

IMPULSE

MAHLE

Mobility
magazine
for the
repair shop

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EVERYTHING IN THE COOL ZONE

Thermal management
as a sales driver

WE ARE MAHLE

Our commitment to your
repair shop

DAMN SEXY

Tuner JP on his first time
with MAHLE

HEROES OF THE LIFTING PLATFORM

Become the coolest repair shop on the planet
—with just one photo





Dear readers,

MAHLE is a company that is experiencing change. This is also reflected in the design of our Aftermarket magazine, which as of now has a modernised, fresh look. We have standardised the name: MAHLE Aftermarket news is now known as MPULSE. MPULSE has appeared in an online version since autumn 2016 (mpulse.mahle.com). In the future, we'll inform you about everything that may be of interest for your repair shop, with practical tips, helpful info, and exciting stories and campaigns relating to cars and your business. Because we are driven by you, and we go flat out for you every day.

We have developed a new cabin filter, for example, that offers fivefold protection for your family and your customers. But when we talk about air conditioning here at MAHLE, we always mean more than just the cabin. We have so much to contribute to the climate and thermal management of vehicles—both those with combustion engines and those with electric motors. These are topics that will allow your repair shops to generate new sales—more from page four onwards.

I hope you enjoy reading and browsing this issue!

Olaf Henning
General Manager of MAHLE Aftermarket GmbH
and member of the MAHLE Management Committee

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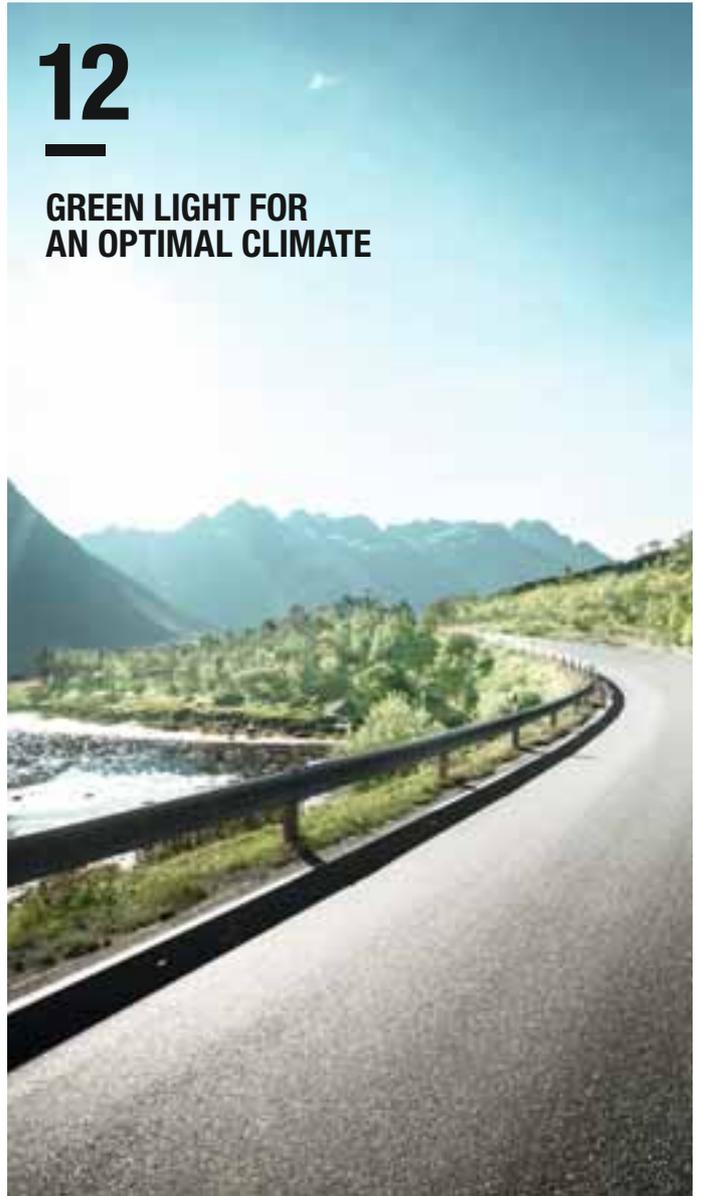
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04

**EVERYTHING IN
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**GREEN LIGHT FOR
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**MORE TURBO
FOR EVERYONE**



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DAMN SEXY



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**HEROES OF THE
LIFTING PLATFORM**

A dramatic scene of a volcanic eruption in a desert. In the foreground, there are smooth, golden sand dunes. In the background, a volcano is erupting, sending a massive, billowing plume of dark ash and bright orange-red lava into the sky. The sky is a pale, clear blue. The overall atmosphere is one of intense power and natural beauty.

EVERYTHING

IN THE COOL ZONE

Cabin air filters, thermal management, and A/C service—repair shops earn good money when it comes to cabin air conditioning and vehicle temperature control. This will remain the case in the future—no matter the type of drive. And you also have the support of a strong partner: MAHLE Aftermarket. MPULSE introduces you to key products and services, as well as a groundbreaking innovation: CareMetix®.



»EVERYTHING IN THE COOL ZONE

—
**PURE AIR,
COLD
HARD
CASH**
—



There is a cabin filter that delivers more—more for your customers and more for your sales: CareMetix® from MAHLE. The all-round cabin filter that even eliminates odours.

Filtering pollutants and neutralising odours

The new CareMetix® does both. You're driving past a freshly fertilised field or sitting in heavily congested traffic—and what can you smell? Nothing! The innovative MAHLE filter with its odour barrier is a real allrounder and made possible thanks to the in-house S5 broadband technology. The carefully coordinated combination of five specialised layers noticeably optimises the filter's effectiveness. The filter was tested in Stuttgart's Pragstraße: heavy traffic, traffic lights on a slope, an underground station, and a high pollen count from the Wilhelma Zoological & Botanical Gardens provide conditions that expose new filters to the ultimate load.

100,000 litres of fresh air every hour

Besides soot, fine particulates, allergens, bacteria, and mould spores, CareMetix® can also filter odours. This is necessary because, on average, an air volume of around 100,000 L is fed into the cabin every hour. For a commuter who is on the road for two hours every day, this amounts to around 50 million litres per year. Cabin filters keep more than 35 g of dirt out of the cabin each year, or per 15,000 km travelled. This amounts to around four heaped tablespoons of dust, soot, and dirt that doesn't make its way into your lungs. Therefore, a well-functioning filter is crucial and regular filter changes are important.

Particularly worthy of protection: children's lungs

It goes without saying that every passenger should be protected from particles. This is especially important, however, when it comes to children. Their lungs are not yet fully formed, and high concentrations of nitrogen dioxide can cause long-term damage. We are also seeing a sharp rise in allergies, which affect around 25 million people in Germany. 650,000 children suffer from allergic asthma, and around a million from hay fever. A well-functioning cabin filter is a must, especially for families with children.



