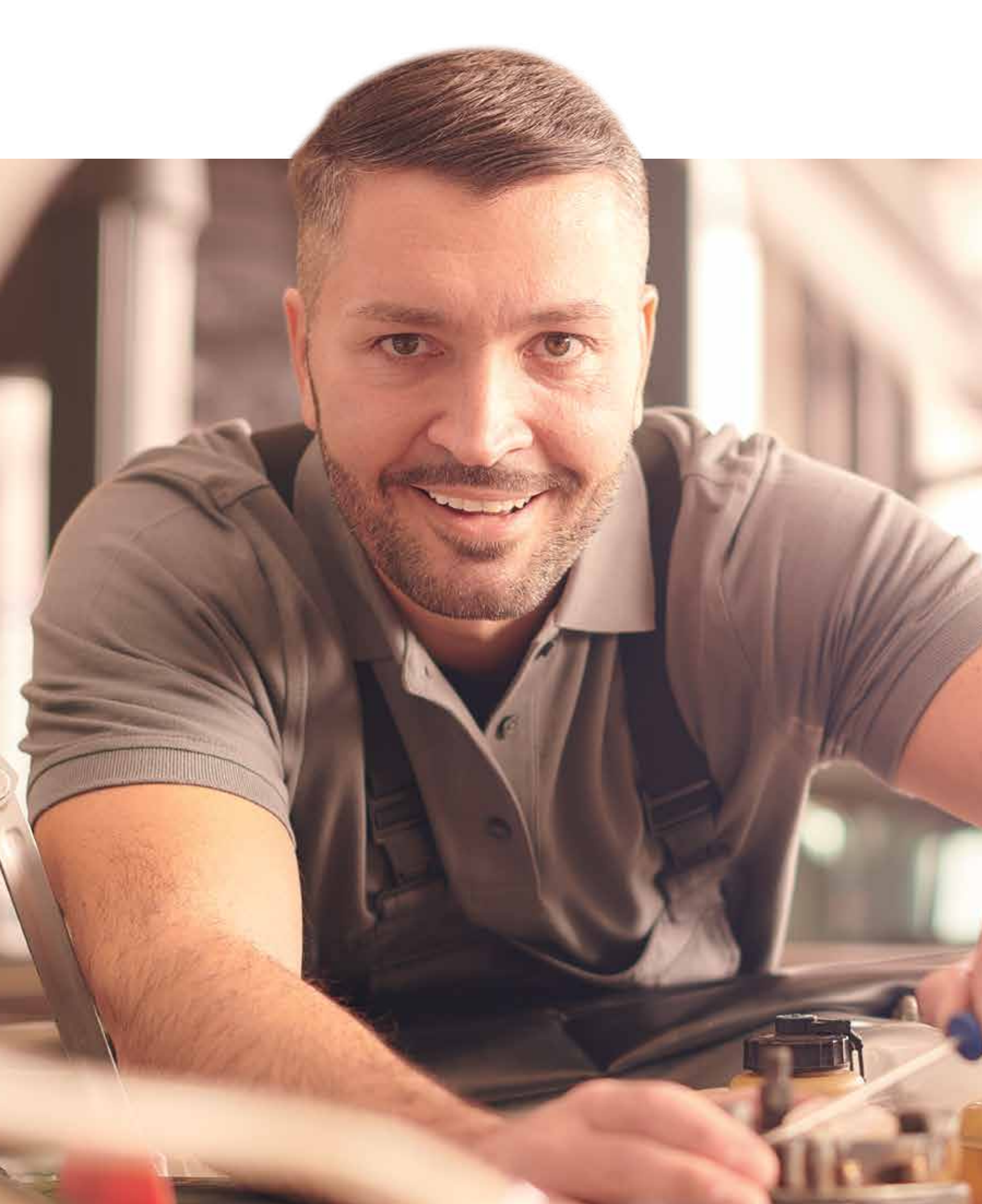
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Register now at mpulse.mahle.com, and get your
subscription delivered to your door free of charge.



360° SERVICE

In the last issue, we introduced you to our 360° product portfolio. But a successful workshop needs more than just spare parts. Technological change brings far greater challenges: automotive engineering is increasingly complex and maintenance ever more demanding. This makes systems solutions and comprehensive service even more important—for you and for your work.

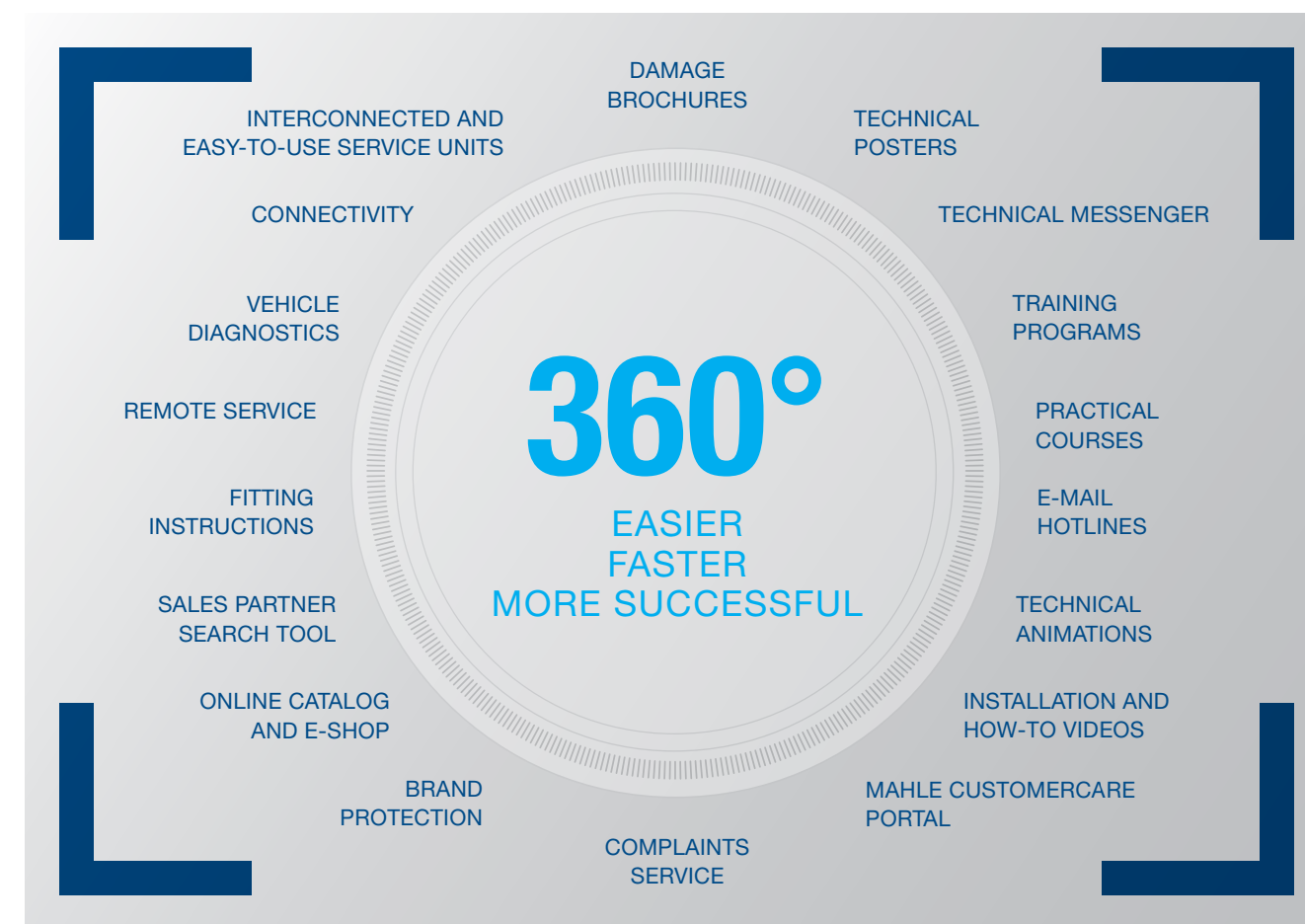


»360° SERVICE

TAILWIND FOR YOUR SUCCESS

MAHLE is no longer simply your parts supplier – MAHLE is your solutions provider. We offer you an end-to-end solution, particularly when it comes to diagnostics and workshop equipment. On the following pages, we show you how our products and services come together to form an integrated system.

