

**MAHLE**

*Driven by performance*

2013 //

ANNUAL REPORT

# ANNUAL CHRONICLE—HIGHLIGHTS 2013 //

## JANUARY

### RTI Technologies joins MAHLE Group

The acquisition of the manufacturer of workshop equipment headquartered in York, Pennsylvania/USA, enables MAHLE to expand its business activities in the workshop business.

### High-volume order for air filter modules

MAHLE receives a high-volume order from a European premium manufacturer for air filter modules to be fitted in new four- and six-cylinder diesel engines.

### Prototype order in the wind energy sector

The European market leader for wind energy systems awards MAHLE with a prototype order for an innovative cooling concept.

### Reverse osmosis system for a converter platform

The duplex version of the membrane filtration system is designed for an offshore wind power plant. The system includes pre- and ultrafiltration as well as activated carbon filters and peripheral components. It can be remotely controlled from land.

### Supplier award from CNHTC

China National Heavy Duty Truck Group (CNHTC) honors MAHLE Tri-Ring Valve Train (Hubei) Co., Ltd. in Macheng/China with the "Excellent Supplier" award.

### Quality Excellence Awards from General Motors and CMQMA

General Motors awards the "Quality Excellence Award" to MAHLE Engine Components USA, Inc. in St. Johns, Michigan/USA and to the current MAHLE Behr Korea Inc. in Busan/South Korea. Shanghai Behr Thermal Systems Co., Ltd. in China receives the "Quality Excellence Award" from the China Machinery Industry Quality Management Association (CMQMA).



## FEBRUARY

### High-volume order for gasoline engine pistons

A globally operating U.S. customer commissions MAHLE to manufacture pistons for a new generation of four-cylinder gasoline engines destined for North America, Korea, and Europe.

### Order for friction-welded commercial vehicle steel pistons

MAHLE will manufacture friction-welded steel pistons for the European and North American engine production of a European commercial car manufacturer.

### Order for feed filter systems

A customer from the United Arab Emirates orders two recently developed feed filter systems from MAHLE. This technology can be used to process light hydrocarbons and fills a significant gap in this market.

## MARCH

### High-volume order for air filter modules

A major Japanese customer commissions MAHLE to manufacture air filter modules to be fitted in four-cylinder gasoline engines for the markets in North America, Japan, Indonesia, Thailand, and China.

### Cooling systems for new high-speed train

MAHLE concludes a supply agreement for cooling systems for a German key customer. This is the largest individual order received by MAHLE to date in the railroad vehicle sector.

### Supplier award from Hino Motors

MAHLE Filter Systems Japan Corporation in Ibaraki/Japan is honored by Hino Motors with the "Quality Control Award for Special Effort."

## APRIL

### Series order for intake and exhaust valves

A European premium manufacturer commissions MAHLE to supply intake and exhaust valves for a new generation of four- and six-cylinder diesel engines.

### Order for coolant coolers

MAHLE is commissioned by a European agricultural machinery manufacturer for the production of coolant coolers.

## Auto Shanghai

MAHLE showcases innovative technologies and product novelties at the world's largest motor show.



## Supplier awards from Toyota

Toyota presents the "Logistic Excellence Performance Award" to MAHLE Metal Leve S.A. in Itajubá/Brazil and the "Certificate Appreciation—Best Effort in the Area of Innovative Technology" award to MAHLE India Pistons Limited (MAHLE IPL) in Chennai/India.

## MAY

### MAHLE increases its participation in Behr and concludes an integration agreement

The acquisition of the shares of BWK GmbH Unternehmensbeteiligungsgesellschaft (BWK) increases MAHLE's holding in the Behr Group from 36.85 percent to around 51 percent. In addition, a comprehensive integration agreement is concluded with the family members who hold the remaining shares, enabling MAHLE Behr to be integrated within the group as the Thermal Management business unit.

### Additional order for friction-welded commercial vehicle steel pistons

MAHLE is commissioned to supply friction-welded steel pistons for the European and North American engine building of another European commercial vehicle manufacturer.

### Development order for a gas mixture heat exchanger

For the first time, MAHLE receives a development order from an American large engine manufacturer for the development of a gas mixture heat exchanger.

### Supplier award from Ford

Ford honors MAHLE Metal Leve S.A. in São Paulo/Brazil with the "World Excellence Award Go Further."

# MAHLE GROUP //

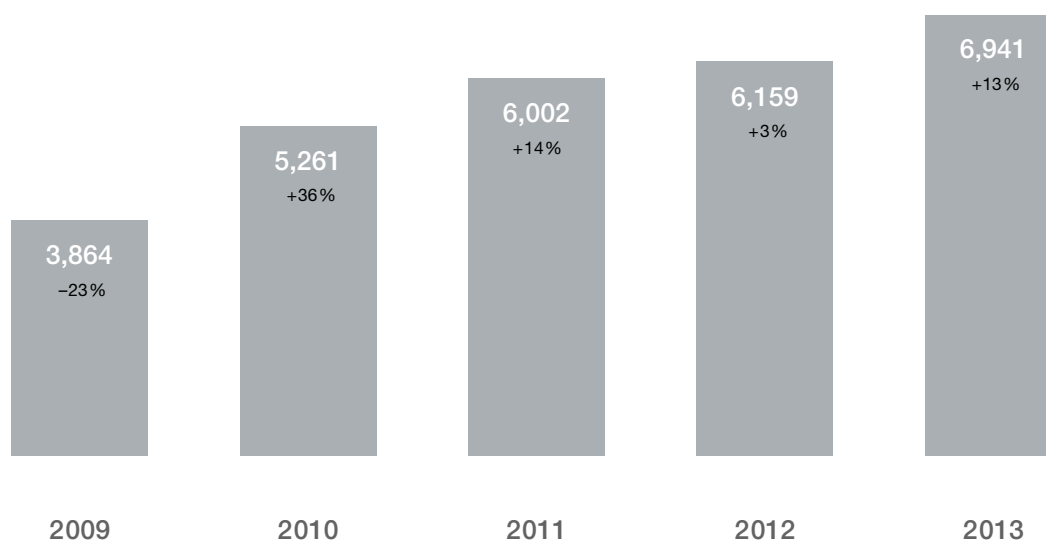
## FIGURES //

million EUR

Business year	2009	2010	2011	2012	2013
Sales	3,864	5,261	6,002	6,159	6,941
EBITDA	264	641	759	725	771
EBIT	-100	287	425	401	422
Income from ordinary activities	-165	252	351	267	307
Net income/loss	-379	177	231	149	236
Tangible fixed assets	1,491	1,522	1,562	1,561	2,167
Capital expenditure on tangible fixed assets (without first consolidation)	172	199	319	324	397
Equity	1,157	1,464	1,696	1,775	2,207
Dividend paid by MAHLE GmbH	3.0	5.5	7.0	5.0	7.1
Headcount (as at Dec. 31)	43,489	47,457	48,818	47,662	64,345

## DEVELOPMENT OF SALES //

million EUR



#### Supplier award from General Motors

MAHLE Componentes de Motor de México, S. de R.L. de C.V. in Aguascalientes/Mexico receives the "Supplier Quality Excellence Award."

### JUNE

#### Audi wins in Le Mans with MAHLE steel pistons

The twelfth victory in 15 years and the seventh win using a diesel engine: Audi triumphs at the legendary 24 Hours of Le Mans. MAHLE has developed extremely durable, ultralight motorsport steel pistons for the V6 TDI engine of the Audi R18 e-tron quattro; these pistons achieve maximum performance on the world's toughest test tracks.



#### Expansion of the research and development center in Farmington Hills

With over 300 guests from the worlds of politics and economics as well as leading executives, MAHLE celebrates the inauguration of the new North America headquarters in Farmington Hills, near Detroit. On the one hand, the research and development center was significantly extended and the vehicle, engine, and electrics/electronics development of the Engineering Services profit center was combined under one roof with the product development of the MAHLE business units. On the other hand, centralized functions and the Aftermarket business unit were transferred here.

#### Series order for commercial vehicle aluminum pistons

A Japanese commercial vehicle customer orders aluminum pistons for the next engine generation.

#### Initial order for air conditioning modules

A major agricultural machinery manufacturer commissions MAHLE to supply an air conditioning module for the first time. Prototypes were already delivered in 2013; the series launch is planned for the end of 2014.

#### Supplier award from Ford

MAHLE Behr Mexico, S. de R.L. de C.V. in Ramos Arizpe/Mexico is honored by Ford with the "Q1" award.

#### Supplier award from Hino Motors

Hino Motors presents MAHLE Engine Components Japan Corporation in Tsuruoka/Japan with the "Excellent Quality Management Award."

### JULY

#### High-volume order for controlled oil pumps

MAHLE receives a follow-up order that includes the supply of controlled oil pumps for the new generation of six-cylinder gasoline engines for a European premium manufacturer.

#### First customer order for coolant/air coolers

MAHLE is to supply coolant/air coolers with a painted steel frame for preseries to the largest Chinese bus manufacturer—the first order in this segment and also the first for the Chinese market.

#### Supplier award from Ferrari

Ferrari honors MAHLE Motorsport with the "Best GT Supplier Award"—by way of thanks for the many years of support. The decisive criteria were technology, competitiveness, and innovation.

### AUGUST

#### Series order for activated carbon canisters

MAHLE receives a high-volume order from a Japanese customer for activated carbon canisters for the North American production of four-cylinder gasoline engines.

#### Supplier award from FAW-Volkswagen Automotive

FAW-Volkswagen Automotive honors MAHLE Tri-Ring Valve Train (Hubei) Co., Ltd. in Macheng/China with the "Excellent Supplier" award.



### SEPTEMBER

#### Laying the foundation stone in Wuhan/China

Around 200 guests from the worlds of politics and economics celebrate the laying of the foundation stone for a new plant in Fenghuang Industrial Park in Wuhan, located in the Chinese province of Hubei. From mid-2014, filtration products for local international OEMs will be manufactured here.

#### International Motor Show (IAA) in Frankfurt

The IAA 2013 in Frankfurt is dominated by the consumption-optimized combustion engine. With innovative solutions and a broad portfolio, MAHLE is well prepared for the future: from series production diesel steel pistons, to controlled oil and coolant pumps, through to solutions for filtration and thermal management. A particularly successful example of the technological potential offered by the merger of MAHLE and Behr is the showcased integrated cascaded charge air cooling. The efficient cooling concept makes it possible to achieve even higher levels of specific output and lower fuel consumption with turbo-charged downsizing engines.



#### Series order for air intake modules

MAHLE receives a series order from a North American customer for air intake modules to be fitted in new six-cylinder gasoline engines.