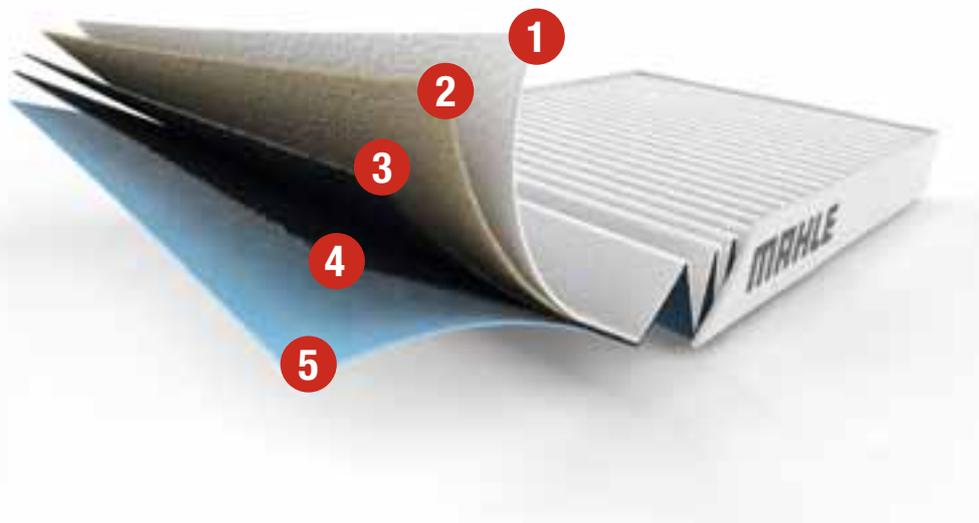
THIS CORRESPONDS TO THE CAPACITY OF **SIX ZEPPELIN NTS**
— ONE OF THE LARGEST AIRSHIP CLASSES IN ACTIVE USE (LENGTH 75 METRES, CAPACITY 8.43 MILLION LITRES).

50 MILLION LITRES

of air flows through the car every year of a commuter who spends two hours driving each day.



x6



More than just a dirt devourer: CareMetix® from MAHLE is the most innovative cabin filter around, and keeps out even overpowering odours from the cabin.

Structure of the innovative S5 broadband technology

- 1) High-performance particulate filter layer
- 2) Molecular layer
- 3) Engineered activated carbon layer
- 4) Bio-functional layer with activated carbon
- 5) Protective layer



»EVERYTHING IN THE COOL ZONE

WIN-WIN
WITH
PURE
AIR

Customers can breathe deeply

CareMetix® defends against the things that don't belong inside the car. This means your customers can finally breathe deeply again, without being bothered by unpleasant odours. The new filter also creates an atmosphere of well-being inside the car, supporting good health. This is particularly crucial for people with asthma or allergies. There's also a safety advantage: when you have to sneeze, your eyes close automatically and, at a speed of 80 km/h, you could end up driving 22 m completely blind.

Repair shops can breathe a sigh of relief

The advantages for customers are also advantages for you and your colleagues: CareMetix® is the worry-free filter that might cost a little extra but gives you much more in return. As a complete package, it caters to every requirement and its benefits can be experienced directly thanks to the added bonus of odour neutralisation. While fine particulates go unnoticed, the absence of odour is beneficial to health and well-being—unpleasant odours can impair concentration and even cause headaches. For you, this means greater customer satisfaction and higher sales.

THE CareMetix® INNOVATION: S5 BROADBAND TECHNOLOGY



1.

PROTECTION
AGAINST
POLLEN



2.

PROTECTION
AGAINST
MOULD



3.

PROTECTION
AGAINST
BACTERIA



4.

PROTECTION AGAINST
SOOT AND FINE
PARTICULATES



+

5.

ADDITIONAL BENEFIT OF
CAREMETIX®: PROTECTION
AGAINST ODOURS



THE BOTTOM LINE:
SATISFIED CUSTOMERS
AND **INCREASED SALES**

ALL ABOUT CareMetix® ONLINE

Find out more about the innovative new filters at caremetix.mahle.com



»EVERYTHING IN THE COOL ZONE

WHAT ARE THE BENEFITS OF A GOOD FILTER?

90% LESS NO₂

Interview with Dr. Denis Pöhler

Environmental expert,
Heidelberg University

With an increasing amount of traffic on the roads, the concentration of harmful NO₂ (nitrogen dioxide) is also rising. We talk to expert Dr. Denis Pöhler from the Institute of Environmental Physics at Heidelberg University about air quality in the cabin.

MAHLE: Mr Pöhler, everyone talks about the NO₂ emitted by the exhaust. But how problematic is a high NO₂ load in the cabin?

Dr. Denis Pöhler: Until now, the focus has been on measurements taken at environmental monitoring stations. Unfortunately, there are very few of these stations in cities, because taking precise measurements is laborious and expensive. In interior settings, specifically vehicle cabins, there is virtually no measurement data available. More investigations are certainly needed in this area. Nitrogen oxides enter the cabin from



NO₂

A POISON THAT SHOULD NOT BE UNDER-ESTIMATED

- ! Red-brown, toxic, odourless, corrosive, irritant gas
- ! Highest concentrations at ground level
- ! Produced during combustion (gas, coal, oil), and therefore a component of the exhaust gas emitted by motor vehicles
- ! Damages the mucosal tissue throughout the respiratory tract and irritates the eyes. Effects include shortness of breath, coughing, bronchitis, pulmonary oedema, reduced pulmonary function, cardiovascular diseases, higher mortality rate
- ! Harmful to health at concentrations of 10 to 40 µg/m³ and higher if inhaled over long periods of time



“A high-quality filter is indispensable for children’s health.”

the surrounding air and are just as harmful to health inside the vehicle as they are on the street. The nitrogen concentrations in the cabin are particularly high as a result of emissions from the exhaust of the vehicle in front. They are even considerably higher than the levels detected, for example, at a roadside measuring station. High loads can therefore be hazardous to health. Standard cabin filters, i.e. pollen filters, are not able to filter out these substances.

MAHLE: How does a high NO₂ load affect health?

Dr. Denis Pöhler: So far, studies have mainly indicated negative long-term effects such as asthma, allergies, impaired pulmonary function, and even cardiovascular diseases. Over the long term, a high NO₂ concentration can lead to premature death. Children are particularly affected, as their lungs are not yet fully formed.

MAHLE: How can motorists protect themselves? Does venting help, or does NO₂ dissipate quickly enough in the car anyway?

Dr. Denis Pöhler: Yes and no. NO₂ is broken down slowly in the cabin. Ventilation and venting brings in new NO₂. Not venting is also not recommended, however, because this causes the CO₂ (carbon dioxide) level to rise and impairs the driver’s concentration. Nonetheless, it is possible to switch to recirculated air operation for a short time in situations with very high loads. The ventilation system can also be retrofitted with a good, pollutant-reducing cabin filter. This is strongly recommended in city centres and large metropolitan areas, where the large volume of traffic results in high emissions in densely built-up areas with poor air circulation. However, very high concentrations can also be found on motorways, federal roads, and

particularly in tunnels—often significantly exceeding those in city centres.

MAHLE: How important is it to use a suitable cabin filter?

Dr. Denis Pöhler: Very important. This is the most effective method of reducing the NO₂ load in the vehicle. These filters generally cost just a few euros more than conventional filters. But the results are worth it. High-quality filters are able to reduce the NO₂ load by more than 90%. With inexpensive activated carbon canisters, we have measured reductions of just 10% in some cases.

MAHLE: Dr. Pöhler, thank you for the interview.



»EVERYTHING IN THE COOL ZONE

GREEN LIGHT AN OPTIMAL



**From September 2017:
sales launch of the new
MAHLE Original air con-
ditioning compressors**

In the future, MAHLE Aftermarket will offer a comprehensive portfolio of air conditioning compressors under the MAHLE Original brand. This is underpinned by the expertise and experience of the technology partner for all vehicle manufacturers in the area of thermal management.