We also present our 360° services, which support you right from the initial customer inquiry through the fully serviced vehicle. The result? Perfectly satisfied customers. At the same time, our services and solutions help you save time so you can work more productively and ultimately earn more money. You take care of the important things: maintenance, repairs, and servicing. We give you the best possible support and offer services that ease your workload. That's the idea behind the 360° MAHLE service.



Work more easily

Want to find spare parts quickly and order them with minimum effort? Our digital solutions make it possible. For example, every MAHLE part is marked with a QR code. After scanning the code, you're taken straight to the MAHLE online catalog. No rummaging around, and no danger of selecting the wrong part! The new MAHLE packaging also makes handling easier: striking colors, concise information, and a clear design ensure that you quickly find what you're looking for in your day-to-day work.

Work faster

With MAHLE, you save time on vehicle identification and diagnostics. Our TechPRO® diagnostics solution is ready to identify the vehicle in just seven seconds. You can combine TechPRO® with MAHLE A/C service units and the revolutionary TechPRO® Digital ADAS. With TechPRO® Digital ADAS, calibration of all driver assistance systems is completed in under three minutes. No other system on the market can do this! Read the article on page 32 to find out more.

Work more successfully

Knowledge is a real competitive advantage. MAHLE provides you with important know-how and handy technical tips. This starts with training for trainees, specialists, supervisors, and engineers as well as practical courses on damage prevention. MAHLE damage brochures describe both typical and rare cases. Every month, the Technical Messenger presents new tips and tricks to help you become more confident at cracking those technical nuts. You can also access various fitting instructions, installation videos, technical animations, and posters at any time via the Internet. From the end of 2019, the new MAHLE CustomerCare portal will also be available to offer you optimal customer service. Read the article on page 10 for more.



>>360° SERVICE

360° FIT FOR THERMAL MANAGEMENT

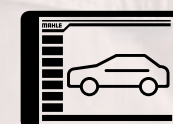
Frank runs an independent vehicle workshop in Stuttgart/Germany. He and his employees are usually left to their own devices. So, he appreciates the value of a partner that offers all-round support: Frank not only gets spare parts from MAHLE but also relies on our range of accessories, workshop equipment, and workshop services. He explains why:

"We're doing more and more in the area of air conditioning and cooling, as e-mobility is making thermal management increasingly important. MAHLE knows what we need and offers the full thermal management range: parts and accessories, equipment, and services—everything fits together and is perfectly matched. This saves us time and money."



SPARE A/C PARTS:

- > Compressors
- > Control units
- > Cabin filters
- > Cabin heat exchangers
- > Filter-driers and accumulators
- > Expansion valves and orifice tubes
- > Condensers
- > Evaporators
- > Switches
- > Actuators
- > Blower fans and control units
- > Compressor oils



WORKSHOP EQUIPMENT:

- > ACX A/C service units
- > Diagnostics with TechPRO®
- > Refrigerant analysis units
- > Refrigerant recovery unit (ROU)
- > A/C system flushing with flushing kit

360°

ALL YOU NEED
FOR A/C SERVICE



SERVICES:

- > Thermal management training
- > Workshop equipment for Remote Service
- > ACX user videos
- > Fitting instructions
- > Installation videos

Our heart beats for thermal management

Starting January 1, 2020, the complete thermal management range will be available from a single source—because Behr Hella Service is becoming MAHLE. Find out all you need to know in our leading article from page 12 onward.

YOUR NEW MAHLE SERVICE WORLD

The digital MAHLE customer portal is your key to our service world. In the last MPULSE, we announced that it would be open both to workshops and to dealerships at the end of 2019! Find out here what it can offer you. Just register and away you go!

Register here for free:
WWW.CUSTOMERCARE.MAHLE.COM.

WORKSHOPS
DEALERSHIPS

ServiceTicket.
Dealerships: Send us your questions and complaints directly.
Workshops: Send us your technical questions.

DEALERSHIPS

MarketBarometer.
Info on our product coverage, new products, vehicle populations, sales potential, and much more.

WORKSHOPS
DEALERSHIPS

E-catalog.
All spare parts with part number and technical drawings—available for download.

DEALERSHIPS

E-shop.
Everything you need. Easy to order, fast delivery.

WORKSHOPS
DEALERSHIPS

TechnicalNews.
Useful documents and handy tips.

WORKSHOPS
DEALERSHIPS

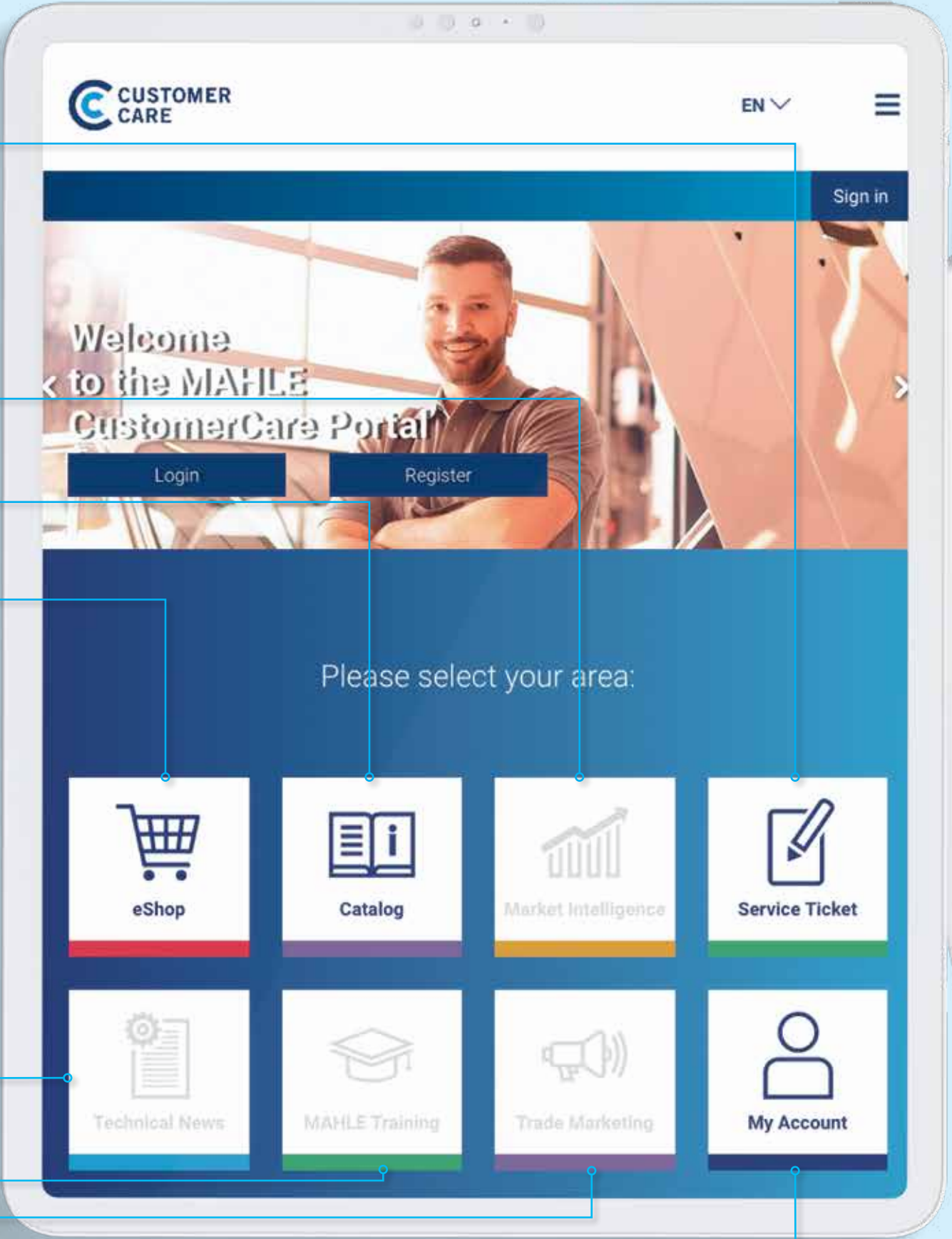
Training.
Information and booking system for technical training programs from MAHLE.