#### Series order for coolers

MAHLE will manufacture coolant coolers, charge air coolers, and oil coolers for a major European agricultural machinery manufacturer.

#### Second high-volume series order for railroad vehicle cooling systems

MAHLE will supply cooling systems for electrical railcars for a new Russian customer. The order also includes the local production of the cooling systems.

#### Supplier award from Mitsubishi Heavy Industries

Mitsubishi Heavy Industries honors MAHLE Engine Components Japan Corporation in Tsuruoka/Japan with the "Special Award."



#### Supplier award from Ford

MAHLE Componentes de Motor de México, S. de R.L. de C.V. in Aguascalientes/Mexico receives the "Q1" award.

### OCTOBER

#### World Rally champion and manufacturer titles go to VW

Volkswagen achieves a unique success at the World Rally Championship (WRC). At the brand's debut in the 2013 season, all titles in the top category go to Wolfsburg/Germany: the VW factory pairing Sébastien Ogier and Julien Ingrassia wins the World Rally Championship, and VW gains the manufacturers' title. The Polo R WRC runs with an aluminum cylinder crankcase coated with NIKASIL® and honed by MAHLE as well as MAHLE forged pistons.

#### MAHLE Aftermarket expands its central warehouse in Schorndorf

Turbochargers, thermostats, air conditioning service units: the MAHLE Aftermarket product range is growing—and so is the requirement for space at the European central warehouse in Schorndorf. MAHLE increases this space by approximately 8,500 square meters. Celebrations are held for the topping-out ceremony; completion is planned for mid-2014.

#### MAHLE Innovation Day at FIAT

Accompanied by technical lectures, MAHLE showcases its product highlights at FIAT in Turin/Italy.

#### Order for air filter modules

A major Japanese customer commissions MAHLE with the supply of air filter modules for four-cylinder diesel engines that are manufactured in Thailand.

#### Supplier award from General Motors

General Motors honors MAHLE Ventiltrieb GmbH in Zell im Wiesental/Germany with the "Supplier Quality Excellence Award."

#### Supplier award from Nissan

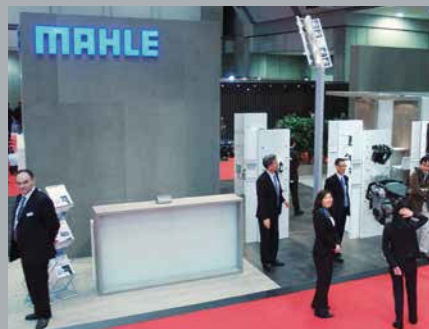
MAHLE Sistemas de Filtración de México S.A. de C.V. in Santa Catarina, Monterrey/Mexico and MAHLE Filter Systems North America, Inc. in Murfreesboro/USA receive the "Regional Supplier Quality Award Finalist."



### NOVEMBER

#### Tokyo Motor Show

MAHLE presents innovative technologies and product novelties at the Tokyo Motor Show. The MAHLE range extender, in particular, greatly impresses visitors.



#### Opening of the new pumps competence center

MAHLE celebrates the opening of a new competence center for pumps in Brattendorf/Germany, in the south Thuringian municipality of Auengrund. Around 100 employees develop and manufacture pumps at this location for well-known automobile manufacturers throughout the world.

#### High-volume order for air intake modules

MAHLE receives a high-volume order from a customer in Korea for air intake modules to be fitted in new four-cylinder gasoline engines.

#### Series order for commercial vehicle air conditioners

A customer in North America orders air conditioners for the new generation of heavy commercial vehicles.

#### Formula 1 success

Fernando Alonso wins second place in the World Drivers' Championship in Formula 1. Scuderia Ferrari has been competing in Formula 1, the number one motorsport event in the world, using exclusively MAHLE pistons and engine components for more than 30 years.

### DECEMBER

#### Acquisition of all shares of MAHLE India Pistons Limited

The shareholding in the Indian joint venture MAHLE India Pistons Limited (MAHLE IPL) in Chennai/India is increased from around 60 percent to 100 percent.

#### Supplier award from Changan Ford Mazda Engine

MAHLE Engine Components (Yingkou) Co., Ltd. in China receives the "Preeminent Achievement Supplier" award.

#### Supplier award from Dongfeng and SAIC

Dongfeng and SAIC honor MAHLE Tri-Ring Valve Train (Hubei) Co., Ltd. in Macheng/China with the "Excellent Supplier" award.

#### Supplier award from General Motors

General Motors presents MAHLE Behr GmbH & Co. KG in Mülacker/Germany with the "GM Supplier Award."

#### Supplier award from Volvo

Volvo honors MAHLE Metal Leve S.A. in Mogi Guaçu/Brazil with the "Volvo Cars Quality Excellence Award."

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# 01 //

THE COMPANY

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# 02 //

MANAGEMENT REPORT

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# 03 //

CONSOLIDATED FINANCIAL STATEMENTS

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Dear readers,

For all of us at MAHLE, 2013 was an exciting and challenging year—both for the employees who were already part of the MAHLE family and for the more than 16,000 employees of the MAHLE Behr Group, who arrived officially on October 1, 2013.

The majority acquisition of the MAHLE Behr Group resulted not only in a rise in our sales and other key figures, but also in a significant increase in the number of employees and locations. Moreover, some of the areas of focus of our product range are being redefined. Thermal management, an important topic for the future, is now one of the central themes of our future developments. We intend to establish this new business unit quickly and aim to achieve global technology and cost leadership. 2013 will also likely prove to be a milestone in our company history.

After a purchase contract to achieve majority shareholding and a comprehensive integration agreement were concluded with the former shareholders of the MAHLE Behr Group in May 2013, and all relevant regional and country-specific bodies had given their approval at the end of September, we started with the implementation of a fully integrated target organization. This organization became operational on January 1, 2014, and will achieve its definitive formation in all functional divisions and at all regional and international locations during the course of the new business year.

The new, enlarged MAHLE family totals approximately 65,000 employees on five continents, in 28 countries, at over 140 production locations, and in ten large research and development centers. We aim to achieve sales of around EUR 10 billion in 2014.

In the 2013 business year, we increased our sales from just under EUR 6.2 billion to almost EUR 7 billion. This rise of around 13 percent is, however, exclusively due to the first consolidation of the new Thermal Management business unit (MAHLE Behr Group) as of October 1, 2013. MAHLE—at least in the euro group currency—did not achieve organic growth. In the first half of the year, the weak passenger car business in Europe impaired the development of sales; at the same time, the commercial vehicle, off-road, and industrial business remained frail throughout the entire year and fell clearly short of our expectations. In addition, as a result of the conversion into the euro group currency, huge exchange rate effects put a significant burden on our development of sales. In particular, the devaluation of the Japanese yen, the Brazilian real, and the U.S. dollar against our euro group currency led to sales losses of much more than EUR 300 million in comparison with the previous year. Despite the restrained development of sales, we achieved the target corridor of our operating return on sales owing to strict cost-cutting measures, and our balance sheet ratios were also structured in a traditionally sound manner despite the full consolidation of the MAHLE Behr Group and the associated significant balance sheet extensions. This was helped by an operational improvement in working capital management.

As we again do not expect sustainable growth prospects in the European automotive market in the medium-term future, we have therefore decided to pursue additional significant restructuring measures in western Europe in particular. These measures will put a considerable burden on our commercial result due to high provisions in 2013. In addition to the termination of production at our French location in Colmar at the end of 2013, we concluded successful negotiations on a voluntary basis for several other sites in France, Spain, and Germany; this will have a negative impact on the result in the short term, but will lead to significant positive effects in the medium and long term.



We continue to regard the whole of Asia as a sustainable positive growth region. We therefore also laid the foundations during the year for four new plants in China and Indonesia to commence production in 2014. Preparations for new plants are also progressing in Mexico.

In the middle of last year, we celebrated the opening of our greatly extended North American regional headquarters in Farmington Hills. All centralized functions of the new extended MAHLE Group are now concentrated here. In the meantime, all the management functions and development activities of the Filtration and Engine Peripherals as well as Thermal Management business units have been combined at our second largest location, Troy, which is situated in the Detroit area.

The first major MAHLE location in Russia, our large logistics center for the independent aftermarket in Obninsk, near Kaluga, was commissioned at the start of 2014. In Brazil—in Limeira, near São Paulo—a new Aftermarket logistics center with twice the capacity was also opened at the beginning of the year.

As part of the integration of the MAHLE Behr Group in the corporate group, we have also started to establish joint production locations where products from several business units can be manufactured as systems, modules, or individual components. In this context, specific investigations are being carried out at various locations in Europe, North America, and Asia. We are firmly convinced that this approach will avoid unnecessary overhead structures and allow us to tap into significant synergy potential.

In 2013, we made record investments in new capacities as well as research and development activities. We intend to intensify these activities further in 2014. With a full range of new products for high energy efficiency, we have secured good returns on newly acquired major orders for the coming years. In 2014, we aim to expand our product portfolio in a targeted manner and establish new priorities in the mechatronics area so that we can actively support the development of efficiency technologies. It is in MAHLE's DNA to work at the forefront of new technologies. We want to further pursue this approach in the future.

Toward the end of the 2013 business year, we took over all the shares in our hitherto majority joint venture, MAHLE IPL (MAHLE India Pistons Limited) in Chennai/India. Thanks to numerous new contracts for globally operating key accounts, we aim to independently conclude investment measures and technology transfers in the future.

I would like to express my sincere thanks to all partners, customers, and suppliers for the cooperation in 2013. I am also deeply grateful to the shareholders and Supervisory Board for the support given to our sustainable corporate policy. Without motivated cooperation and collaboration, the joint corporate success would not have been possible. On behalf of the entire Management Board, I would like to expressly thank all employees for their commitment and the work they performed in the past year. At the same time, I once again warmly welcome the over 16,000 new employees to the MAHLE family.



  
Heinz K. Junker



# 01 //

## THE COMPANY

“The MAHLE Tech Center in Stuttgart-Bad Cannstatt/Germany was founded over 90 years ago; it is one of the largest and most traditional centers in the global MAHLE R&D network. When I think that I am working where Ernst Mahle invented his legendary ring carrier piston and where Henry Ford visited, I am, as an engineer, filled with awe. For me, the challenge is to continue making automotive history together with my colleagues across the world. The combustion engine has a future—its potential is far from exhausted. Together with our new colleagues from MAHLE Behr in Stuttgart-Feuerbach/Germany, we are already working on new projects for promising trend-setting technologies.”