**AIR CONDITIONING COMPRESSOR:
THE HEART OF AIR CONDITIONING**

The air conditioning compressor is the core component of vehicle air conditioning and is usually driven by the vehicle engine via a V-ribbed belt. It compresses the gaseous refrigerant and forwards it to the condenser, where the compressed gas loses pressure and cools down. Proper compressor functioning guarantees an optimal temperature in the cabin.

VALUABLE ASSISTANCE & ONLINE ADVICE

The installation video is available on MAHLE's YouTube channel. An overview of the complete initial range and installation instructions can be found at mahle-aftermarket.com

FOR CLIMATE

VITALLY IMPORTANT: MAINTAINING THE AIR CONDITIONING CIRCUIT

The air conditioning compressor is designed to be a “lifetime component”. However, insufficient or incorrect maintenance of the air conditioning circuit can lead to compressor damage. Penetrating moisture or a lack of oil can then damage the air conditioning compressor. This not only causes disturbing noises, but also reduces the cooling capacity and can even cause the HVAC system to break down completely, requiring the air conditioning compressor to be replaced.



WHAT YOU SHOULD KNOW

- › The initial range already covers all major applications for your market—around 70 million passenger cars and vans, as well as premium commercial vehicles in Europe, the Middle East, and Africa.
- › MAHLE Original has two lines: IAM Standard and a Premium range for the highest performance and quality standards.
- › The new air conditioning compressors are available from your usual distributors.
- › You can now offer your customers a worry-free package as “air conditioning experts”: air conditioning compressors, A/C service, and cabin filters.



»EVERYTHING IN THE COOL ZONE

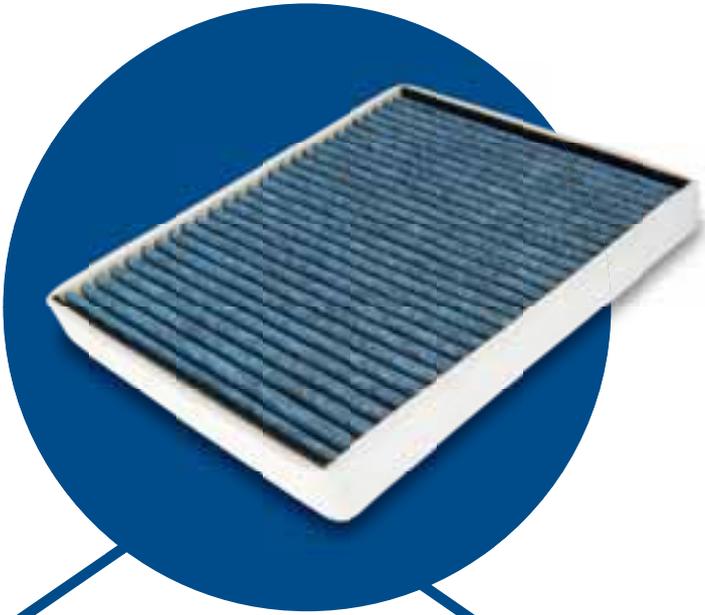
TRIPLE PROTEC TION FOR THE HVAC SYSTEM

MAHLE Aftermarket makes you the hero of the HVAC system. With the new MAHLE air conditioning compressors, you can now offer your customers an unbeatable trio. The perfect interplay between air conditioning compressor, A/C service unit, and cabin filter ensures an optimal climate throughout the vehicle's service life.



A/C compressors

Our air conditioning compressors in original equipment manufacturer quality reliably deliver performance, as long as the environment is right. To guarantee this, we also provide you with two other strong players.



Cabin filters

The high-quality cabin filters from MAHLE Aftermarket safeguard the long-term performance of the air conditioning compressor. They protect the HVAC system and heating against contamination and irreparable consequential damage.



A/C service units

MAHLE Aftermarket can offer you the right service units to reliably maintain the air conditioning circuit in line with specifications, e.g. for rinsing the refrigerant circuit. The refrigerant is the carrier for the refrigerant oil that is vital to the compressor.



USING THE HVAC SYSTEM IN WINTER? CRAZY? NO, CLEVER!

- › When the compressor is running, all parts in the air conditioning circuit are lubricated with oil. The gaskets and hoses remain flexible.
- › The HVAC system also ensures an unobstructed view. The moisture contained in the air condenses on the surface of the evaporator. This prevents fogged windows and increases road safety.
- › No need to worry about the windows icing up. The vast majority of HVAC systems switch off automatically at outside temperatures below 4 °C. This is taken care of by a temperature sensor.
- › Whether it's winter or summer, turn off the HVAC system 5 to 10 minutes before you arrive. This allows the evaporator to dry and minimises the formation of bacteria.

A HOT TOPIC:

REFRIGERANT RECOVERY

You probably know the danger: the number of cases of contamination in HVAC systems has been increasing recently because different coolants are being mixed together. The new “Recovery Only Unit” (ROU), a specialised device from MAHLE, is the simple solution for reliable refrigerant recovery.

It's Friday afternoon. You are just about to leave work. You only have to carry out a quick A/C service, and then you can head home. At least, that's what you think! What you don't realise is that the refrigerant is contaminated. The analysis unit does not allow your A/C service unit to suck away the refrigerant, and you are suddenly left with a problem. Refrigerant recovery has until now been difficult as contaminated and unknown refrigerant

from HVAC systems can be flammable or even explosive. Recently, the amount of contamination has been on the rise. This is because different substances have been in circulation since 1 January 2017. The refrigerant R134a is found in vehicles registered before this date, while the refrigerant R1234yf is used in all newly registered vehicles and vans up to 3.5 metric tons. Incorrect use can result in mixing.



BENEFITS OF THE ROU

- › Safe operation: risk-free, reliable, efficient recovery
- › Easy handling: lightweight, compact, transportable unit
- › Immediate service: no additional media required
- › Automatic: the entire process takes place automatically



Improved safety in 30 minutes

A refrigerant analysis must therefore be carried out prior to the service. The refrigerant can only be sucked away normally if it has a purity of at least 92% to 95%. If it is contaminated, this is not possible. We have developed a comfortable, fast, and—most importantly—safe solution for this situation: the “Recovery Only Unit” (ROU), a specialised device that operates without electricity and thus prevents sparking. With the ROU, you can recover gas mixtures easily and safely in around 30 minutes, with barely any residue left behind—without having to purchase additional materials or supplies. All you need is the A/C service unit and the ROU. For you, this ensures safety in the workplace; for your customers, it prevents a potential write-off.

HOW DOES THE ROU WORK?

- › First, connect the high- and low-pressure hoses from the A/C service unit to the corresponding ports on the ROU using the service fittings.
- › Next, connect the vehicle's HVAC system to the ROU's connections.
- › Start the process. The ROU sucks all the contaminated or unknown refrigerant away into an internal recovery tank.
- › The unknown refrigerant collected in the container can then be transferred into a recovery cylinder and disposed of.

SENSITIVE EQUIPMENT

Did you know that when replenishing the refrigerant, getting the exact amount is important? This is the only way to ensure the optimal functioning of the HVAC system and prevent its service life being shortened. With the ArcticPRO® ACX series A/C service units, achieving the correct filling quantity is child's play.