WORKSHOPS
DEALERSHIPS

Marketing.
Sales and information materials—PoS items, brochures, promotional gifts, and much more.

WORKSHOPS
DEALERSHIPS

Also for tablet or smartphone.





OUR HEART BEATS FOR THERMAL MANAGEMENT

Beginning January 1, 2020, Behr Hella Service will be called MAHLE. How will this affect you? We'll answer your questions on the following pages. First things first: you won't notice any changes until the end of 2019. Starting in 2020, you'll receive all your thermal management spare parts in the BEHR brand, plus workshop equipment and diagnostics as well as other services from a single source.





» OUR HEART BEATS FOR THERMAL MANAGEMENT

HELLO, FUTURE!

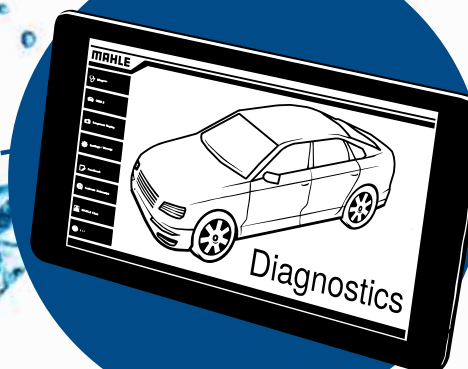
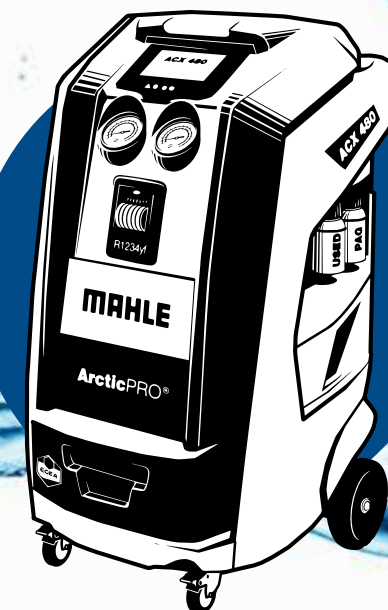
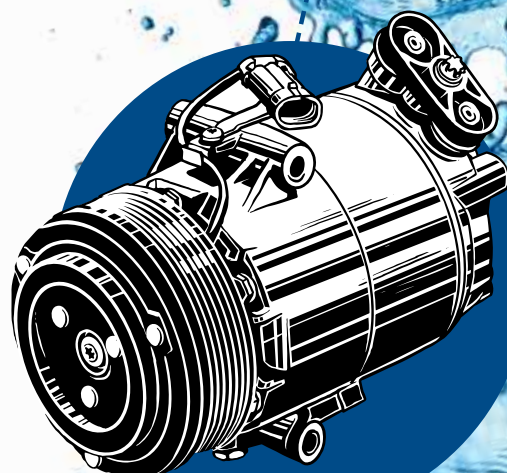
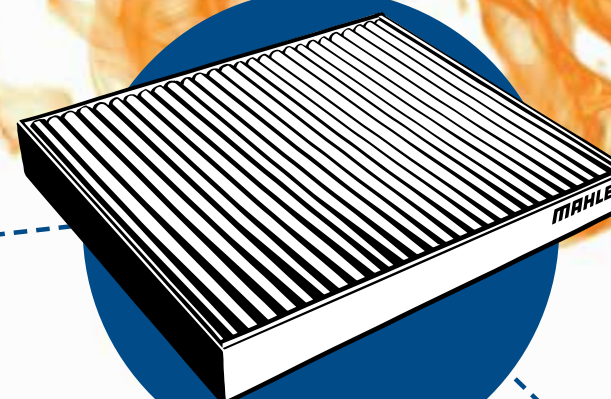
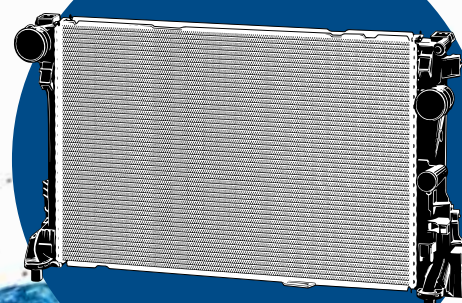
To own the future, you have to make yourself future proof. Through strong strategic partnerships, for example. After all, you can achieve so much more as part of a team.

This means that with MAHLE, you have a proven, strong partner and expert for everything relating to air conditioning and cooling. It means even better workshop quality thanks to MAHLE's know-how as an original equipment manufacturer. And it means that you can keep your cool as you look ahead, because you'll be ideally equipped for the future. After all, precise thermal management is a prerequisite for the reliable operation both of combustion engines and of electric vehicles as well as a critical factor in fuel cell technology. Sounds good? It gets even better! On the following pages, we'll explain which specific thermal management products, solutions, and services you'll find in the MAHLE Aftermarket range in 2020.

The acquisition of Behr Hella Service by MAHLE is a logical step that allows us to give distribution and workshops even better support when it comes to up-to-date and new forms of mobility. The two product ranges complement each other perfectly—and together we seamlessly cover air conditioning and cooling for all types of drives. In addition to spare parts, this includes A/C service units and diagnostic tools, technical training, and repair and maintenance information. As we all know, efficient thermal management is set to play an increasingly important role in the future—for all powertrain technologies.

THE BENEFITS FOR YOU

- **Benefit for existing Behr Hella Service customers:**
Direct access to the complete MAHLE Aftermarket range in original equipment quality.
- **Benefit for MAHLE customers:**
All thermal management products and solutions now available from a single source
- **Benefits for everyone:**
Support throughout the transition process. High level of availability. Future-proofing in thermal management. Systems know-how, not only in engine cooling & air conditioning, filtration, and workshop equipment & diagnostics, but also in engine components & turbochargers, starter motors & alternators, and e-mobility & electronics.