*Dr. Uwe Mohr, Vice President Corporate Research and Advanced Engineering,  
at the Research and Development center in Stuttgart-Bad Cannstatt/Germany*

# MANAGEMENT COMMITTEE //

## Prof. Dr. Heinz K. Junker

Chairman of the Management Board and CEO Profit Centers Engineering Services as well as Motorsports and Special Engines; Research and Advanced Engineering, Corporate Planning, Corporate Communications



## Wilhelm Emperhoff

Member of the Management Board  
Business Unit Filtration and Engine Peripherals,  
Profit Center Mechatronics

## Michael Glowatzki

Member of the Management Board  
Human Resources, Legal

## Dr. Rudolf Paulik

Member of the Management Board  
Business Unit Engine Systems and Components,  
Profit Center Small Engine Components;  
Corporate Quality Management



**Arnd Franz**

Member of the Management Board  
Automotive Sales and Application Engineering  
(effective February 1, 2013),  
Business Unit Aftermarket

**Dr. Bernhard Volkmann**

Member of the Management Board  
Chief Finance Officer,  
IT Services, Insurances, Internal Audit

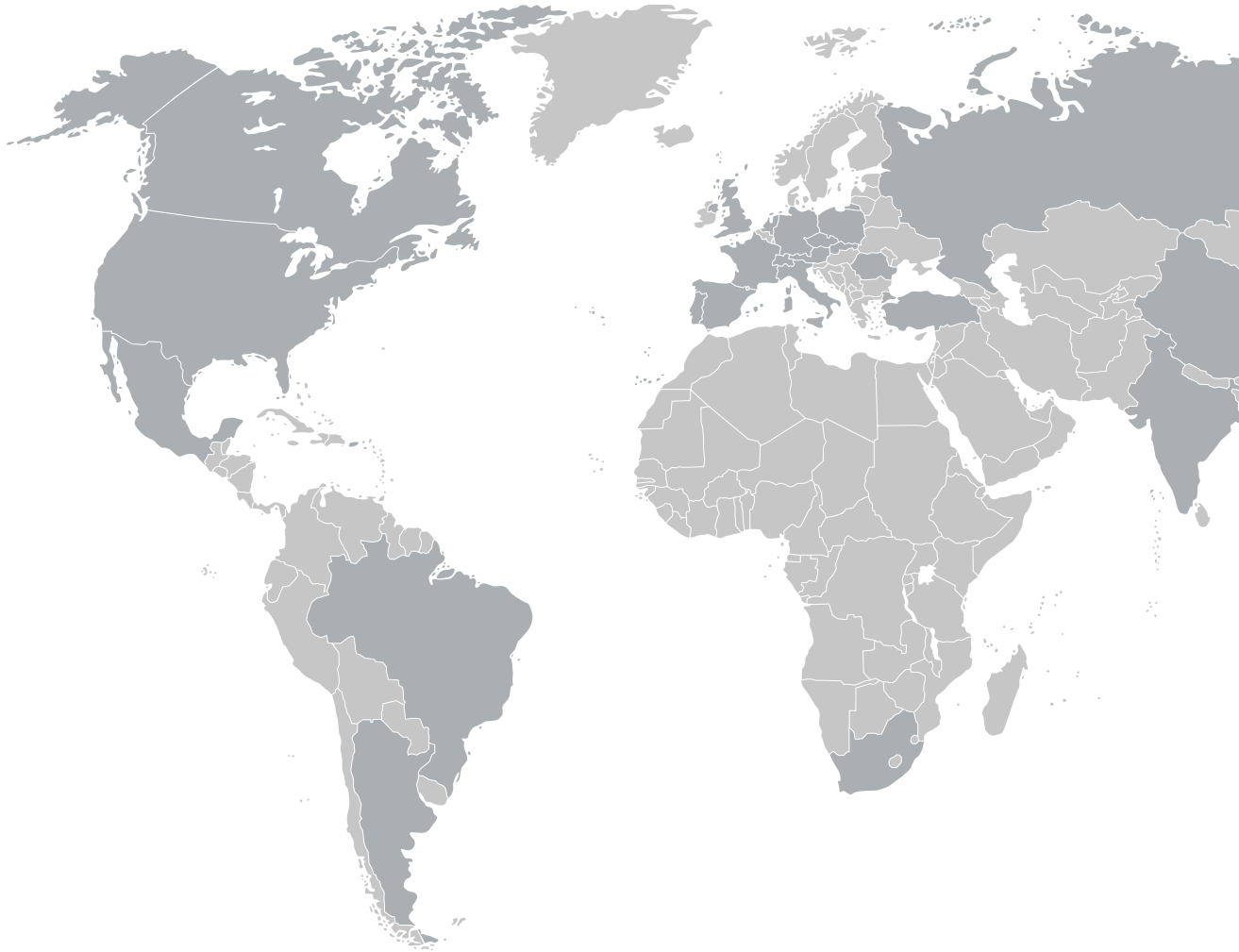
**Dr. Jörg Stratmann**

Member of the Management Board  
Business Unit Thermal Management,  
Profit Centers Thermostats and Valves,  
Control Units as well as Front-end Modules  
(effective January 1, 2014)

**Dr. Michael Matros**

Member of the Management Committee  
Business Unit Industry

# MAHLE WORLDWIDE //



## EXPLANATION //

Location as at April 2014

Production locations

**R&D centers**

## NORTH AMERICA

### CANADA

Burlington

Tilbury

### MEXICO

Aguascalientes

Lerma

Naucalpan de  
Juárez

Querétaro

Ramos Arizpe

Santa Catarina/  
Monterrey

## USA

Atlantic (IA)

Belmont (MI)

Charleston (SC)

Dayton (OH)

**Farmington Hills/  
Detroit (MI)**

McConnelsville (OH)

Morristown (TN)

Murfreesboro (TN)

Nowata (OK)

Olive Branch (MS)

Russellville (AR)

St. Johns (MI)

**Troy (MI)**

Winterset (IA)

Wixom (MI)

York (PA)

## SOUTH AMERICA

### ARGENTINA

Buenos Aires

Rafaela

### BRAZIL

Aruja

Indaiatuba

Itajubá

**Jundiaí/São Paulo**

Limeira

Mogi Guaçu

Queimados/  
Rio de Janeiro

São Bernardo do  
Campo



## EUROPE

## GERMANY

Albershausen  
 Auengrund  
 Berga  
 Eislingen/Fils  
 Fellbach  
 Freiberg  
 Gaildorf  
 Hamburg  
 Kirchberg  
 Kornwestheim  
 Leibertingen  
 Lippstadt  
 Lorch  
 Markgröningen  
 Mühlacker  
 Neustadt/Do.  
 Öhringen  
 Pforzheim  
 Plettenberg  
 Reichenbach  
 Roßwein  
 Rottweil  
 Schorndorf  
 Schwäbisch Hall  
 Schwaikheim  
**Stuttgart**  
 Vaihingen/Enz  
 Wölfersheim  
 Wustermark  
 Zell im Wiesental

## FRANCE

Chavanod  
 Décines  
 Hambach  
 Ingersheim  
 Orange  
 Poissy  
 Rouffach  
 Rungis/Paris  
 Seboncourt

## GREAT BRITAIN

Bilston  
 Kilmarnock  
**Northampton**  
 Rugby  
 Stoke-on-Trent  
 Telford  
 Wellingborough  
 Worcester

## ITALY

Grugliasco/Turin  
 La Loggia  
 Saluzzo  
 Trento

## NETHERLANDS

Lochem

## AUSTRIA

Mattighofen  
 Rankweil  
 St. Michael ob  
 Bleiburg  
 Vöcklabruck  
 Wolfsberg

## POLAND

Krotoszyn

## PORTUGAL

Murte de

## ROMANIA

Timisoara

## RUSSIA

Obrninsk

## SLOVAKIA

Dolný Kubín  
 Námestovo

## SPAIN

Alcalá de Henares/  
 Madrid  
 Montblanc  
 Vılanova i la Geltrú

## CZECH REPUBLIC

Holíšov  
 Mnichovo Hradiště  
 Ostrava

## TURKEY

Gebze  
 Izmir  
 Konya

## ASIA/PACIFIC

## CHINA

Changchun  
 Chengdu  
 Chongqing  
 Guangzhou  
 Jinan  
 Macheng  
 Nanjing  
 Qingdao  
**Shanghai**  
 Shenyang  
 Shiyang  
 Tianjin  
 Wuhan  
 Yingkou

## INDIA

Chennai  
 Gurgaon  
 Parwanoo  
 Pithampur  
**Pune**  
 Sanand

## INDONESIA

Jakarta

## JAPAN

Fukushima  
 Ibaraki  
**Kawagoe**  
 Kyushu

## Okegawa

Tochigi  
 Tokyo  
 Tsuruoka  
 Yamagata

## KOREA

Busan  
 Hwasung  
 Jangan  
 Ulsan

## PHILIPPINES

Cavite

## SINGAPORE

Singapore

## THAILAND

Bangkok  
 Samut Prakan

## AFRICA

## SOUTH AFRICA

Durban  
 Port Elizabeth

## REFERENCES //

All automobile and engine manufacturers worldwide are customers of MAHLE. Here are some of our original equipment references.

<b>A</b>	ABB	Continental	Freightliner
	AGCO	Cummins	Fuso
	Alfa Romeo	<b>D</b>	<b>G</b>
	Alpina	Dacia	Gamesa
	Alstom	DAF	GAZ
	AMG	Daihatsu	GE Jenbacher
	Ashok Leyland	Dalian Diesel	GE Transportation
	Aston Martin	Detroit Diesel	Geely
	Audi	Deutsche Bahn	General Dynamics
	AvtoVAZ	DEUTZ-FAHR	General Motors
<b>B</b>	BAE Systems	DMG Mori Seiki	GETRAG
	Bajaj	Dodge	GMDAT
	Beiqi Foton	Dongan	Great Wall
	Bentley	Dongfeng	<b>H</b>
	BMW	Doosan Infracore	Harley-Davidson
	Bombardier	DPCA	HATZ
	Bosch	Ducati	Henan Diesel
	Brilliance	<b>E</b>	Hindustan Motors
	Bugatti	EADS	Hino
	Buick	EDF	Hitachi
	BYD	Eicher Motors	Holden
<b>C</b>	Cadillac	Embraco	Honda
	Case	EMD	Hummer
	Caterpillar	ENERCON	Husqvarna
	Changan	Escorts	Hyundai
	Chaoyang Diesel	Eurocopter	Hyundai Heavy Industries
	Chery	EvoBus	<b>I</b>
	Chevrolet	<b>F</b>	Infiniti
	Chrysler	FAW	International
	Citroën	FAW-Volkswagen	Irisbus
	CLAAS	Fendt	Irizar
	CNHTC	Ferrari	Isuzu
		FIAT	Iveco
		Force Motors	<b>J</b>
		Ford	Jaguar