“Roughly” is precisely the wrong approach. One of the most important aspects of a correctly functioning HVAC system is the refrigerant filling quantity: too much is bad and too little is just as bad. As a result of downsizing, the possible deviation from the exact filling quantity is now only ± 15 grams. If the amount is outside this range, the

compressor may be damaged. Thanks to our A/C service units, you can stay on the safe side: with the ArcticPRO® ACX series, for example, the measuring tolerance of the maintenance-free refrigerant scale is just ± 5 grams. This means you can easily fill the precise quantity, and your customers can continue on their way happily.



Dangers of too much refrigerant

- › Cracking of the refrigerant lines or hoses
- › Bursting of other system components
- › Increase in systems temperature
- › Compressor oil loses lubricity



Dangers of too little refrigerant

- › Compressor overload as a result of excessive output and associated mechanical wear
- › Insufficient refrigerant oil circulation
- › Burning of the compressor oil as a result of permanently high operating temperatures

FIVE TIPS TO GET THE FILLING QUANTITY RIGHT

- › Get vehicle-specific ambient data: this will show you whether there was sufficient refrigerant in the system prior to the service.
- › Connect the A/C service unit: make sure that the hose couplings are attached tightly to the service connections and the refrigerant cannot escape unnoticed into the environment.
- › Start the suction and ensure that it always runs right to the end so that all the refrigerant is sucked away.
- › Check high and low pressure on the running system.
- › In critical environmental conditions (outside temperatures $<10^{\circ}\text{C}$ or $>50^{\circ}\text{C}$), condition the HVAC system in accordance with the vehicle manufacturer's instructions.



5
GRAMS

is the maximum deviation for a filling quantity of 300 to 500 grams in the ArcticPRO® ACX series. This is less than the weight of a 20-cent euro coin.





“

DAMN SEXY

He's one of the most successful tuners on the scene, always ready with a witty remark. We interview JP, co-presenter of the PS Profis television series about his cooperation with MAHLE and his passion for our pistons.

MAHLE: When did you first come into contact with MAHLE products?

JP: My first time with MAHLE was during my apprenticeship at Porsche. There, they only have the finest parts and components, of course.

MAHLE: Why are you so convinced by the quality of the MAHLE pistons?

JP: Even when tuning vehicles with a much higher power output than series vehicles, the MAHLE piston works significantly better than the so-called “tuning piston”. At MAHLE, the standard is extremely high. The pistons can easily produce up to 900 hp and are installed as standard in

Porsches or in the BMW M6, for example. This is what makes them so damn sexy!

MAHLE: Which tuning project has been the biggest challenge so far?

JP: The RB26 engines of the Nissan Skyline GT-R have already cost me a huge amount of money, time, and nerves! These engines are incredibly delicate and sensitive—the smallest defect can have serious negative consequences.

MAHLE: Which tuning project is still a dream for you?

JP: To rebuild a BMW E30 M3 and get it into good condition, technically speaking.

MAHLE: What does a typical working week at JP Performance look like?

JP: I'm afraid our week is packed so full that my reply would definitely be too long for this interview.

MAHLE: Can we look forward to new projects involving you and MAHLE?

JP: Certainly. The next project is almost in the starting blocks already. Perhaps the MPULSE readers have some cool ideas for our future projects with MAHLE.



JP & MAHLE

- › Jean Pierre Kraemer, better known as JP from JP Performance, is one of the most successful YouTubers on the automotive scene with more than one million followers.
- › He captivates with his relaxed nature and extensive technical knowledge and attaches particular importance to quality.
- › This explains the close cooperation between JP and MAHLE.
- › JP uses MAHLE pistons for his projects, such as in the Golf VII, Nissan Skyline GT-R, and Audi A4 B5.

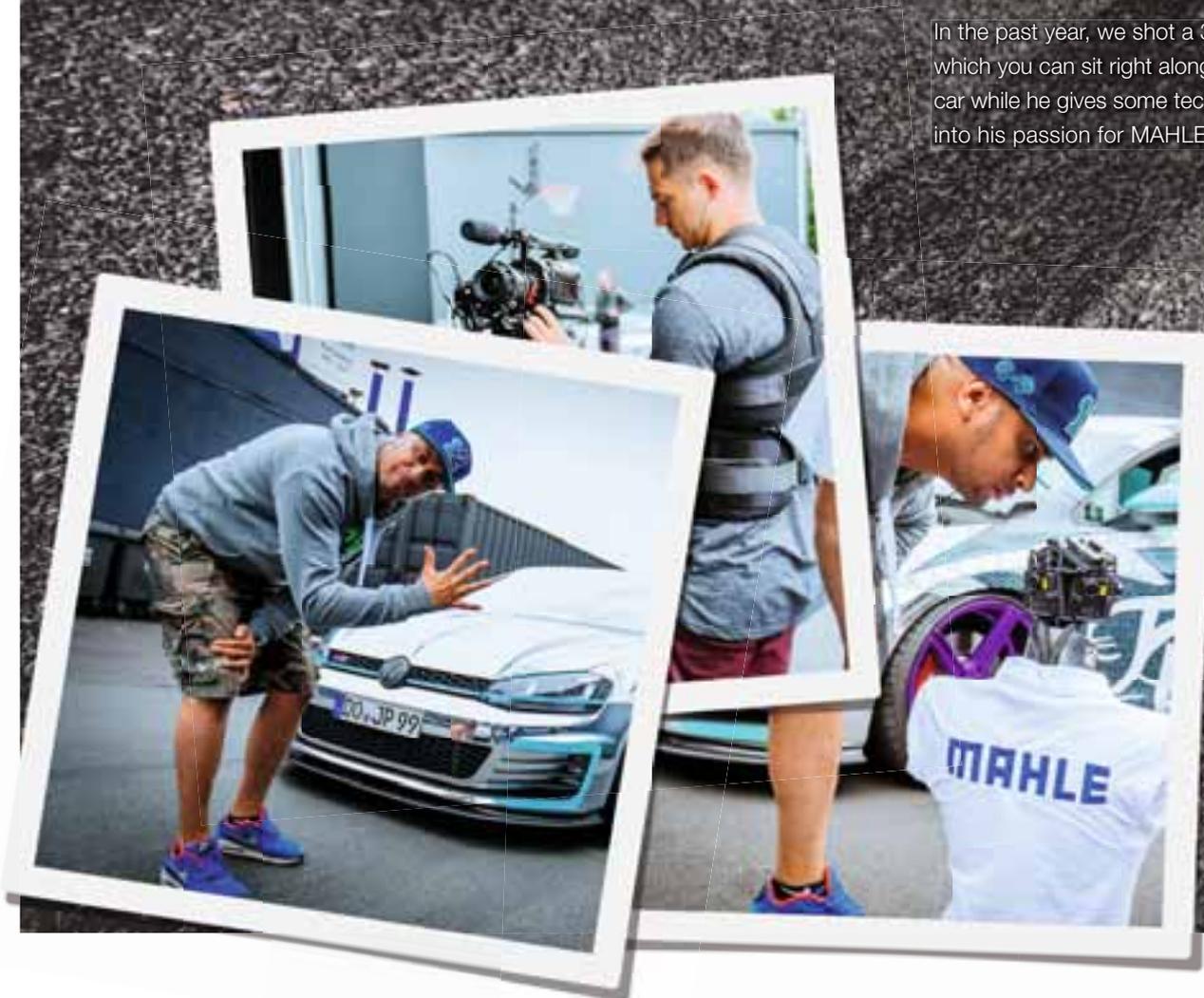
A TUNER TAKES THE INTERNET BY STORM

Find out more about JP at mpulse.mahle.com; all videos are available on JP's YouTube channel (JP Performance).