»OUR HEART BEATS FOR THERMAL MANAGEMENT

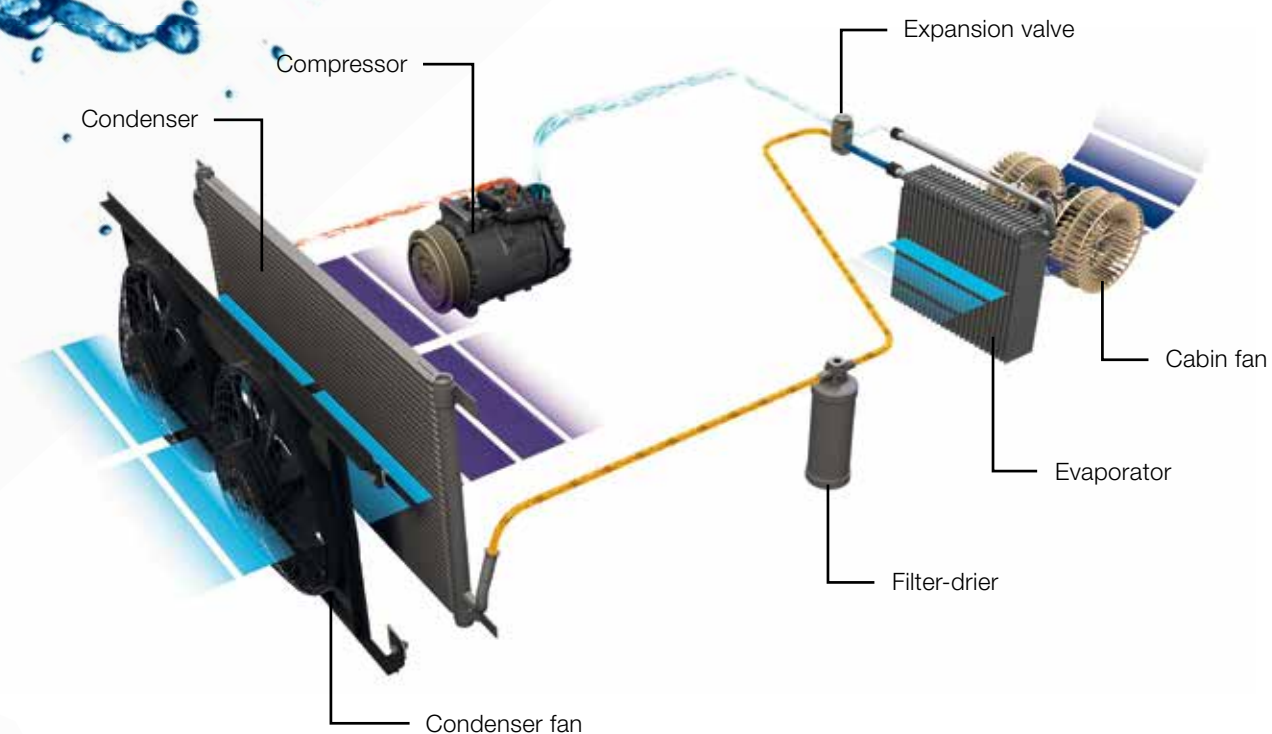
DOUBLE THE EXPERTISE

With MAHLE Aftermarket, you'll be well positioned when it comes to air conditioning and engine cooling.

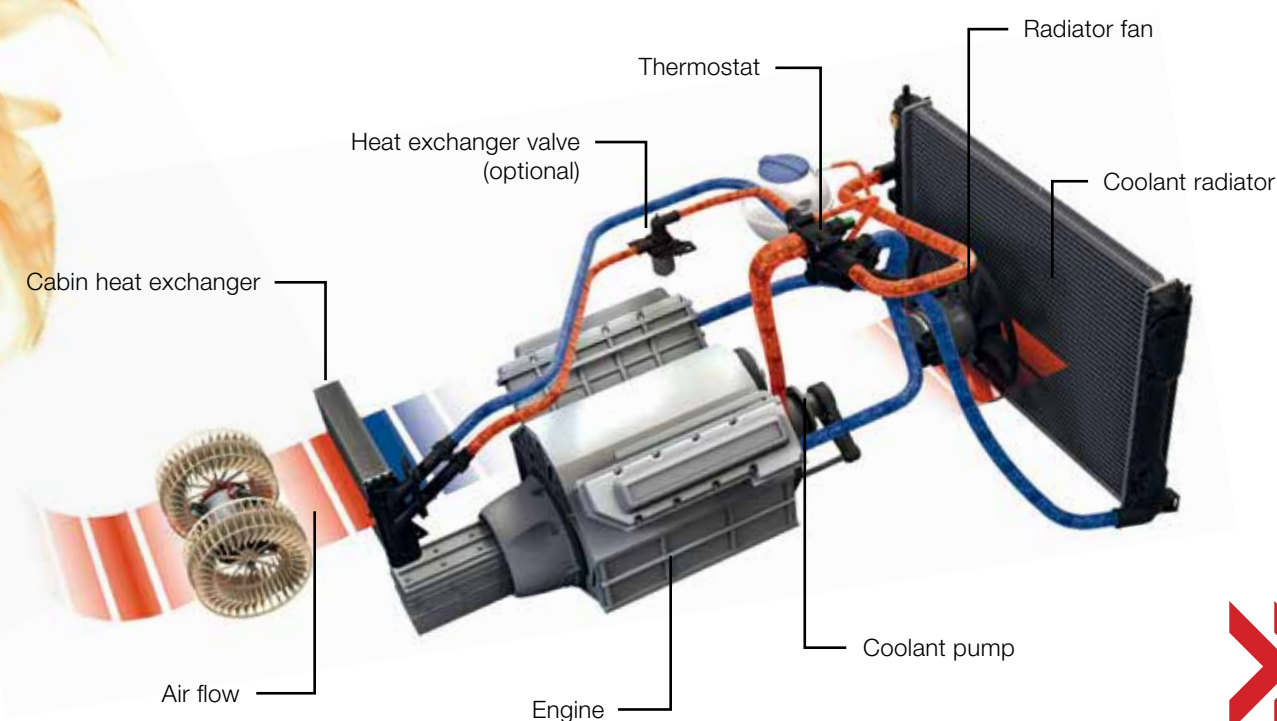
In a sensitive system such as the thermal management system, all components are exposed to heat and high pressure, and work together as an experienced team. All modules are 100% coordinated. Technological competence, power output design, fit, and material quality all play an important role. There are many reasons to opt for quality parts every time.

"EFFICIENT THERMAL MANAGEMENT WILL PLAY AN INCREASINGLY IMPORTANT ROLE IN THE FUTURE. BY TAKING OVER BEHR HELLA SERVICE, WE'LL GIVE THE BEST POSSIBLE SUPPORT IN THIS AREA TO ENSURE THE SUCCESSFUL OPERATION OF WORKSHOPS." **OLAF HENNING, CORPORATE EXECUTIVE VICE PRESIDENT AND GENERAL MANAGER MAHLE AFTERMARKET**

Refrigerant circuit with expansion valve



Engine cooling circuit





» OUR HEART BEATS FOR THERMAL MANAGEMENT

GOT QUESTIONS? GET THE ANSWERS!

SOME BEHR HELLA SERVICE CUSTOMERS HAVE BEEN ASKING US: “WHAT’S CHANGING FOR ME?” LIKEWISE, MAHLE CUSTOMERS WANT TO KNOW WHAT IMPROVEMENTS THEY’LL SEE. YOU’LL FIND ANSWERS TO THE MOST COMMON QUESTIONS ABOUT THE ACQUISITION HERE.

WHY IS THERMAL MANAGEMENT SO IMPORTANT FOR THE FUTURE OF MY WORKSHOP?

Whatever the type of drive, thermal management is a key technology. It makes combustion engines even more efficient. In the case of electric vehicles, economical use of hot and cold currents is the basis for a vehicle’s performance and cruising range as well as the service life of the battery. This makes integrated thermal management one of the prerequisites for the ongoing development of e-mobility. Following the acquisition of Behr Hella Service, MAHLE Aftermarket will become a full-line supplier in thermal management and can therefore provide you with comprehensive support.