JCB	MWM International	SsangYong
Jeep	<b>N</b> Navistar	Steyr
JMC	Neoplan	Stihl
John Deere	New Holland	STX
<b>K</b> KAMAZ	Nissan	Subaru
KAESER KOMPRESSOREN	<b>O</b> Opel	Suzuki
Kenworth	Otosan	SWW
Kia	<b>P</b> Paccar	<b>T</b> Tata Motors
Kirloskar	Perkins	Tecumseh
KNOLL	Peterbilt	Teledyne Continental Motors
Komatsu	Peugeot	Temsa
Krauss Maffei	Piaggio	Terex Demag
Kubota	Polaris	Tognum
<b>L</b> Lamborghini	Pontiac	TOTAL
Lancia	Porsche	Toyota
Land Rover	Proton	Triumph
Lexus	<b>Q</b> Qingling Motors	<b>U</b> UD Trucks
LEYLAND	<b>R</b> Renault	<b>V</b> Valtra
Liebherr	Renault Trucks	Vauxhall
Linde	Renk	Vestas
Liuji	Rheinmetall	VM Motori
Lycoming Engines	Rolls-Royce	Volkswagen
<b>M</b> Mack Trucks	Rotax	Volvo
Mahindra & Mahindra	<b>S</b> SAIC	Volvo Penta
MaK	SAME	Volvo Trucks
MAN	Samsung	Volvo Prevost
Manitowoc	SBB	Vossloh
Maruti Suzuki	Scania	<b>W</b> Wärtsilä
Maserati	SCHNELL Motoren	Waukesha Engine
Massey Ferguson	Scion	Weichai Power
Mazda	SEAT	Wuxi Diesel
McLaren	SEMT	<b>Y</b> Yamaha
Mercedes-Benz	SGM	YaMZ
Mercury	SGMW	Yangzhou Diesel
Mini	Shanghai Diesel	Yanmar
Mitsubishi	Siemens	Youngman
Mitsubishi Heavy Industries	Sinopec	Yulin Diesel
MTU	Sisu	Yunnei
MWM	Škoda	<b>Z</b> ZF
	Smart	ZMZ
	SNCF	

## CORPORATE CITIZENSHIP //

Social responsibility was very important to company founders Hermann and Ernst Mahle. Therefore, in 1964, they entrusted 99.9 percent of their company shares to a foundation that has since then sponsored numerous social and cultural projects.

A key component of the MAHLE culture has always been to combine entrepreneurial thinking and behavior with social commitment and responsibility in a far-sighted manner. By establishing the charitable MAHLE Foundation, the company founders made it possible to live actively this MAHLE culture in the long term and retain its key importance within the group today. For 50 years, the MAHLE Foundation has sponsored and supported projects in the areas of health care, youth welfare, biodynamic agriculture, research, and science, as well as schooling and public and vocational education.

### State recognition of anthroposophical therapy in Brazil

With the founding in 2007 of the Brazilian branch headquartered in São Paulo, the work of the Foundation was expanded on an international scale. The Foundation, which was renamed Instituto MAHLE in 2013, focuses primarily on projects to establish anthroposophy in Brazil's state health system and thus to humanize medicine. The state recognition of the Casa Angela birthing clinic in a slum of São Paulo can be viewed as a particular success of this work. Brazil is now the only country in the world where anthroposophical therapies are firmly rooted in the state health system and are reimbursable by the system. The work of Instituto MAHLE contributed greatly to this in previous years.

### Anthroposophical and conventional medicine under one roof—the Filderklinik

The most significant funding project of the MAHLE Foundation is the Filderklinik, located to the south of Stuttgart/Germany and inaugurated in 1975. It is one of the three major anthroposophical acute-care hospitals in Germany. Patients are treated at the Filderklinik based on a holistic approach: on the one hand the specialized departments work together in a very interdisciplinary manner. On the other hand, patients are looked after and treated as individual personalities with specific needs. The Filderklinik specializes in obstetrics, integrative oncology, and surgery.

Since the Filderklinik was founded, the department of psychosomatic medicine has been a specialist area and is now even more topical and important than ever: according to a World Health Organization study, depression is one of the most common diseases of our time. When treating psychosomatic illnesses, the Filderklinik puts particular emphasis on the use of anthroposophical and naturopathic medicine alongside conventional medicine.

*MAHLE employees in the USA collect donations at the "Tour de Cure" for the development of future diabetes treatments.*



### Global commitment to support health

Throughout the world, MAHLE and its employees are committed to improving the situation of sick people. In Brazil, for example, employees acting as “Doctors of Joy” make hospital stays more bearable for children. In addition, MAHLE supported theatrical performances with subsequent discussion meetings about drug addiction and alcohol dependency. Around 9,000 young people and adults came to the performances at various MAHLE locations in the past business year. A cycling team of U.S. MAHLE employees took its place on the starting line of the “Tour de Cure” to collect donations for the “American Diabetes Association.” MAHLE employees are also committed to the fight against cancer in numerous campaigns around the world: in the United States, employees at the St. Johns location collect donations for “Relay for Life” in extensive fundraising campaigns each year. Dutch employees entered the “Fight Cancer Ride.” In Mexico, the “AMANC Foundation,” a relief organization for children suffering from cancer, was supported with fundraising activities. Blood and stem cell donations for international relief organizations are also part of the standard program at many MAHLE locations.

### “Focus on iThemba” and “MAHLE Formare” —real prospects for disadvantaged youngsters

In South Africa, MAHLE took part in the “Focus on iThemba” project that promotes the schooling and further education of orphans. This is not just about financial support. The young people were offered real prospects, such as becoming MAHLE employees.

The MAHLE Formare School, which meanwhile is firmly established, pursues similar objectives. At six locations in Brazil, MAHLE employees look after and teach socially disadvantaged young people in technical subjects. A large proportion of these people find permanent work at MAHLE.

### “Freie Interkulturelle Waldorfschule Mannheim” —integration not exclusion

The MAHLE Foundation is involved in the “Freie Interkulturelle Waldorfschule Mannheim” in Germany; this school has broken new ground under the motto “integration not exclusion.” Children from different origins, nationalities, and religions have been learning and working here together for ten years and receive individual support, if required, as well as intensive language training. From an early age, around 300 pupils from 33 countries thus learn together in integrated classes about intercultural dialog and tolerance. In 2013, the “Freie Interkulturelle Waldorfschule Mannheim” was recognized for its unique integration model: the German UNESCO Commission also praised this outstanding example of a sustainable education system.

### Neighborhoodly help—MAHLE locations assume social responsibility

Social commitment and the support of disadvantaged people are second nature to MAHLE and many MAHLE employees. Numerous projects and activities thus provide assistance to people living in the direct vicinity of individual MAHLE locations.

In Poland, for example, MAHLE regularly supports the children of impoverished families by providing school meals, clothing, and donations. The local kindergarten and regional blind association in Mnichovo Hradiště/Czech Republic regularly receive financial donations from MAHLE. In Ramos Arizpe/Mexico, donations are collected to provide families of hospital patients with free lunches and to send Christmas presents to children in remote communities. Around 12,000 pupils near the Brazilian MAHLE locations benefited from educational theatrical performances sponsored by MAHLE. At the German training workshops, internships are provided for pupils from special schools and schools for children with learning difficulties. MAHLE apprentices support workshops for the disabled with their active commitment to alteration work and collect donations in cash and kind in Christmas sales promotions. In Portugal, MAHLE took part in the reforestation of the “Mata Nacional Bussaco,” which was severely damaged by storms, by donating trees.

These representative examples from all over the world give an insight into the extensive social commitment of MAHLE employees. The MAHLE Management Board would like to express its heartfelt thanks and high regard to MAHLE employees for their commitment.



*MAHLE supports the “Focus on iThemba” project primarily to make it possible for orphans in South Africa to receive schooling and continued training.*

## HUMAN RESOURCES //

The integration of the Behr Group increases the number of employees of the MAHLE Group by 35.0 percent and therefore also opens up great prospects. A joint personnel policy is based on uniform guidelines and development programs.

With a headcount of 64,345, the MAHLE Group had more employees than ever before as at December 31, 2013. In comparison with the previous year, this represents an increase of 16,683 (+35.0 percent), which results from the acquisition of the majority share in the Behr Group. Without taking the Behr integration into account in the development of employment relationships at the MAHLE Group, the total number of employees remained more or less constant.

The impact of the integration of the Behr Group varied across the different regions. With the takeover of Behr, the headcount in Europe at the end of 2013 rose by 9,927 to a total of 29,750 employees. The disinvestment in the Swiss location of Grenchen and personnel adjustment measures in Turkey and Great Britain due to declines in sales decreased the number of employees. In order to temporarily offset additional overcapacities and safeguard employment relationships, short-time work was introduced in several European countries, mainly in the first half of 2013.

The incorporation of Behr increased the number of employees in Germany by almost 62 percent to 14,545. The headcount in the existing MAHLE companies remained largely at the previous year's level. At the start of 2013, a new job security agreement was concluded between the MAHLE Management Board and the Central Works Council of MAHLE. It sets out the conditions to flexibly respond to fluctuations in capacity and excludes dismissals for operational reasons until mid-2015 for MAHLE locations in Germany.

With the acquisition of the majority share in the Behr Group, the number of employees in North America grew by around 2,900 to 10,357. Furthermore, the acquisition of RTI Technologies and the expansion of the research and development center in Farmington Hills led to a moderate increase in headcount in the United States. In contrast, the number of employees in Mexico had to be reduced due to declining sales.

In Brazil, headcount had to be cut as a result of temporary poor capacity utilization; in Argentina, however, loaned personnel were transferred to permanent employment. The growth in headcount owing to the Behr integration was relatively low in South America with an increase of around seven percent. At the end of 2013, the number of employees totaled 10,893. The headcount in the Asia/Pacific region increased by approximately 2,300 to 12,436 as a result of the Behr integration. Moreover, additional employment contracts were concluded in China for the new camshaft production in Yingkou and on account of sales increases. With 909 employees, Durban and Port Elizabeth/South Africa were the first locations in Africa thanks to the Behr integration in 2013. The MAHLE Group is now represented on five continents again.

### **MAHLE and Behr = Mehr (More)**

The merger with Behr increases the number of highly committed employees in the MAHLE Group. With their knowledge and experience, they create the very foundation to address new challenges, achieve joint goals, and maintain the MAHLE Group's competitiveness in the future: "MAHLE and Behr = Mehr (More)." To achieve the clear objective of being one of the top three global suppliers in all relevant markets for MAHLE in the future, it is now time to join forces, to harmonize and further improve all business processes.