AWESOME YEAR, GREASY PISTONS

For well over a year, JP and MAHLE have been partners for full tuning power. These are a few examples of our cooperation. And more cool projects are in the pipeline. Follow JP and MAHLE on Facebook, YouTube, and MPULSE, so you don't miss any of the action.

In the past year, we shot a 360° video in which you can sit right alongside JP in the car while he gives some technical insight into his passion for MAHLE components.





At the Automechanika in Frankfurt, Germany, JP was live at the MAHLE stand with his Golf VII, which is tuned with MAHLE Motorsports pistons to provide a full 500 hp.



JP declared his love for MAHLE pistons in black on metal—by signing four MAHLE Motorsports pistons. And MPULSE readers now have an exclusive chance to win them. Simply answer the question below. We will draw four lucky winners

from the correct entries. Send your reply by e-mail with the subject line “MAHLE—Damn Sexy” to: mpulse@mahle.com by 15 October 2017, and you could soon be the owner of a signed Motorsports piston! Find out more about the competition at mpulse.mahle.com

WIN SIGNED MOTORSPORTS PISTONS!

What is the name of the MAHLE intern who accompanies JP on the test drive in our 360° video?



WE ARE MAHLE

OUR COMMIT MENT TO YOUR REPAIR SHOP



We are MAHLE Aftermarket. We are 1,600 employees with one goal: more success for your repair shop. Day after day, we give it our all. For better and better products, faster logistics, and comprehensive services.

We pride ourselves on our products. In this and the next edition of MPULSE, we would like to introduce some of our colleagues, starting with our experts from the product divisions. They stand behind the MAHLE Aftermarket range of around 150,000 spare parts in OEM quality and are constantly developing our portfolio for you and your customers.



MAHLE Aftermarket in figures

» 25

LOCATIONS



» 100%

OEM QUALITY

» 140 +

ENGINE AND VEHICLE
MANUFACTURERS AMONG
OUR CUSTOMERS

» 25,000

SALES PARTNERS

» 1,600

EMPLOYEES

» 150,000

SPARE PARTS

WE ARE MAHLE

—
SIX
PERFECT
PORTFOLIOS
FOR YOUR
REPAIR SHOP
—





Steffen Dassler

Head of Product Management
Engine Systems and Components,
Filtration, Engine Peripherals, and
Mechatronics

*"The engine is the heart of every
vehicle. For uncompromising
performance, only the best is good
enough. This is what drives me
to give my all each and every day.
You can count on that."*

01 EVERYTHING RUNS SMOOTHLY ENGINE PARTS

Our engine parts portfolio:

Pistons, piston rings, cylinder liners,
bearings, valve train components,
gaskets, assemblies



03 STAYING COOL A/C COMPRESSORS AND THERMOSTATS



Michael Gaier

Head of Product Management and
Thermal Management

*"Our cool product range always
ensures optimal temperatures in the
vehicle—for the engine technology
and, thanks to our new air
conditioning compressors, for the
passengers too."*

02 CLEAN PERFORMANCE FILTERS

Our filter portfolio:

Air filters, oil filters,
air drier cartridges,
fuel filters, cabin filters



Jürgen Fath

Product manager for cabin filters

*"My motto: 'clean air for everyone'.
That's why I strive for the best cabin
filters on the market—keeping pollen
and odours out so your customers
can breathe a sigh of relief."*





Dirk König

Head of Product Management
Turbochargers

"Quality creates trust. At MAHLE, we create quality products and that drives me to always go flat out, so that you can rely 100% on MAHLE."

04 FULL POWER TURBO-CHARGERS

Our portfolio of turbochargers and components:
Turbochargers, TC mounting kits, TC oil lines, TC sets (medium and large), mounting kits



ELEC-TRICITY AND EFFICIENCY 06 MECHATRONICS



Renate Reisser-Fueller

Key Account Manager Mechatronics
Central Europe

"If we don't have it, it doesn't exist. I'll always look for the right part for you. I make the impossible possible to ensure you're happy."

Our mechatronics portfolio:

Alternators, starter motors,
electric drive systems



05 SERVICE, IT'S QUITE SIMPLE REPAIR SHOP EQUIPMENT

Our repair shop equipment portfolio:

ArcticPRO® (A/C service units),
FluidPRO® (automatic transmission flushing units),
NitroPRO® (nitrogen tyre inflation systems),
TechPRO® (vehicle diagnostics)



Helmut Häussermann

Product manager and technical
service for A/C service units

"Never lose your cool with MAHLE ACX. Every day, I work to provide professional solutions that make your job in the repair shop easier."



QUESTIONS ABOUT MAHLE PRODUCTS?

E-mail: info@mahle-aftermarket.com

Phone: +49 711-501-0



KNOWLEDGE CREATES ADVANTAGES

You are the expert in your field. And to keep it that way, we make sure that you are always up to date. Videos, posters, or brochures: we supply everything you need to stay informed. All you have to do is choose.

»» ALWAYS AHEAD OF THE GAME: OUR TECHNICAL MESSENGER

Absolutely no spam—experience it for yourself and become a fan! Every four to six weeks, we provide you with the latest technical tips relating to the powertrain, filtration, thermal management, and mechatronics in the vehicle.

Where can you find it? mahle-aftermarket.com including our newsletter (just register online in the Products & Services section under Technical Messenger), MPULSE online

»» BRIGHTENING UP THE REPAIR SHOP: OUR TECHNICAL POSTERS

Thanks to our technical posters, you can now change the scenery. Whether it's a three-step poster (disassembly—testing—assembly) or a poster about damage prevention, you can display this harnessed knowledge on your wall.

Where can you find it? On our website mahle-aftermarket.com in the Products & Services section, in the Download Center of the respective product

»» IF SOMETHING GOES WRONG: OUR DAMAGE BROCHURES

We explain the causes of a variety of problems and, much more importantly, how you can prevent the most common defects. Our damage brochures are available in several languages, or you can print the ePaper versions directly.

Where can you find it? In the Download Center on our homepage, mahle-aftermarket.com

»» STEP BY STEP: OUR FITTING INSTRUCTIONS

Installation tips and fitting instructions—we give you both. We show you in detail how to assemble the product, so nothing will go wrong.

Where can you find it? On our website mahle-aftermarket.com in the Products & Services section, in the Download Center of the respective product

»» A FEAST FOR THE EYES: OUR INSTALLATION VIDEOS

Knowledge doesn't have to be dull. Our installation videos are entertaining as well as informative. And, most importantly, they explain how to do things in a clear and easy-to-understand way.

Where can you find it? MAHLE Aftermarket channel on YouTube, MPULSE online ("Do It & Get It" section)

»» LEARN FROM THE EXPERTS: OUR TRAINING PROGRAMMES

Refresher courses, further training, learning something new—our technical experts will keep you up to date. With "THEORY compact" and "PRAXIS live", we offer training sessions on the topics of damage prevention in the engine environment as well as analysis, diagnostics, and correct assembly for exhaust gas turbochargers. Just tell us when, and we will arrange our visit.