WHAT WILL HAPPEN TO THE NAME BEHR HELLA SERVICE?

Starting in 2020, the name Behr Hella Service will be discontinued.

UNDER WHAT BRAND NAME WILL BEHR HELLA SERVICE PRODUCTS BE DISTRIBUTED IN THE FUTURE?

Beginning in 2020, products will be distributed within the BEHR sales brand under the MAHLE umbrella brand. The familiar Premium Line and Standard product categories will be retained. Premium Line brings together parts produced by BEHR, AKG, Visteon, and other manufacturers with OE competence—an ideal solution for customers who expect the very best. Products without the extra Premium Line branding still offer good performance and represent an economical solution with an excellent price–performance ratio.

WILL I STILL BE ABLE TO ORDER BEHR HELLA SERVICE PRODUCTS USING THE PART NUMBERS I’M USED TO?

In 2020, you’ll still be able to order those products using the old part numbers. New part numbers based on MAHLE’s numbering system will be introduced in parallel. Both numbers will be shown on MAHLE orders, bills of delivery, and invoices as well as in TecDoc. There’ll be a transition from Behr Hella Service’s part numbers to MAHLE’s numbers at some point in the future.

WHICH THERMAL MANAGEMENT PRODUCTS AND SOLUTIONS ARE SUPPLIED BY MAHLE AFTERMARKET?

Thermostats, switches, sensors, air conditioning compressors, and cabin filters. There’s also an extensive range of diagnostic tools and workshop equipment.

WHICH PRODUCTS ARE SUPPLIED BY BEHR HELLA SERVICE?

Behr Hella Service covers the areas of engine cooling and air conditioning with products such as coolant coolers, charge air coolers and other heat exchangers, expansion tanks, water pumps, oil coolers, fans, Visco® products, air conditioning condensers, filter-driers, expansion valves, orifice tubes, evaporators, air conditioning compressor oils, and air conditioning compressors—to name just some of the key components.

DOES MAHLE ALSO AIM TO OFFER HIGH AVAILABILITY LEVELS OF 95 PERCENT?

Of course. We’re committed to guaranteeing full supply capacity in thermal management too, just as we are for the other MAHLE Aftermarket product lines. In this regard, we rely on the experience and efficiency of MAHLE Aftermarket’s logistics.

WHAT WILL HAPPEN TO THE SERVICES THAT BEHR HELLA SERVICE USED TO PROVIDE, LIKE TECHNICAL SERVICES AND DYNAMIC SALES SUPPORT?

Workshops around the world receive comprehensive expertise from MAHLE Aftermarket in terms of solutions and service. This applies to the current product lines and will also be true for thermal management in the future. In addition to spare parts in proven quality and workshop equipment, we offer workshops and the parts market technical training, repair and maintenance information, a ticketing system, an annual thermal management campaign, and other promotions.



»OUR HEART BEATS FOR THERMAL MANAGEMENT

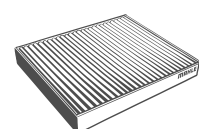
COOL! EVERYTHING FROM A SINGLE SOURCE

At a glance: our thermal management range available beginning in 2020! Not only will we offer you spare parts, but also integrated systems solutions. And you'll be able to take advantage of numerous services to further your success. These include technical training, maintenance information, operation and installation videos, as well as a ticketing system.

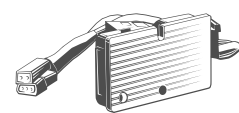
#usethebestparts



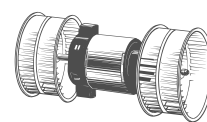
Filter-driers and accumulators



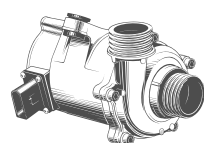
Cabin filters



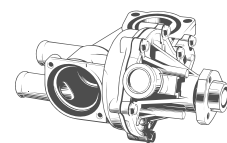
A/C blower regulators and resistors



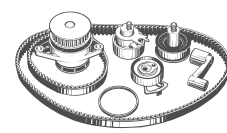
Interior blowers



E-water pumps



Water pumps



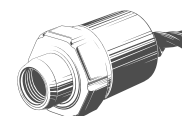
Water pump kits



Expansion valves



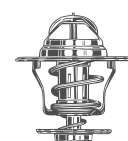
Orifice tubes



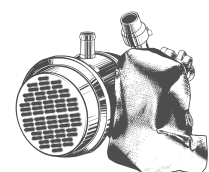
A/C switches



A/C actuators



Thermostats



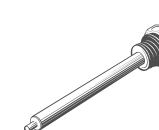
Exhaust gas recirculation coolers



Thermocouples



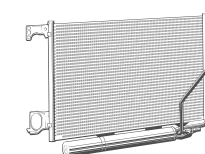
Compensating tanks



Sensors



A/C service units



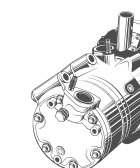
A/C condensers



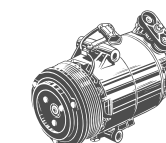
A/C hose groups



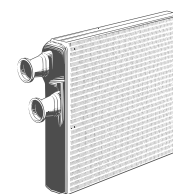
A/C compressor oils



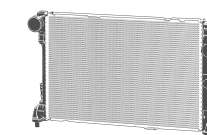
Electric air conditioning compressors



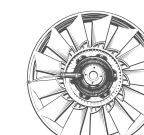
A/C compressors



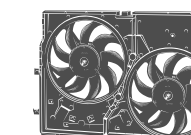
Cabin heat exchangers



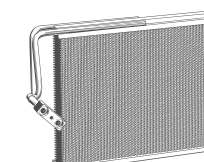
Coolant radiators



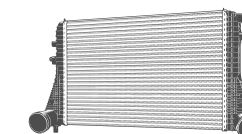
Visco® fans/fans



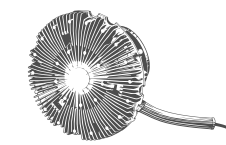
Coolant coolers/condenser fans



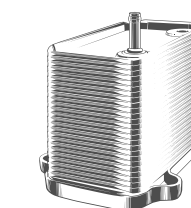
Evaporators



Charge air coolers



Visco® fan drives/fan clutches



Oil coolers



LOUIS HELPS

THE FORGOTTEN THERMOSTAT

Damage scenario: fluctuating coolant temperature Solution: check the transmissions oil thermostat

If you see unexplained temperature fluctuations in vehicles with automatic transmissions, particularly in models with direct-shift transmissions, you should always check the transmission oil thermostat!

As you know, modern coolant circuits are highly complex systems, consisting of dozens of components that are precisely coordinated with one another. This allows them to reliably ensure that the engine and transmission stay at an optimal temperature under all operating conditions.

If a customer vehicle with automatic transmission shows unexplained temperature fluctuations and the engine no longer warms up as much as it should, the cause could be a defective transmission oil thermostat.

As the thermostat regulates the transmission oil temperature via the vehicle's coolant circuit, the engine can't reach the correct operating temperature if the thermostat fails.

You should investigate further, particularly if the vehicle has a direct-shift transmission—people often forget the transmission oil thermostat when carrying out troubleshooting. As it's usually installed in a well-hidden spot directly in the hose to the transmission oil cooler, it's very easy to overlook. When installing a new one, you just need to make sure the installation direction is correct!



The thermostat is integrated in the hose to the heat exchanger (beneath the air filter housing).



Important when inserting the thermostat: note the installation direction (arrow).

LET THE AIR OUT!