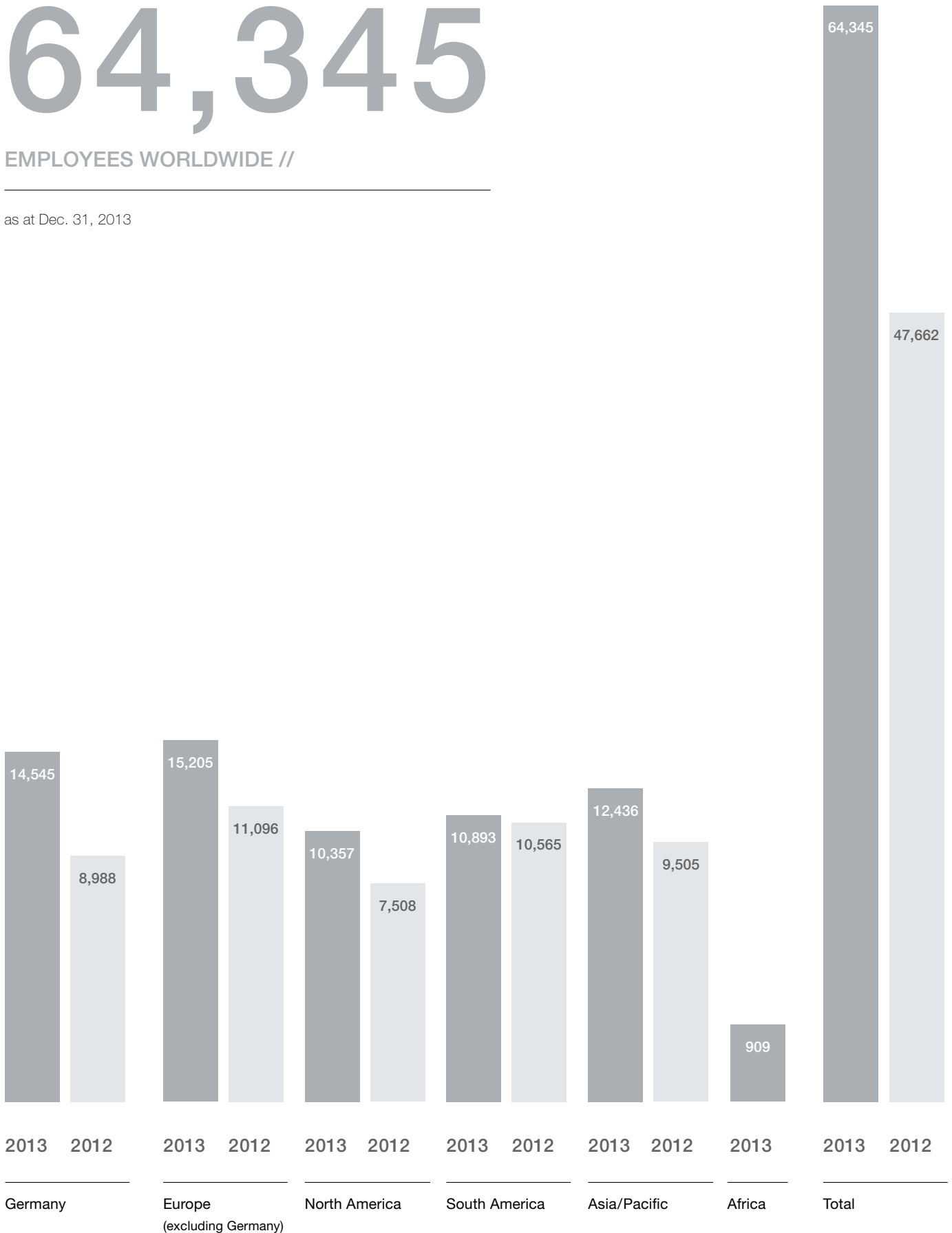
### **Executives: common targets**

As part of an integrated personnel policy, a new uniform remuneration system was introduced in 2013 for all executives; this system will link the income of executives more closely to the economic success of the group in the future. The new remuneration system is designed to strengthen the entrepreneurial behavior of executives, thereby sustainably safeguarding and building on the MAHLE Group's success. Its synchronized launch at MAHLE and MAHLE Behr also contributes to the integration of the Behr companies in the MAHLE Group. At the same time, modern, performance-oriented, and competitive remuneration supports the recruiting of new executives and talents.

# 64,345

## EMPLOYEES WORLDWIDE //

as at Dec. 31, 2013





### Developing global potential

With a comprehensive program of training and further education measures, as well as national and international personnel development programs, MAHLE is safeguarding and building on the essential know-how of its employees across the world and improving its own competitiveness. In order to jointly support and develop high-potential employees, MAHLE and the former Behr locations started to combine further education and personnel development measures in 2012. These measures were further intensified in the past business year. The development programs implemented across the group are an excellent platform enabling the close networking of high-potential employees, specialists, and executives within the group on an international level.

In 2013, a European development program that was specifically designed to secure the succession of plant managers started for the first time. MOVE (Manufacturing and Operations Venture Program) is designed for managers from European production locations with the potential to become plant managers.

### International exchange and know-how transfer

With the increasing globalization of the MAHLE Group, employee mobility is also growing in importance. The secondment of specialists and managerial staff supports international know-how transfer and opens up new prospects for employees and managers. This concerns both individual career development opportunities as well as broader personal horizons. In order to set out the conditions for the international secondment of employees uniformly and fairly, a binding global mobility policy was introduced in 2013. This policy seeks to address the in-

terests of expatriate staff, support them during their secondment, and facilitate reintegration in the home company. At the same time, the mobility policy helps to guarantee a uniform structure of international secondment regulations.

### Top employer—comprehensive recruitment concept

A comprehensive recruitment concept and a targeted personnel marketing strategy ensure that MAHLE's image is that of an attractive employer. MAHLE thus again improved its position in an employer ranking in the past business year and was once again named top employer in Germany. In Austria, MAHLE achieved first place in an automotive/vehicle production industry ranking and took thirteenth place in the overall evaluation out of the 520 employers that were tested.

A key objective of the MAHLE Group is to recruit young, well-trained engineers. This goal is pursued by means of university and recruitment events as well as cooperation with selected universities across the world. In Brazil, for example, 20 particularly successful students in mechanical engineering and control and automation technology at the University of Campinas are honored with a MAHLE award each year. It gives them the opportunity to complete an internship at the MAHLE research and development center in Jundiaí, São Paulo/Brazil.

The "eMploy" recruitment portal, which was launched very successfully in Germany in 2012, was rolled out for all former Behr locations in Germany and also went live in the United States at the end of the year.

### A foundation for the future: vocational training at MAHLE

Apprenticeships and cooperative studies traditionally play a key role in personnel development at MAHLE. Due to the demographic change with declining pupil numbers, MAHLE approaches young people before they leave school in order to generate interest in technology and to make them aware of MAHLE as an interesting vocational trainer and employer. For many years, numerous events and training cooperation ventures have been an established part of the personnel marketing program in Germany. In France, MAHLE has made a commitment in close cooperation with an employers' federation to the "Bravo l'Industrie!" project, which gives school leavers the opportunity to find out about different careers in the economy.

In the German MAHLE Group companies, a total of 342 apprentices were trained in 17 occupational profiles, and 89 students in cooperative studies were trained in seven courses of study in 2013. In addition, 16 retrainees successfully passed their exams. The transfer of experience across countries plays a major part in training at MAHLE in order to address the growing globalization of the work environment. Therefore, 15 students of cooperative studies completed a portion of their studies at a foreign MAHLE location in 2013.

*For a long time, MAHLE has supported the competition for up-and-coming engineers that have "fuel in their blood" and has been a key partner of the German Formula Student teams from Stuttgart, Esslingen, Karlsruhe, Darmstadt, and Zwickau once again in this racing season.*





*The Girls' Day took place at MAHLE this year for the eighth successive time. It gives girls the opportunity of finding out about technical professions.*

The changing technical requirements of employees' know-how are also reflected in the apprenticeship. The need for specialists and apprentices in the areas of electronics and mechatronics is growing steadily. To keep pace with this rising demand, the electrical workshop at the headquarters in Stuttgart/Germany was expanded. Furthermore, MAHLE, in cooperation with other commercial enterprises, took part in the development of the new practice-oriented study course MechatronikCom in the past business year. The practice-integrated study concept is primarily directed at young skilled workers who plan to continue education in engineering after their apprenticeship and at high-school graduates who intend to start cooperative studies. The new program thus promotes further training as well as employee loyalty.

To better meet the requirement for qualified specialists in Aguascalientes/Mexico, an 18-week internal training program commenced at that location in 2013. Six graduates have already successfully completed the training that is geared toward requirements specific to MAHLE.

### **Reconciling health, family, and career**

Commitment, performance, and professional success all depend on the physical and psychological well-being of employees. MAHLE therefore supports its employees with numerous occupational health management projects and individual measures. Health-promoting measures worldwide aim to improve the work environment and to make employees more aware of their own health. Besides occupational medical examinations, MAHLE therefore also provides a broad spectrum of different prevention programs, health awareness days, and vaccinations, as well as internal and external sporting activities.

The in-house day-care center in Stuttgart/Germany helps working parents to reconcile their daily work with children. To cover school holidays, holiday programs for employees' children are available at several locations, including Mexico, Poland, and Germany.

The Management Board would like to thank all employees of the MAHLE Group for their high level of motivation and commitment. They are the backbone of the company, the basis for the success of the MAHLE Group, and the guarantee for the successful integration of the employees from the former Behr companies.

## QUALITY //

Defect-free, reliable products underpin long-term corporate success. That's why quality management at MAHLE is fully integrated into all business processes.

Quality is one of the key competitive factors in a company. Customers expect failure-free product and systems assembly as well as smooth vehicle operation. This is why the MAHLE Group works according to the zero-defect principle. Qualified employees lay the foundation for high-quality products. To retain its position as a top global brand with regard to quality, MAHLE is continually improving its own products and processes.

Commercial success is only achievable if customers are impressed with the quality of the products. MAHLE's strategy is therefore to identify and thus eliminate potential defects early on in the development phase. Moreover, series production focuses on optimal quality assurance. MAHLE's quality management is therefore fully integrated into the group's business processes and constantly updated.

### **Electronic workflow facilitates group-wide problem solving**

In 2013, the global implementation of an electronic workflow for the problem-solving process was completed. Should a customer complaint arise, this process facilitates fast and high-quality troubleshooting, thereby enabling customer satisfaction to be restored as quickly as possible. The electronic workflow is based on a common platform. All parties concerned within the group can therefore start, plan, and monitor improvements in the problem-solving process in a targeted manner. The proven global "Lessons Learned" database will be developed on an ongoing basis to avoid problems that have already arisen in other areas of the group.