Where can you find it? On our homepage mahle-aftermarket.com, in the Products & Services section under Training & Events

NEW ON THE MARKET

» A/C COMPRESSOR

Vehicle type:

Pass. car

Vehicle models:

Audi (A1, A3, Q3, TT), Seat (Altea, Ibiza V, Leon, Toledo III, Toledo IV), Skoda (Fabia, Octavia, Roomster, Superb, Yeti), VW (Caddy II, Caddy III, EOS, Golf V, Golf VI, Golf VII, Golf Sportsvan, Golf Plus, Jetta III, Jetta IV, New Beetle, Passat, CC, Scirocco, Tiguan, Touran)

Characteristic features:

DELPHI CVC6 compressor (Compact Variable Compressor with 6 pistons)

Part no.:

ACP 1



MAHLE
ORIGINAL

» PISTON

Vehicle type:

Van

Vehicle models:

Mercedes-Benz (Viano, Sprinter, Vito)

Characteristic features:

Piston with cooled ringcarrier, bushing, and EvoGlide coating

Part no.:

001 PI 00166 000



MAHLE
ORIGINAL

Don't promise what you can't deliver: our automotive innovations are presented here. Better, more efficient, more forward-looking. More innovations and info at mpulse.mahle.com ("New on the market" section).

» CYLINDER LINER

Vehicle type:

Com. veh.

Vehicle models:

IVECO (Euromover, Eurotech, Stralis, Trakker)

Part no.:

007 WN 79 01



MAHLE
ORIGINAL

» ASSEMBLY

Vehicle type:

Com. veh.

Vehicle models:

VOLVO (FM 460, FH 460, FMX 460)

Characteristic features:

Assembly contains MonoWeld® piston with graphite coating and phosphating as well as a cylinder liner with roller burnishing

Part no.:

037 AY 00144 090



MAHLE
ORIGINAL

» HOUSING THERMOSTAT

Vehicle type:

Motorcycle

Vehicle models:

BMW (R 1200 R, R Classic, RT)

Part no.:

TH 56 87



BEHR **MAHLE**
ORIGINAL

» AIR FILTER

Vehicle type:

Pass. car

Vehicle models:

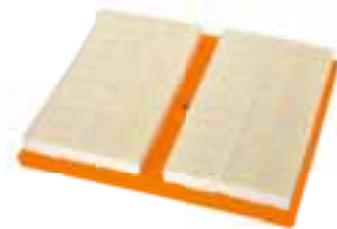
Audi (A1, A3, Q2), Seat (Ibiza),
Skoda (Octavia), VW (Caddy, Golf, Up)

Characteristic features:

Two paper blocks through foamed
land with round cutout

Part no.:

LX 4246



KNECHT **MAHLE**
FILTER ORIGINAL

» CABIN FILTER

Vehicle type:

Pass. car

Vehicle models:

Audi (A6, C6, R8)

Characteristic features:

Also installed in our CareMetix®
mini-demonstrator

Part no.:

LAO 239/S



KNECHT **MAHLE**
FILTER ORIGINAL

» ALTERNATOR

Vehicle type:

NRMM (Non Road Mobile Machinery)
Agricultural and construction machinery

Vehicle models:

FPT/CLAAS tractors (ARION 410,
ARION 420, ARION 430, ARION 440,
ARION 450, ARION 460, ARION 550)

Characteristic features:

ARION 550 has a 158 hp DPS
engine with four cylinders and
4.5 L displacement

Part no.:

MG 693



MAHLE
ORIGINAL

» STARTER MOTOR

Vehicle type:

NRMM (Non Road Mobile Machinery)
Agricultural and construction machinery

Vehicle models:

Kohler/JCB Midi Excavator
(85Z-1, 86C-1 TAB, 86C-1)

Characteristic features:

Installed engines (Kohler KDI,
KDW, LDW)

Part no.:

MS 732



MAHLE
ORIGINAL

» TURBOCHARGER

Vehicle type:

Com. veh.

Vehicle models:

MAN (MAN TGS 18.320,
MAN TGA 18.350)

Part no.:

228TC17808000



MAHLE
ORIGINAL

— INTO THE FUTURE WITH DUAL POWER —



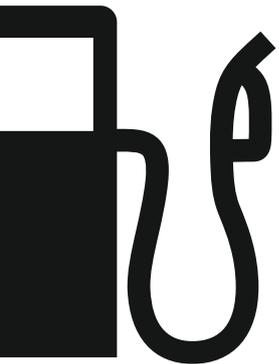
MAHLE works doubly hard for your business —with optimized combustion engine products and a forward-looking portfolio for the growing e-mobility sector.

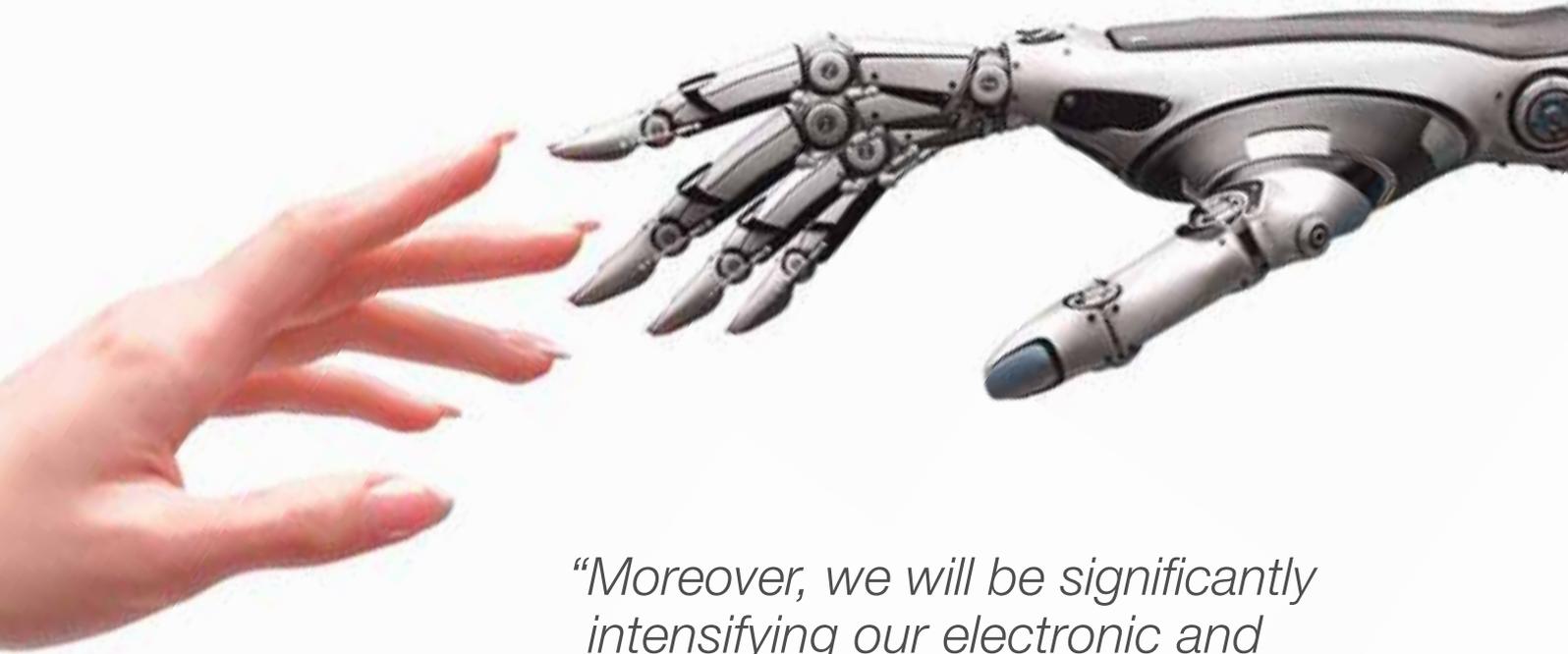
GOING FLAT OUT FOR INTERNAL COMBUSTION ENGINES

The combustion engine era is far from over. There is still a great deal of potential for optimisation. It is true that technologies such as electric and hybrid drives are gaining ground in passenger cars and light commercial vehicles for urban distribution transport. We deem it highly unlikely, however, that these will replace the combustion engine in the foreseeable future. After all, hybrid vehicles cannot manage without them. What's more, as far as heavy-duty commercial vehicles are concerned, there are no alternatives in sight in the short to medium term.