When working on the coolant circuit, you should always ensure that it is correctly vented. If there are still problems with the coolant temperature, even after replacing the thermostat, the cause is usually entrapped air in the cooling system.

LOUIS RECOMMENDS

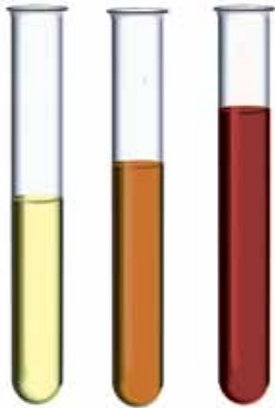
RUNNING SMOOTHLY



The perfect solution for changing transmission oil and filters

Lubricate, cool, switch: transmission oils are the heavy lifters in automatic transmissions. This makes it even more important to change the oil and filters regularly.

A growing number of vehicles are being ordered with automatic transmissions, which need to be serviced regularly. Good for you and for your workshop! While transmission oil filling used to last a lifetime, transmission oils are now exposed to much heavier thermal and mechanical loads in transmissions that are increasingly small and lightweight due to their design. Contamination of the transmission oil by abrasion particles can stop the transmission from functioning properly and prevent correct gear switching, resulting in the familiar “judder” when starting the car. For this reason, filters are built into the transmission oil circuit. Many motorists don’t even notice when their transmission performance starts to decline, as it happens very gradually. That’s why automatic transmissions have fixed oil change intervals, prescribed by each vehicle manufacturer.



Yellow: fresh transmission oil
Orange: after a conventional transmission oil change
Brown: used oil

Transmission maintenance from a single source

To make transmission oil service as simple and economical as possible, MAHLE is one of the few providers that offer both the appropriate transmission oil filter in original equipment quality* for almost all common vehicle types and the corresponding workshop equipment: The automatic transmission flushing unit** in the FluidPRO® line (ATX 150 and ATX 180) completes the oil change in five to fifteen minutes, and with the numerous adapter sets, the units are suitable for around 90% of all automatic transmissions on the market.

After flushing, the transmission works like new

FluidPRO® ATX from MAHLE also makes the oil change dynamic, as 100% of the used oil is extracted from the transmission while new transmission oil is

pumped in. In contrast, in a conventional static oil change, only 30% to 50% of the used transmission oil is discharged. The remaining oil is left behind in the pipes, the oil cooler, and all the nooks and crannies of the transmission.

Your customers will notice the fully replaced fresh transmission oil as soon as they set off: the car accelerates without juddering, just like a new one. And there are other positive effects: fuel consumption is reduced, expensive transmission repairs are avoided, and the service life of the transmission is significantly increased!



Filters for almost all common vehicle types*.



The professionals’ flushing system: FluidPRO® ATX 150, the low-cost, entry-level model.

WELL-OILED INTO THE FUTURE

In the transmissions of electric vehicles too, the transmission oil ensures that the high torques of the electric motor are transmitted to its wheels. These transmissions have to be able to convert electric motor speeds of up to 18,000 revolutions per minute. Reliable lubrication is the key. The transmission oil must also muffle sound, because electric cars need to produce minimal noise. To ensure that all this is done reliably in the long term, regular transmission oil flushes and filter changes are also required for electric cars.

* Available in the MAHLE and KNECHT FILTER brands.

** Available in the MAHLE and BRAIN BEE brands.

You can find a video tutorial on quick and easy operation of our ATX units on MAHLE’s YouTube channel.

FOUR MOTORS

Bioconcept-Car

GREEN IS WINNING



Can motorsports really be sustainable? What may sound like a contradiction is a matter of pride for Four Motors. The racing team has been using biofuels since 2003 and is now also testing the suitability of biomaterials and re-refined lubricants for series production. This makes their Bioconcept Car the world's fastest test lab: the sustainable technologies need to withstand the tough conditions of the Nürburgring in the VLN Endurance Championship and the 24-hour race.

With its Bioconcept Car project, Four Motors aims to accelerate the development of zero-emissions automobiles. The climax of every season is the 24-hour race through the legendary "Green Hell." In view of the debate about diesel and fine particulates, the concept of sustainable transport is increasingly gaining in significance. But the conversion to e-mobility won't happen overnight.

The team's boss, Tom von Löwis, and its cofounder, "Smudo"—who, when he's not in the cockpit, is the front man of well-known German hip-hop group Die Fantastischen Vier—want to show that transport and resource conservation can be compatible. Four Motors constantly analyzes new approaches and brings together sustainable technologies into its Bioconcept Cars. Every two to three years, the team takes the latest developments into account to build a new Bioconcept Car. Since 2018, Four Motors has been on the starting grid with a Porsche 911 GT3 Cup, a Porsche Cayman GT4 Clubsport, and a near-series Porsche Cayman.

The GT bioracers give it some gas with sustainable high-grade fuels and re-refined high-performance oil. The two vehicles are also fitted with lightweight car body components made from plant fibers, which makes them the world's fastest test lab for the mobility of the future.

In collaboration with scientists, research institutes, and committed companies like MAHLE, Four Motors is realizing and constantly optimizing innovations.

75% LESS CO₂

Car body components made from plant fibers are the future: They're light like carbon fiber parts but have better noise reduction properties and exhibit improved splintering behavior in a crash. Their manufacture also requires much less energy, which improves their carbon footprint by 75 percent.

1954

Eberhard Mahle

SOLITUDE REVIVAL 2019



PASSION AND LEGENDS

Twenty-six turns to the left, 19 to the right, an elevation change of 130 meters, and a total length of 11.4 kilometers. Anyone who survives the Solitude racetrack near Stuttgart/Germany automatically earns the respect of their rivals. It's no wonder that top racing drivers have been drawn to the magic of Solitude since the 1920s.

Two of these heroes on wheels are particularly close to our hearts: Ernst and Eberhard Mahle. Both experienced triumph at Solitude—Ernst Mahle in a Wanderer in 1923, and his son Eberhard in a Hartmann DKW in 1959.

The last official winner took to the podium on July 18, 1965. After that, the risky course fell quiet. But the passion lives on. Since 2008, the thunder of engines around the winding track has returned every two years in the Solitude Revival. And it'll take place again in July 2019. On the starting grid with their owners: two- and four-wheeled legends from over 100 years of motorsports and automotive history. And among them will be Eberhard Mahle and his Porsche—60 years after his triumph at Solitude—proud to be back at the age of 86.



RACING AT SOLITUDE INTERNATIONAL CLASSIC MOTORSPORTS FESTIVAL

Solitude is the name of a former race-track to the west of Stuttgart. It hosted various motorcycle and automobile competitions between 1903 and 1965. The 1964 race is one of the most legendary events in motorsports history. High-caliber heroes like Jim Clark, Jack Brabham, Graham Hill, Mike Hailwood, and Giacomo Agostini flocked here. The Solitude Revival has taken place every two years since 2008. More info at solituderevival.com.



MAHLE CLASSIC LINE: keeping 100-year-old classic cars on the road. This is where you'll find spare parts for modern classics and vintage cars, manufactured to original specifications. Your direct contact: classicline@mahle.com.

We were live on the ground at Solitude Revival 2019! You can find the video on MAHLE's YouTube channel.

DRIFTING

CATCHING THE DRIFT



Drifting is booming! Roaring engines with 500 hp, smoking tires, a fantastic atmosphere, and the smell of gasoline and rubber in the air—it's hard to beat. We were on the Moscow Raceway at the start of the Russian Drift Series and managed to grab a few words with our driver George Chivchyan (Gocha).

In drifting, it's all about sharp curves, skill, and strong nerves. Drifting tracks are often only a couple of hundred meters long—they're frequently the winding sections of large racetracks.