### **MAHLE and MAHLE Behr set joint quality targets**

Quality is also a key integration topic in the merger of the two companies. In cross-company teams, specific quality processes were analyzed, best practices identified, and joint quality processes and standards set for MAHLE and MAHLE Behr. In addition, monthly regulatory reports on quality management were introduced and joint quality targets defined for the next business year.

### **Ensuring quality through standards and global coordination**

Following the global coordination of quality planning for new customer projects in the past business year, the focus is now on the global standardization of certain results. In the future, further improved support will be provided to international customer projects based on the principle that "prevention is better than cure."

### **IMPACT improves group-wide production processes**

Customers expect high-quality MAHLE products and systems. To assess the quality of series supply, MAHLE evaluates the number of customer complaints and the amount of defective products supplied. As in previous years, both values were again successfully reduced in 2013. In the next business year, we will continue to work on a more systematic monitoring of production processes. This should help to further optimize product quality. The objective of the group-wide IMPACT improvement program is to achieve control loops that are as short and effective as possible. MAHLE is constantly working toward optimizing and accelerating the flow of data, improving internal quality communication, and thus sustainably increasing the quality of products and systems supplied.

### **System-based planning makes targets achievable**

Quality targets are an integral component of the annual business plan. In 2013, the planning of quality objectives was entirely system-based for the first time. This makes it faster and easier to evaluate the planning and greatly facilitates the adjustment of targets, which are set top-down and consolidated bottom-up. In previous years, a group-specific standard (master plan) was also developed for the planning and controlling of required actions.





*Employee setting up an automated piston measurement and piston ring assembly device*

### **Predefined objectives and improvement actions allow for reliable planning**

Quality management is fully integrated into the group's business processes. Each business process has a Business Process Owner who is responsible for the performance of his process. Using a balanced scorecard, the Business Process Owner formulates the targets for his area and plans the required improvement actions (master plan) for the following business year.

### **Numerous prizes awarded for quality**

In the past business year, numerous customers recognized the quality of MAHLE products and systems. Prizes were awarded to the whole group or to individual locations in Europe, America, and Asia. The list of awards is long: some examples are included in the "Highlights" section of this Annual Report. Regardless of this, MAHLE employees celebrate each and every prize. The awards are an incentive for all employees in all business units and product groups to continue developing themselves and the associated processes step by step to further impress customers with outstanding quality.

## ENVIRONMENT //

Workplace safety and environmental protection are essential corporate principles for MAHLE. Installations and processes are continually analyzed and developed in order to ensure the protection of employees as well as the environment.

In the area of health, safety, and environment (HSE), we are continuously working to improve safety at the workplace and avoid negative effects on nature. This is why MAHLE implements actions at all its plants across the world to ensure a responsible approach to natural resources. This year, the group can look back on many successful projects, above all in the area of energy management.

### **Transparent energy management reduces consumption**

At the Krotoszyn plant in Poland, MAHLE is developing an energy management solution that provides a detailed long-term forecast for the determination of base load and for energy consumption. In the future, cooperation with the central energy purchasing department will enable tendering numerous international quotes for the coming years. Consumption will thus be controlled accurately and more efficiently. In order to further raise energy efficiency and improve transparency, all MAHLE production locations are increasingly implementing a software-based measurement approach. Thanks to this tool, it is now possible to monitor energy flows for electricity, gas, compressed air, and water in real time. With this clear overview, energy can

be controlled more flexibly and allocated without loss. Network analyzers, among other things, were recently rolled out to record short power failures and analyze the associated implications with the network operator.

New energy efficiency projects were also developed and driven forward at the Ramos Arizpe/Mexico and Kawagoe/Japan locations and, in the process, the plants use new technologies such as peak load monitoring. All projects clearly show that it is possible to effectively counteract the increasing demand for energy and that the future expense resulting from production increases can therefore be significantly reduced.

### **New filter system for cooling lubricants**

A new central filter system for cooling lubricants was commissioned at the plant in Leibertingen/Germany. This ensures ongoing capacity expansion in the area of lobe contour grinding. Initially, a new building had to be established for the system. Planning for the construction and installation started already two years ago. At the start of May in the past business year, the first components of the system were installed in the new building. The system transferred smoothly to series operation in July.

*The new central filter system for cooling lubricants in the Leibertingen/Germany plant uses band filters to process grinding oil.*





*Water treatment in the central cooling water supply of the Mühlacker/Germany plant is carried out using a new environmentally friendly reverse osmosis system.*

This system sets new standards with regard to economic efficiency and ecology. Considerable energy savings can already be recorded owing to energy-efficient controlled pumps, the absence of filter aids, and the briquetting of the grinding sludge. There is virtually no more waste, thereby significantly improving the overall waste balance.

#### **Reverse osmosis system for water treatment**

At the Mühlacker/Germany plant, the water treatment process for the central cooling water supply was converted at the end of 2013. The water treatment is no longer carried out by an ion exchange system, but by a new environmentally friendly reverse osmosis system. The chemical consumption of hydrochloric acid and sodium hydroxide can thus be completely eliminated.

#### **NOCOLOK brazing process**

At the Czech location of Ostrava, a recently developed spray flux-free brazing process is currently being introduced into series production. The so-called NOCOLOK brazing process for direct charge air coolers appreciably reduces the environmental impact: the energy requirement during the brazing process and the total amount of flux per charge air cooler is considerably lower as the drying station is no longer used prior to the soldering furnace.

#### **Energy recovery processes in South America**

Three plants in South America have now successfully implemented a process to recover energy in furnaces (aluminum and iron). Tools and blanks are heated using waste heat, thereby leading to a significant reduction in natural gas consumption. Other recently implemented technologies support waste recycling. One such example is a new process to separate and recycle metals from foundry sand and dust from exhaust systems or from slag and sludge.

#### **Focusing regularly on safety and environmental protection**

MAHLE employees regularly organize events relating to safety and environmental protection. For example, employees and their families in North America contributed to these topics on open-house presentations. By identifying these topics, many locations can look forward to a year without accidents at work.



## RESEARCH & DEVELOPMENT //

MAHLE continues to invest in the future. In 2013, numerous new developments and technologies were elaborated or made ready for series production.

### DEVELOPMENTS FOR ENGINE COMPONENTS AND SYSTEMS

The thermal and mechanical load on components affected by the combustion process in modern gasoline and diesel engines is increasing dramatically. This is primarily due to growing specific output and the associated reduction in specific fuel consumption. Furthermore, moving engine components are intended to increase engine efficiency, for example through lower weight and friction. To do this, MAHLE developed numerous innovative products and technologies in the previous business year that fulfill these requirements.

#### Gasoline engine pistons

In comparison with the EVOTEC® 2 piston, the new EVOTEC® SC piston is additionally equipped with a cooling channel that allows the temperatures at the piston crown and around the first piston ring land to be reduced by up to 25 kelvin. The load capacity in these areas increases significantly, enabling power densities of well over 100 kilowatts per liter.

A numerical 3D topology optimization of the EVOTEC® 2 piston concept was performed in order to develop the EVOLITE®. An improvement in the connection between the skirt and the box wall increases the service life in that area by nearly eight times while the weight is significantly lower. Both test bench and live engine results have proven that friction, crucial to low CO<sub>2</sub> emissions, is further dramatically reduced.

#### Steel pistons for passenger car diesel engines

MAHLE has now also developed steel pistons for passenger car diesel engines to readiness for series production: the MONOTHERM® piston will be used in series production for the first time in 2014. As a further development of the single-piece MONOTHERM® piston, the new two-piece MonoGuide® piston closes the gap to the TopWeld® steel piston introduced in 2012. In comparison with the MONOTHERM® piston, the MonoGuide® has a longer skirt, which remains decoupled from the piston crown. Consequently, it offers better NVH behavior (noise, vibration, harshness) and is therefore also optimally suited to application in aluminum crankcases.

#### Piston rings

MAHLE uses a combination of the so-called X-taper design and a PVD coating to achieve a high degree of flexibility and therefore good mold filling behavior with minimized oil control ring wear. The X-taper design primarily represents a shallow rise in the land design geometry. The land width thus remains low even if there is slight abrasion and the surface pressure stays intact. As galvanic plating reaches its limits at this land width, a coating made of MIP230 chromium nitrite is applied to increase wear resistance. The new MIP300 piston ring coating (Ceram Slide) combines the advantages of a PVD chromium nitride layer with those of a DLC layer. For the first time, a ternary layer with ceramic matrix and embedded graphite particles combines the good friction coefficients of the carbon layers with the positive properties of ceramic layers, which stand out thanks to their particularly high wear resistance, thermal stability, and potential layer thicknesses of up to 20 micrometers.

MAHLE steel pistons for passenger car diesel engines: MONOTHERM®, TopWeld®, and MonoGuide® (from left to right)





*From solid valve to hollow valve to EvoTherm®:  
a low-cost and effective solution for valve cooling*

### Valve trains

MAHLE has developed a new technology on the basis of a conventional hollow valve with cylindrical bore, whereby an extended hollow cavity can be made in the valve head with just one additional process: electrochemical machining. This enlarged hollow space allows liquid sodium to dissipate the heat even better during engine operation. The resulting cooler surfaces in the combustion chamber (reduction of around 30 to 50 kelvin) allow a shift in the knock limit. This therefore facilitates the optimization of the ignition point in the combustion design of gasoline engines and thus improved CO<sub>2</sub> and fuel consumption values. The valve mass is likewise reduced by up to six percent compared with conventional hollow valves.

Beyond the potential of the EvoTherm® valve, the thermodynamic advantages and industrial feasibility of the MAHLE TopTherm® valve were evaluated. This valve concept is designed as a lightweight valve. Its advantages have been proven with respect to reduced friction in the valve train, which lead to lower consumption in the NEDC by up to 0.5 percent. At the same time, this assembled valve offers more extensive potential for reducing temperatures by more than 100 kelvin at the thermally highly loaded component surfaces due to its construction as a rigid, rotation-symmetrical surface structure with a large sodium-filled cavity, and thus for additional significant CO<sub>2</sub> reduction potential through the optimization of the ignition point.



*First prototype of the newly developed  
active fuel prefilter module from MAHLE*

## DEVELOPMENTS IN FILTRATION AND ENGINE PERIPHERALS

### Fuel filter modules

The strategies of identical parts and modular design offer great potential for serving global markets efficiently in high quantities. On the powertrain side, the pinnacle of this approach is the so-called world engine. This concept presents substantial technical challenges. On the one hand, the entire powertrain must meet strict and regionally varied exhaust gas legislation, which leads to a high level of technological complexity. On the other hand, it is this level of technology that is confronted with different biofuel shares and fuel quality levels.