BETTER. MORE EFFICIENT. MORE ENVIRONMENTALLY FRIENDLY.

The combustion engine will remain the leading technology for achieving mobility in the years to come—and therefore the most important driver of sales for your repair and maintenance business. As a technology leader, MAHLE will continue to drive the ongoing development of the combustion engine to keep offering you better and more cost-effective solutions.





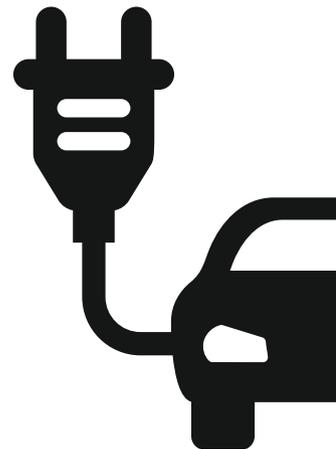
“Moreover, we will be significantly intensifying our electronic and mechatronic activities over the coming years.”

FULL POWER FOR ELECTRIC

With MAHLE, you have at your side not only the specialist in combustion engines but also a pioneer of e-mobility. In matters of battery management, for example, we are a technology trendsetter. At the start of the year, we also expanded into thermoelectrics. This technology allows heat to be converted into electricity and electricity into cold or heat. In the future, for example, we will be able to provide solutions to heat the cabins of electric vehicles much more effectively than before without adversely affecting the electric cruising range.

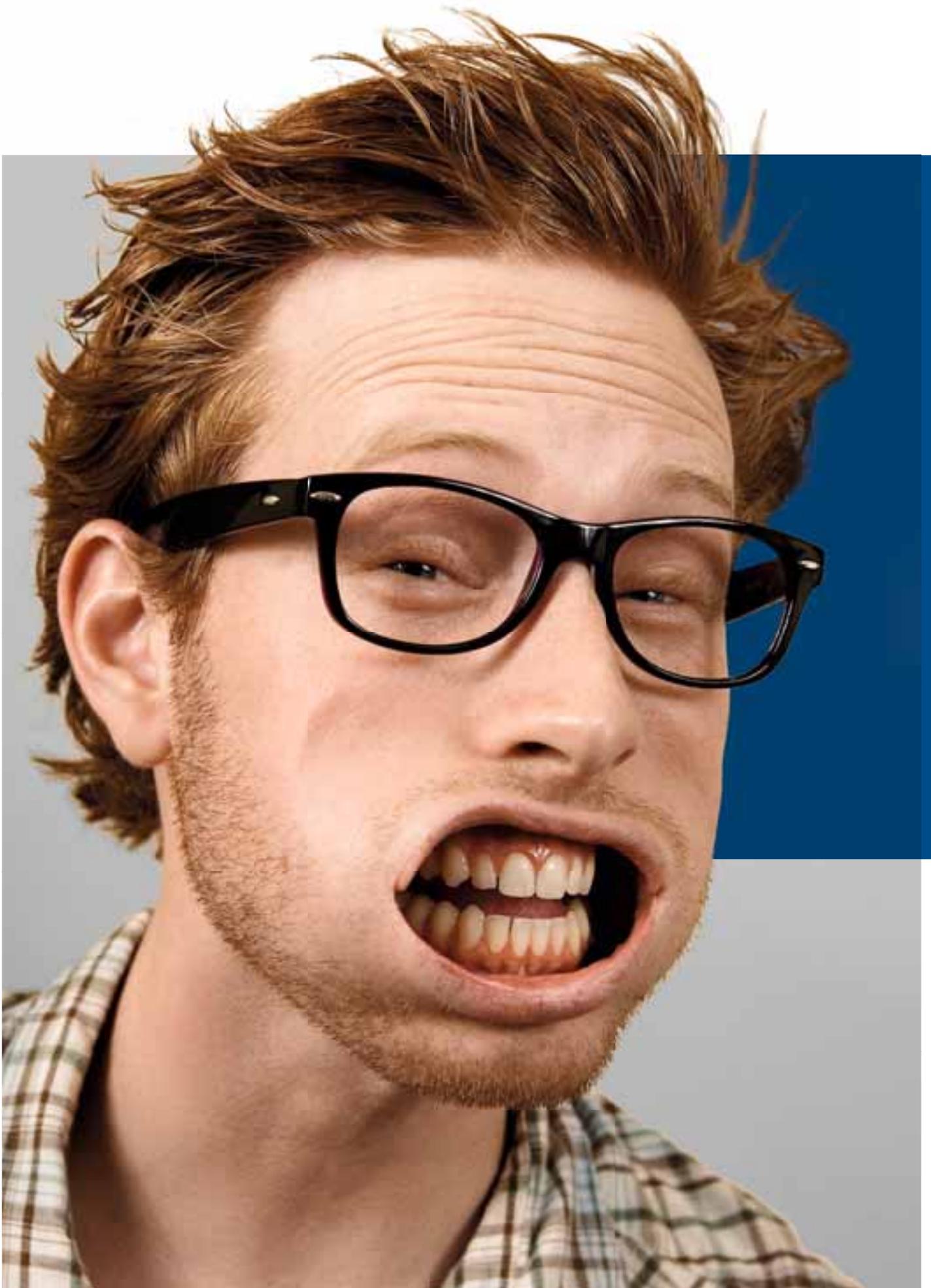
**MORE ELECTRONICS
MORE MECHATRONICS**

Moreover, we will be significantly intensifying our electronic and mechatronic activities over the coming years. MAHLE will be able to offer you a growing range of electric motors—for the drives of passenger car and two-wheeler vehicles, as well as for the electrification of auxiliary aggregates, such as electric air conditioning compressors.



**NEW STARTER MOTORS
AND ALTERNATORS FOR
COMMERCIAL VEHICLES**

- › Expanded range for heavy-duty commercial vehicles from the ten largest manufacturers since mid-2017
- › 26 brand-new MAHLE Original starter motors
- › 23 brand-new MAHLE Original alternators
- › 70% coverage for all current heavy-duty commercial vehicles in Europe and Africa



MORE TURBO FOR EVERY ONE

Supplied quickly and installed quickly—with MAHLE turbochargers you can get cars back on the road at top speed.

COMING TO YOU AT A RAPID PACE

If the turbocharger is defective, nothing will work. And that's simply not an option! We have therefore come up with a new idea for how we can supply our MAHLE turbochargers to repair shops and your customers even more quickly in the future: By the end of the year, you will be able to order our products from even more dealers. With all the frills, all from a single source: with MAHLE, you get everything you need for a clean and cost-effective replacement—from oil lines and mounting kits to oil and air filters.

MORE PRODUCTS, MORE TIPS, MORE SUCCESS

Good products are one thing, but good information is something else. This is another area in which MAHLE aims to give you even better support. With our practical training programs for repair shops and comprehensive technical advice in the form of installation videos and Technical Messengers, we are sure to answer all your questions. Why not give yourself and your repair shop a turbo boost!