Handling the curves is the key to success

A panel of judges assesses speed, drifting angle, the choice of racing line, and overall style, then awards points. The maximum number of points that can be achieved is 100. In the final run, known as the drift battle, the two competitors with the most points go head to head. The opponents often shoot along the track just a small distance from each

other. For spectators and drivers, the drift battle is the highlight of every drift event.

Gocha is one of the most successful drivers in the Russian drifting series

In the past year, Gocha won the FIA Intercontinental Drifting Cup 2018 in Japan and the RDS GP 2018 in Moscow. And he was once again victorious at the start of the current season in Moscow. It's no surprise: his 500 hp Nissan Silvia is fitted with MAHLE pistons and filters.

COME WITH US TO LA

In October 2019, we'll be visiting Vaughn Gittin Jr. at the season finale of Formula Drift USA in Los Angeles. To keep up with the action, follow us on MAHLE's YouTube channel and on Instagram.

In the vlog on MAHLE's YouTube channel, we present the most exciting scenes from Moscow, and Gocha explains how he got into drifting and why MAHLE is an important partner for him. And there's more at mpulse.mahle.com under SWEAT & GASOLINE.

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@gocha_chivchyan
@forvardavto
@mahlempulse

zaRRubin

LIFE INSURANCE FOR YOUR TRUCK

WHEN DIESEL SWEATS

Water in diesel is a constant threat to the affected vehicle components. It causes metal parts to rust and reduces the lubricity of the fuel, which can make the fuel pump jam. With the new CleanLine spin-on oil filter, MAHLE offers optimal protection for commercial vehicles with diesel engines.

Water and contamination need to be removed reliably from the diesel fuel. That's why we've developed MAHLE CleanLine for you and your customers: an innovative, high-performance, and easy-to-change filter system for water and particle separation that achieves peak performance throughout its service life. The highlight is the two-stage variant for regions with inferior diesel quality. In this variant, dirt (stage 1) and water (stage 2) are removed separately, resulting in highly efficient cleaning.

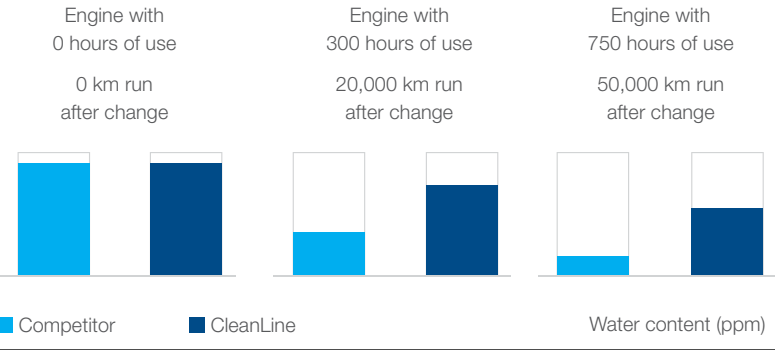
CleanLine in first place

Compared with its competitors, CleanLine has the highest water separation efficiency throughout the service life of the filter: over 93% when new, and even after 30,000 kilometers, it still separates as much as 70% of the water. Competitor products provide less than 20% separation after the same number of kilometers. The dust retention capacity of CleanLine is also significantly higher than that of conventional filters.



CleanLine separates more water from diesel fuel

The superiority of two-stage filtration over conventional systems is best seen over time.



In South America, MAHLE CleanLine was tested in the trucks and buses of more than 200 companies. The employees were impressed by the easy and fast filter replacement and by the variety of applications for which the filters can be used. In 2020, MAHLE CleanLine will be available throughout the world—including in your country. Your direct contact: felix.maier@mahle.com.

CLEANLINE AT A GLANCE

- › CleanLine is available with single- or two-stage separation. The single-stage variant filters particles and water in one step. The more powerful, two-stage variant filters in two separate steps: first the particles, and then the water, via a water-repellent, synthetic fabric.
- › With CleanLine, you can change the filter in an instant: the existing bowl (water storage tank) can be easily unscrewed when changing the filter.
- › CleanLine is made entirely from plastic, which makes it lighter than comparable filters on the market, and it can be disposed of in an environmentally friendly manner.
- › CleanLine is compatible with the current filter heads made by vehicle manufacturers.

ADAS: CALIBRATION IN UNDER 3 MINUTES

TIME IS MONEY

In the last issue of MPULSE, we introduced the new TechPRO® Digital ADAS. This time, we're going to show you how incredibly quick it is to set up and work with this system. On your mark, get set, go!

TechPRO® Digital ADAS makes short work of the time-consuming process of positioning vehicles and making complicated adjustments to calibration panels. Calibration is completed in under 3 minutes using our digital solution. This means that, compared with conventional systems, you save more than 80 percent of your valuable time—per vehicle!

TechPRO® covers almost 90 percent of all vehicles in Europe. The system communicates with all the modules fitted in the vehicle and responds to over 54,000 detailed OEM error code descriptions.

Available in the MAHLE and BRAIN BEE brands



1 > Boot up the TechPRO® system (takes 7 seconds), select the model, and follow the instructions to position the vehicle.

2 > Fix wheel clamps to the front wheels. These are important for the subsequent laser measurement step.

3 > Roll the digital calibration panel in front of the vehicle.

4 > Use the two laser measuring tools to set the required values. These are essential for adjusting the digital target image.

5 > Align the height of the digital calibration panel using the remote control.

6 > Start calibrating!
The digital calibration panel adjusts the target to the position of the vehicle and performs the calibration in a fully automated process. And you're done!

> The entire procedure takes under 3 minutes!

A video says more than 1,000 words! Visit MAHLE's YouTube channel and check out the unbelievable speed and simplicity of TechPRO® Digital ADAS for yourself.

DOING GOOD WORK WITH MAHLE

YOU MAKE THE WORLD BETTER

When you work with MAHLE parts, you're also contributing toward a better world. That's because, as a MAHLE customer, you're automatically supporting the MAHLE FOUNDATION, which finances and assists worthwhile projects. Thank you very much!

Our founders, Hermann and Dr. Ernst MAHLE, were always aware that commercial success and social responsibility are inextricably linked. In 1964, the MAHLE brothers invested their personal assets and shares in the MAHLE legal entities in a foundation. Since then, the distribution of profits from the company to the MAHLE FOUNDATION has ensured its long-term impact in the fields of education and training, health care and nursing, arts and culture, as well as agriculture and nutrition. Appreciation of and a sense of responsibility toward people, the environment, and nature—these guiding principles of anthroposophic thought and behavior are the basis of the work of the MAHLE FOUNDATION.

HAPPY BIRTHDAY

The MAHLE FOUNDATION is turning 55. MPULSE sends its congratulations and encouragement to keep up the good work!

Helping others to help themselves

"We support people, not projects," explains Jürgen Schweiß-Ertl, managing partner of the MAHLE FOUNDATION. In practice, the MAHLE FOUNDATION supports forward-looking initiatives with the aim of opening up opportunities that enable people to lead a better life. In its "education" support area, for example, the Foundation focuses on sustainability. The goal is to help others to help themselves. That's because the MAHLE FOUNDATION sees itself less as a source of funding and more as a source of inspiration. It mainly provides start-up finance but also supports certain projects over a longer period. One of these core projects has been—and remains—the construction and ongoing sponsorship of the Filderklinik near Stuttgart/Germany. Sustainable seed breeding is another area that the MAHLE FOUNDATION has supported since it was first established.

Because the MAHLE Group operates around the world, the MAHLE FOUNDATION is involved at international locations, such as Poland, Japan, Africa, and Brazil. For example, it provides funding to the Pediatric Oncology department of São Paulo's University Hospital and to emergency response organizations operating in disaster zones.