MAHLE has thus developed an active fuel prefilter for diesel engines that allows a new generation of engines and powertrains to be used around the world based on its reliable separation of water and contaminants. In normal operation, MAHLE's solution achieves a separation level of up to 98 percent and consequently protects critical engine components from damage and wear. The separation of water from fuel is dependent on the volume flow: separation levels drop in particular at high volume flow rates. Previously, separation systems were integrated in the fuel filter module near the engine on the pressure side. As a result, the separation was lower than the transient volume flow, which is determined by the load state of the engine. The active prefilter is now located in a separate circuit and can be charged with a largely constant volume flow, which is optimized for the filter medium.



*The controlled mechanical coolant pump from MAHLE enables a significant reduction in CO<sub>2</sub> emissions during the engine warm-up phase.*

### Air intake modules

Increasingly greater charge air pressures in modern turbocharged engines and the associated rising temperatures as well as stricter emissions regulations require more efficient charge air cooling systems that allow further reductions in charge air temperature. MAHLE has recently developed and presented integrated cascaded charge air cooling in the air intake module for gasoline engines. In the next step, investigations were performed to assess the potential of such cooling systems in diesel engines. The resulting increase in air volume was observed with respect to reducing soot emissions, increasing performance, and improving responsiveness. The principal motivation behind the diesel engine investigations was, however, the optimization of combustion at high loads. In a joint project of the Filtration and Engine Peripherals and the Thermal Management business units as well as MAHLE Corporate Advanced Engineering, numerous basic tests were carried out on a live engine. These tests showed considerable potential for decreasing emissions in partial-load operation, and for either reducing consumption or increasing performance in full-load operation, for example.

### Coolant pumps

Reaching the optimal operating temperature of a combustion engine more quickly is an effective way of further reducing CO<sub>2</sub> emissions in vehicles. Keeping the coolant flow at a standstill after cold-starting the engine supports an effective warm-up phase, as the coolant in the engine will not immediately dissipate any heat generated by the engine. MAHLE has therefore developed a system with a hydraulically controlled coolant

pump, which is attractive due to its simple design. With the patented MAHLE valve control, a slider closes the impeller outlet of the pump on demand and completely prevents the flow of coolant. The force required to move the slider is generated by the coolant pressure. A solenoid valve controls the generation of hydraulic pressure. In normal driving operation with a warm engine, the solenoid valve on the centrifugal impeller pump engages a direct permanent bypass from the pressure side to the suction side, therefore preventing pressure buildup during slider adjustment. When the engine is cold, the solenoid valve receives an electrical signal from the engine control unit and closes the permanent bypass.

## DEVELOPMENTS FOR ENGINE COOLING AND AIR CONDITIONING

### Engine cooling

In order to further reduce fuel consumption and CO<sub>2</sub> emissions, turbocharging must be increased in combustion engines. Thus, highly efficient charge air cooling must necessarily be complemented by increased cooling capacity. In addition, more space is necessary in the passenger car's front end in order to improve pedestrian protection and crash behavior. The Thermal Management business unit fully addresses both requirements with the 2-level cooling module. By optimizing the cooling module design, low-temperature radiators can now be designed to be larger and more efficient. It is possible to increase the performance of the entire cooling system while decreasing its package by reducing the pressure loss in the cooling module and improving the air flow through the module; this involves replacing the direct condenser by an indirect condenser in the engine compartment—without negatively affecting climate comfort. The new indirect passenger car charge air coolers, in turn, stand out with a high cooling capacity of up to 18 kilowatts and an exceptionally low pressure loss of less than 100 millibar. The plastic side boxes offer great freedom of design and flexible packaging.

The cooling system requirements for commercial vehicles are also more stringent with the EURO VI emission standard. At the same time, the focus of attention is on the reduction in fuel consumption. In the previous business year, MAHLE therefore launched the new VISCO® clutch ERP 200 with improved torque capacity, better controllability, and optimized cold start behavior onto the market. The VISCO® product range was rounded off with the new DF fan series, which is lighter than its predecessors, with improved performance, reduced sound levels, and optimized efficiency.

### Air conditioning and battery cooling

PHYSIO-CONTROL® comprises all innovations that contribute to improved individual climate comfort through, among other things, three different basic air conditioning configurations and one comfort layer between head and footwell area, as well as

between driver and passenger, which can be controlled according to outside temperature and sun intensity. The latest generation of four-zone HVAC modules are 300 grams lighter and use less electricity, with air performance that is virtually identical. Moreover the filter performance has been improved: separate fresh air and circulation air flaps ensure optimal ram air control.

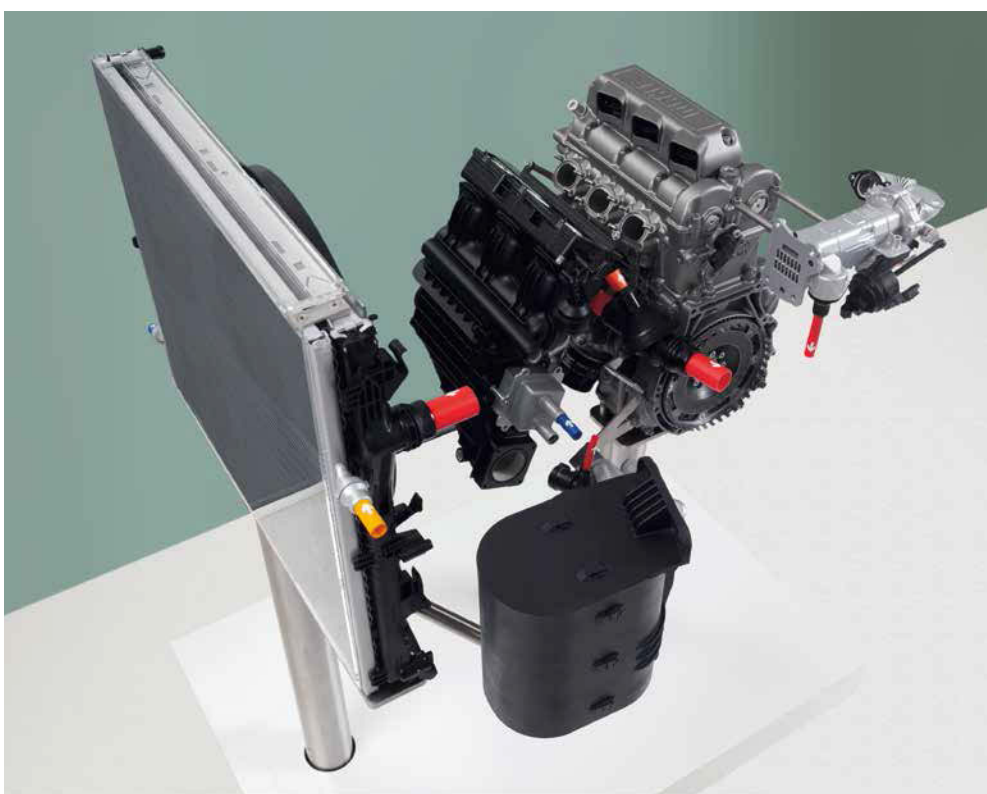
The new high-performance condensers with a triple undercooling zone are characterized by system performance that is between two and four percent higher with the same installation depth or by a weight advantage of 500 grams at a depth that is 16 to 12 millimeters lower with constant system performance. MAHLE's specific material concept demonstrates also a very high corrosion resistance.

In order to offset the heating deficit in electric and hybrid vehicles, MAHLE has developed the second generation of high-voltage PTC heaters, for which the power electronics and heat register have been completely redesigned. In order to cool the temperature-sensitive lithium-ion battery for the new plug-in hybrid vehicles, MAHLE is now fitting in series a new cooling plate for electrical energy storage device cooling. Thanks to the standardized, modular design, the different package requirements can be adapted with little construction effort. The cooling area can be changed by adjusting the number and length of pipes, while achieving lower package and weight, and higher power density.



*The latest generation of four-zone HVAC modules are lighter and more efficient. Various basic air conditioning configurations and thermal stratifications ensure optimal thermal passenger comfort.*

*The 2-level cooling module provides increased space in the front end with higher performance charge air cooling at the same time. The indirect condenser can be located in the engine compartment without any impact on comfort.*



## DEVELOPMENTS FOR INDUSTRIAL APPLICATIONS

### Indirect charge air cooling

In 2013, MAHLE supplied a total of 30 prototypes of its recently developed counterflow staggered blade charge air cooler for indirect charge air cooling in large engines to five major OEM engine manufacturers. The newly developed iCAC stacked-plate system for high-speed, high-performance diesel engines, for application in mobile machinery, is a very compact, rigid, and pressure-resistant charge air cooler. This is the first-time successful implementation of a counterflow arrangement of charge air and coolant for these applications, thereby resulting in a significant increase in power density compared with previous round-tube or bar-and-plate crossflow coolers. The charge air cooler can therefore be much more compact, which, in addition to the improved packaging, also generates a saving in weight of almost 50 percent. Thanks to the identical port configuration on the engine, the packaging remains unchanged with alternative designs in aluminum, nonferrous metal, or stainless steel. The number of plates makes it easy to achieve modularity by matching the charge air cooler performance to the number of cylinders within an engine class. As a low-cost solution, the recently developed counterflow staggered blade charge air cooler proves that technical advantages do not always come at a high financial cost.

### MAHLE ultrafiltration

Since the adoption of the Drinking Water Ordinance in 2011 and the associated requirement to carry out initial tests for Legionella bacteria in commercial facilities by the end of 2013,

MAHLE has brought numerous new technical developments to production maturity in order to permanently combat the Legionella problem. MAHLE's ultrafiltration membranes provide a chemical-free alternative. Micro- and ultrafiltration membranes reliably control pathogens, such as the Legionella bacteria, thanks to narrow pore widths and thus provide permanent protection for the pipe networks in private and commercial buildings. Besides membranes for cold water applications up to 45 degrees Celsius, MAHLE also provides polymer membranes for warm and hot water systems since 2013. The Ruhr District Institute of Hygiene in Germany has tested the design and materials at 60 degrees Celsius and certified them in accordance with KTW approval for hot water systems. Membrane modules and facilities, together with heat-resistant plastics or metallic materials such as stainless steel, can be designed for installation in the hot water cycle. This also applies to outlet points with expected temperatures of over 45 degrees Celsius. In addition to great heat stability, the outstanding properties of MAHLE membranes are maintained—in particular high permeability, low pressure loss, and high retention rates.