MADE BY MAHLE NOW AND IN THE FUTURE

At MAHLE Aftermarket, we have been developing turbochargers for a variety of vehicles for almost ten years. And in the future we will offer you even more: MAHLE Aftermarket is further expanding its range, for example for heavy-duty vehicles, vans, as well as agricultural and construction machinery.

FACTS ABOUT MAHLE TURBOCHARGERS

- > Developed and produced exclusively in accordance with original equipment standards
- > Custom-fit connections and highly precise measurements for fast, easy installation
- > Portfolio for passenger cars, vans, trucks, and gas applications, current market coverage approx. 65%
- > Complete turbocharger sets for efficient and low-cost repairs
- > Global distribution network for fast spare parts supply worldwide



At MAHLE, you get high-performance turbochargers including mounting kit for a variety of vehicles.

FAST INSTALLATION MADE EASY

You can find the installation video on MAHLE's YouTube channel.



BECOME THE COOLEST REPAIR SHOP

Heroes of the lifting platform: enter now!

You are the pacemakers of the road. You breathe new life into old cars. You work with nuts and bolts to earn your living and help your customers stay mobile. Now it's time you got something back: MAHLE is looking for the coolest repair shop on the planet. You could win a customised ACX 150

A/C service unit with lots of special features from MAHLE and other fantastic prizes. The top three repair shops and their submissions will be presented on mpulse.mahle.com. And the winning repair shop will also have its own full-length article in the March 2018 print issue.

And this is how it could be you:

- › Make your repair shop a backdrop—and let your whole team take the spotlight
- › Take a photo or shoot a video—show us why you're the coolest
- › Send us your submission on Facebook or by e-mail to: mpulse@mahle.com, with the subject line: "We are the coolest".



ACX FOR THE WINNER

- › An original ACX 150 A/C service unit and 15 cool MAHLE watches
- › The winning repair shop will also have its own full-length article in the March 2018 print issue

THE COMPETITION TERMS & CONDITIONS CAN BE FOUND AT MPULSE.MAHLE.COM

The deadline for entries is 27 October 2017. The winners will be announced in November. Good luck!

— OLD PARTS REPRO DUCED —



*Niko Johannidis,
Sales Manager Central Europe
at MAHLE Aftermarket*

The older the type of car, the harder it is to find the right spare parts. Stripping parts from structurally identical cars is a common way to maintain one's own car. MAHLE now produces these sought-after spare parts in its "Classic Line"—based on the old original design drawings.

“What’s nice about the scene is that sense of belonging to a community. Everyone shares the same interests. We’re simply fascinated by the beauty of these vehicles and the ‘old’ engineering. These are cars you can still fiddle around with yourself.”

Niko Johannidis is one of 4.4 million vintage car fans in Germany. He is passionate about automotive legends, which have to be more than 30 years old before they can be described as vintage. Modern classic cars are between 14 and 29 years old. As the age of the car increases, the “old iron” starts to exude an aura: vintage cars are a source of fascination for us. They are full of stories and offer that original driving experience. No wonder the market is booming: 280,000 of these nostalgic treasures were registered in 2008, 490,000 in 2015, and

the figure is expected to rise even further. As a result, there is also growing demand for spare parts, which are becoming increasingly rare. Niko, Sales Manager Central Europe at MAHLE, knows this from his own experience: “Finding spare parts is difficult and often very expensive, too. It takes time and effort because these vehicles need a lot of maintenance.”

The Classic Line brings legends to life
We launched the Classic Line to make it easier for you and for vintage car enthusiasts to obtain parts. The production for

this line is specifically geared towards spare parts for old cars. Using the original design drawings, we produce spare parts for even the oldest vehicles. More than 10,000 product documents are available in MAHLE Aftermarket alone. The Classic Line currently comprises pistons, cylinders, and assemblies for around 1,000 vehicle models. We will expand the product range by the end of 2017. Piston rings, valves, bearings, filters, thermostats, and starter motors/alternators are in the pipeline—for vintage as well as modern classic cars.



VINTAGE CAR MAIN- TENANCE MADE EASY

What do you do when a vintage car suddenly drives up and the driver needs a spare part? First of all, you offer your customer a coffee. Then you search through the catalogue or the online catalogue on mahle-aftermarket.com to find the right part.

» Vintage car restoration in five episodes

Over the last few months, we have been filming the restoration of a Jaguar Mark 2.

You can watch the whole story in five episodes on mpulse.mahle.com in the SWEAT & GASOLINE section.

AFTER BURNER

**Latest reports, up-to-date news,
and all other information.**

World's first CO₂ HVAC system

Fireproof, inexpensive, and environmentally friendly – these are the advantages of the CO₂ refrigerant R744. MAHLE developed the ideal HVAC system for this refrigerant on behalf of a large German car manufacturer. It is already in series production in selected luxury models. Another major OEM will follow this year.

The CO₂ in HVAC systems requires pressures that are 10 to 15 times higher than with R134a/R1234yf. And, as the gas molecules are smaller, the system has to undergo an expensive sealing process. The MAHLE solution fulfills these requirements perfectly and can also be used in electric vehicles.



Our film tip for vintage car enthusiasts

During the past few months, we filmed the restoration of a Jaguar Mark 2 and published the results on the MPULSE website. Thanks to a lot of technical expertise, passion, and MAHLE products, the big cat started to purr again. The whole story can be seen in five episodes at mpulse.mahle.com



Four MPULSE readers at the M Festival

We sent four lucky MPULSE readers to the “Green Hell” – a weekend full of adrenalin and race fever during the BMW M Festival at the Nürburgring in Germany. Besides the 24-hour race, the festival included helicopter rides, live entertainment, and pit tours. If you want to be a winner next time, keep up to date about our numerous competitions and draws by visiting mpulse.mahle.com



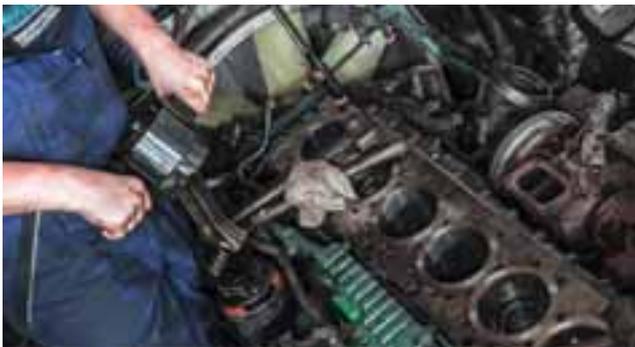
MAHLE at Agritechnica

Are you planning to visit the world's largest agricultural technology trade fair in Hamburg? Then drop in and visit MAHLE! From 12 to 18 November, we will be presenting our brand-new starter motors

and alternators for agricultural machines and tractors, as well as other products. You can find us in Hall 16, Stand C29.



**» AND IF YOU WANT EVEN MORE—CONTINUE ONLINE!
MPULSE.MAHLE.COM**



King of the road

Thirty times around the earth and no wear and tear. Power cell units keep truck engines fit. Fit for the long haul!



Truck Grand Prix at the Nürnbergring

Join us for a glimpse behind the scenes of the Lutz Bernau racing team.



Tackling counterfeit products

If it says MAHLE on the outside, it has to have MAHLE on the inside too.

LEGAL INFORMATION

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