160

The MAHLE FOUNDATION funds 160 projects and initiatives every year. Want to check out all the good work you're doing as a MAHLE customer? Visit mahle-stiftung.de/en

NEW ON THE MARKET

We’ve made more additions to our 360° range for workshops. Here is a small selection of our new products. More new products and info can be found at mpulse.mahle.com (“New on the market” section).

#usethebestparts

» CLASSIC LINE PISTONS

Vehicle type:
Passenger cars
Engine:
M121.921, M121.928, M121.920
Manufacturer:
Mercedes Benz
Vehicle models:
190 SL, 190B
Characteristic features:
Returning to the range
Part no.:
001 63 02, 001 63 03, 001 63 04
(2nd to 4th oversizes)



MAHLE®

» RING SET

Vehicle type:
Passenger cars
Engine:
N47 D20 A/B/C/D
Manufacturer:
BMW
Vehicle models:
116, 118, 120, 123, 318, 225, X1, X5, 420, 520D
Part no.:
081RS001090N0



MAHLE®

» CLASSIC LINE PISTONS

Vehicle type:
Passenger cars
Engine:
M30B30
Manufacturer:
BMW
Vehicle models:
3.0 CS, 3.0 CSI
Characteristic features:
Returning to the range
Part no.:
081 98 01, 081 98 02, 081 98 03
(1st to 3rd oversizes)



MAHLE®

» UREA FILTER

Vehicle type:
Commercial vehicles
Manufacturer:
DAF, VOLVO Trucks, Renault Trucks, IVECO, and many more
Vehicle models:
NEW XF (XF 106), FM II/FMX II (NEW FM/FMX 2013-), FH II (NEW FH 2013), Stralis
Part no.:
UX 11 KIT



MAHLE®

» STARTER MOTOR

Vehicle type:
NRMM (non-road mobile machinery)
Engine:
D924 four-cylinder in-line 154hp (115 kW)
Manufacturer:
LIEBHERR
Vehicle models:
Wheeled Excavator, A918 Litronic Compact
Characteristic features:
24 V 5.5 kW
Part no.:
MS 882



MAHLE®

» THERMOSTAT

Vehicle type:
Passenger cars
Engine:
OM639.939
Manufacturer:
Mitsubishi, Smart
Vehicle models:
Colt, Forfour 1.5 CDI
Part no.:
TH 45 87



BEHR® MAHLE®

» TURBOCHARGER

Vehicle type:
Commercial vehicles
Engine:
DC 11.09
Manufacturer:
Scania
Vehicle models:
4-series
Part no.:
061TC17395000



MAHLE®

» AIR FILTER

Vehicle type:
Passenger cars
Engine:
S63 B44 B
Manufacturer:
BMW
Vehicle models:
5, M5
Characteristic features:
Right-hand drive
Part no.:
LX 3727/1



MAHLE®

» MAIN BEARING SET

Vehicle type:
Passenger cars
Engine:
N42B20, N43B20, N46B20
Manufacturer:
BMW
Vehicle models:
116i, 118i, 120i, 316i, 318i, 320i, 520i, X3 2.0i, Z4 2.0i
Part no.:
081 HS 21720 000



MAHLE®

» TRANSMISSION OIL FILTER

Vehicle type:
Passenger cars
Transmission:
8HP45Z, 8HP50Z, 8HP70Z, 8HP75Z
Manufacturer:
BMW
Vehicle models:
1, 2, 3, 4, 5, 6, 7, X1, X3, X4, X5, X6, Z4
Characteristic features:
Oil pan with integrated transmission oil filter
Part no.:
HX 184 KIT



MAHLE®

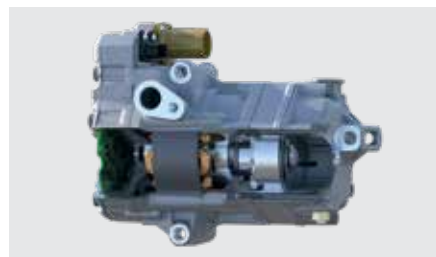
AFTERBURNER

Latest reports, hot topics, and electrifying news.



Our diesel particle counter—your advantage

At present, diesel particulate filters cannot be verified correctly at the periodic technical inspection (TÜV/ASU), as the available equipment does not offer the required measurement accuracy. This will change in 2020/21, with the Netherlands, Belgium, and Germany becoming the first European countries to introduce a new law prescribing a special device for the periodic technical inspection: the particle counter. MAHLE will soon bring a particle counter onto the market that will help you comply fully with the future regulations. More on this in the next issue of MPULSE.



The key to thermal management of batteries

The battery is one of the most important components in an electric vehicle. Correct temperature control is the only way to achieve a long cruising range and service life. The new e-compressor from MAHLE is therefore becoming a key component in the air conditioning and refrigerant circuit of electric vehicles. Optimal thermal management is crucial if e-mobility is to be integrated into our everyday lives. More on this in the MAHLE Annual Report 2018.



MAHLE powers up an airport

A chargeBIG charging system with 110 charging points was successfully installed at Stuttgart Airport in Germany. ChargeBIG is a start-up from MAHLE whose objective is to facilitate the development of an extensive charging infrastructure. The chargeBIG charging concept for AC destination charging, with charging outputs up to 7.2 kilowatts, comprises an intelligent central control unit that is capable of controlling as many as 36 charging points. The parking lot itself is equipped with wall brackets or columns that have fixed cables and connector plugs. More at chargebig.com.



Cruising range of 1,000 kilometers—CO₂ neutral

Achieving long cruising ranges is one of the key issues surrounding e-mobility. The fuel cell is setting new standards in this area. The Nikola Two fuel cell truck covers up to 1,000 kilometers on one tankful and accelerates twice as fast as a diesel truck. Nikola Motor Company is an American start-up and a pioneer in the field of electric high-performance applications in the transport sector. MAHLE is involved in the development of the Nikola Two truck as the supplier of the cooling and air conditioning system.

“Tool Time” for 360° tips all around the engine: In a seven-part series, the engine professional Uwe Rosenau tells you what to look out for during repairs. You can find all episodes on MAHLE's YouTube channel or at mpulse.mahle.com.

MPULSE ONLINE:
MPULSE.MAHLE.COM

Our new center for workshop equipment

With the construction of the new Service Solutions center in Parma/Italy, MAHLE is ideally positioned in the area of workshop equipment. In 2020, equipment for the maintenance of air conditioning systems and transmissions as well as diagnostic tools and equipment for the calibration of driver assistance systems will be developed and produced at the location across an area of around 15,000 square meters.



MAHLE is at the forefront of wireless charging

With MAHLE Wireless Charging, we are currently developing a wireless charging system that makes charging more convenient, faster, and easier to use for short periods of time. For example, you can top up your vehicle's battery while you're doing something else without the need for connector plugs—in the supermarket parking lot when you're shopping, in a parking garage, or in a vehicle fleet parking space. Its special feature is its intelligent inductive field, which does not require the vehicle to be positioned precisely and generates only a small amount of electromagnetic radiation. Its rocker panels are similar to the induction hobs found in many homes. This allows for bidirectional charge transfer and means that vehicle fleets can act as buffer storage in order to absorb peak loads on the network.



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**Follow our MPULSE channels*
on Instagram and win a pair of
Beats Studio³ wireless headphones!**

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- Shielded for top sound
- Audio calibration in real time
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- Listen all day
- 10 minutes' charging = 3 hours' play
- Industry-leading Bluetooth® quality
- Switch seamlessly between devices



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mahlempulsepoland

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