### Filter pump combinations for transmission in wind power plants

The transmission is a core component of most wind power plants and translates the low output speed of the rotor shaft into the high input speed of the generator shaft. Failure-free operation over 20 years or 175,000 operating hours is a prerequisite. MAHLE has therefore developed an oil filter module with combined oil pump in order to reliably clean the transmission oil in these installations. Extensive test bench measurements have already been successfully completed. It is currently being validated by several of our customers; a marked increase in market penetration is expected in the medium term.

*Counterflow staggered blade charge air cooler for indirect charge air cooling in large engines*



## RESEARCH PROJECTS

### Downsizing engine in actual operation

MAHLE has identified the actual consumption of a vehicle with a downsizing engine developed in-house using various road types and driving styles. The results indicate the potential for technologies to further reduce fuel consumption. The analysis according to road type and driving style has provided important findings and confirmed that the driving style in particular has a significant impact on fuel consumption figures. The partly substantial deviations from normal consumption can be reduced by using fuel efficient technologies, such as exhaust gas recirculation during near full-load and stronger transient engine operation. The evaluated data enables MAHLE to develop components and systems in a targeted manner to further reduce fuel consumption. This applies to standard cycles as well as actual driving operation.



### Range extender

The range extender engine developed by MAHLE and installed in a ready-to-ride demonstrator vehicle in 2013, has attracted much interest from customers. It stimulated higher performance levels in the two-cylinder in-line gasoline engine, which until now achieves up to 30 kilowatts by means of natural aspiration. MAHLE is therefore currently investigating the feasibility of two additional performance variants, with 40 kilowatts through increasing the engine speed, and with 50 kilowatts by means of electrical turbocharging.

### System comparison of aluminum and steel pistons

A system comparison of aluminum and steel pistons was carried out by MAHLE on a series passenger car diesel engine. The piston cooling oil volume and temperature, under the same conditions in each case, were investigated in relation to the basic engine and the impact on frictional loss, piston temperature, and combustion. In addition, the combustion's position of center of gravity and the exhaust gas recirculation rate were varied and analyzed to determine whether the piston variants behaved differently. Overall, the results helped to associate the advantages of the steel pistons to the influence variables, i.e., friction differences, combustion improvements, blow-by behavior, and distribution of wall and exhaust gas heat, taking into account the emissions behavior.

### 48-volt hybrid systems

In previous years, the electrical power output and energy requirements of vehicles were constantly on the rise with the addition of new functions related to comfort, safety, assistance systems, and infotainment. However, fuel savings and measures to reduce CO<sub>2</sub> emissions also require additional electric energy. The increased power output of an electrical system with 48 instead of 12 volts fulfills these requirements to a greater extent. It is easier to use a 48-volt electrical system to operate the electrical actuators of engine accessories that are currently powered mechanically or hydraulically. MAHLE's Corporate Advanced Engineering is therefore working on the development of 48-volt units, which will probably not only be used in the powertrains for hybrid functions in the future, but will also become significantly more important for the vehicle as a whole.

### Utilization of exhaust gas heat

One way to further reduce fuel consumption is to use thermal energy, which until now was lost into the environment via the exhaust gas, to generate mechanical power and thus relieve the load on the combustion engine. MAHLE is currently carrying out investigations to determine whether new product opportunities will arise from the use of a so-called Organic Rankine Cycle (ORC). In the ORC, a fluid in liquid form is pumped



*MAHLE is currently investigating additional performance levels of its own range extender engine.*

under high pressure into a heat exchanger, where it is evaporated using exhaust gas heat. The fluid then relaxes in an expansion machine that generates mechanical power output. In order to close the cycle, it is liquefied again in a condenser. The potential consumption savings of this system are estimated at approximately five percent. In specific terms, MAHLE Corporate Advanced Engineering is working on possible designs for the fluid pump and expansion machine as well as the heat exchanger. If the concept proves to be attractive from a technical and economic perspective, there is even the opportunity to enter the market as a total systems supplier. This would be achieved through the collaboration with the Thermal Management business unit, where prototypes of the required heat exchanger for the cycle are already in predevelopment.

## GROUP ORGANIZATION //

The MAHLE Group is split into five business units and seven profit centers. Customers in the automotive industry are mainly served by the Engine Systems and Components business unit, the Filtration and Engine Peripherals business unit, and the Thermal Management business unit, which was recently added in 2013. The Aftermarket business unit supplies the independent automotive spare parts market with products in original equipment quality. All MAHLE industrial activities are combined in the Industry business unit, with its Filtration, Engine Components, and Thermal Systems divisions.

The Motorsports and Special Engines, Engineering Services, and Small Engine Components profit centers are geared toward very specific customer segments. The Mechatronics profit center was created in 2011 to meet the steadily rising demand and requirements for mechatronics systems and components, in particular against the backdrop of growing powertrain electrification in combustion engines and in hybrid and electric vehicles. In the course of the acquisition of the majority share in the Behr Group, the Thermostats and Valves, Control Units for vehicle air conditioning, and Front-end Modules profit centers were integrated in the MAHLE Group in 2013.

## BUSINESS UNITS

### Sales and Application Engineering

#### Advanced Engineering

##### Engine Systems and Components

Aluminum pistons for gasoline and diesel engines, articulated and steel pistons for commercial vehicle engines, piston assemblies, and complete power cell units

Piston rings, piston pins, connecting rods, cylinder liners, bearings, and bushings for combustion engines and other automotive applications, piston inserts

Complete valve train systems and their components, camshafts, valves, and valve actuating components

##### Filtration and Engine Peripherals

Filter modules for fuel, oil, and air filtration as well as cabin air filters

Air intake modules for gasoline and diesel engines, cylinder head covers with integrated oil mist separation, controlled oil pump systems, oil coolers for engine and transmission applications, and activated carbon canister modules for tank ventilation

##### Thermal Management

Complete HVAC systems, condensers, evaporators, storage evaporators and evaporator coatings, heater cores, blowers, air vents, fragrancing units. Control panels for passenger car and commercial vehicle air conditioning systems. Cooling plates and chillers for lithium-ion battery cooling

Cooling modules, expansion tanks, high- and low-temperature radiators, exhaust gas coolers, direct and indirect charge air coolers, power steering oil coolers. VISCO® clutches and fans as well as VISCO® coolant pumps for commercial vehicle applications

##### Aftermarket

Products for vehicle maintenance and engine repair for passenger cars, motorcycles, transporters, commercial vehicles, stationary engines, as well as agricultural and construction machinery: engine components, filters, engine gaskets, exhaust gas turbochargers, air compressors, thermostats, and components for vehicle air conditioning and engine cooling. Workshop equipment for air conditioning, oil, and cooling circuit maintenance. Supplementary ranges

##### Industry

Filters and filtration systems, fluid separation, and dedusting for a variety of industrial applications. Membrane technology for water treatment and product filtration

Pistons, piston pins and rings, cylinder liners, valve train components, camshafts, and bearings for large engines

Cooling systems and cooling applications for large engines, various vehicles as well as wind power and electronics. Air conditioners and complete air conditioning systems for special vehicles

## PROFIT CENTERS

Motorsports and Special Engines

Engineering Services

Small Engine Components

Mechatronics

Thermostats and Valves

Control Units

Front-end Modules

## ENGINE SYSTEMS AND COMPONENTS BUSINESS UNIT //

The Engine Systems and Components business unit includes the development and manufacturing of piston and valve train systems as well as cylinder components at a total of 51 production locations and in five large research and development centers worldwide. The product range comprises integrated systems solutions and components for all types and sizes of combustion engines in passenger cars and commercial vehicles. The success of the business unit is based on extensive systems competence, many years of broad production experience, and innovative development work.

### **Sustainable mobility through technological progress**

MAHLE products make a growing contribution to the reduction of CO<sub>2</sub> emissions in new vehicles and thus to creating sustainable mobility. A significant trend in meeting reduction targets is the downsizing of engines, which means the scaling down of displacement and decrease in the number of cylinders while maintaining and improving performance. This is associated with a rise in the thermal and mechanical load of engine components and the need for a further reduction in friction loss and weight. These technical changes lead to a significant increase in the complexity of products—a trend addressed by MAHLE Research and Development.

In 2013, MAHLE prepared for the launch of new and innovative products and in some cases, manufacturing has already started. Pistons that are significantly lighter but, at the same time, can bear greater loads and therefore contribute to lower fuel consumption, have been developed for diesel and gasoline engines. A new valve technology ensures the improved cooling of hollow valves that are primarily used in highly loaded turbocharged engines and are thus suitable for optimal ignition. Innovative coatings and a new piston ring design reduce friction and, as a result, also lower fuel consumption.

### **Differentiated developments worldwide**

The 2013 business year was marked by a varied market development in the regions. From a global perspective, the development of demand for commercial vehicles and passenger cars was very heterogeneous.

In Europe in particular, passenger car production remained restrained, and some mass manufacturers recorded considerable sales losses. MAHLE had to respond to the lower demand with capacity adjustments: the manufacturing location for passenger car pistons in Colmar/France therefore stopped production at the end of 2013. In contrast, a new market opportunity is arising for MAHLE in Europe with the production start of diesel passenger car steel pistons from 2014. Once again, MAHLE proves to be a technology leader.



Sales in North America were, on the one hand, influenced by the rising production in the passenger car industry. On the other hand, the overall picture was marred by the weak development of sales in the commercial vehicle sector and the difficult business with off-highway applications. After adjustment for massive negative exchange rate effects in the euro reporting currency, stable development was recorded in South America, with slight gains in passenger cars and rising commercial vehicle production.

Significant growth was achieved in Asia, primarily in China. As in previous years, China is the most important driver of sales growth, thereby making the strongest contribution to growth in all product groups. There was an opposite trend in commercial vehicles, particularly in Japan. The weak economy in India also had a negative impact on Asia.

#### Regional investments for regional demand

Regional investment activities correspond to the varied market developments. Investments focused on the growth regions of Asia, primarily in China, where capacities were expanded in line with market development. To offset the considerable increase in wage costs in several emerging markets, MAHLE also invested to a considerable extent in automation and rationalization projects.

In 2013, the business unit was awarded numerous new customer orders. In the area of commercial vehicles, several orders for a new generation of steel pistons were acquired. MAHLE won larger orders for the production of valves for the future gasoline and diesel engine families of two German passenger car manufacturers in the premium sector. Moreover, MAHLE was nominated to supply passenger car aluminum pistons, among other products, for various major international customers.

#### Outlook for 2014: cautiously optimistic

The outlook for the 2014 business year is cautiously optimistic, essentially due to the technological strength of the group and the ongoing globalization. Economic growth in Asia will continue, while a slow recovery can be expected in Europe. The intensification of the European regulation on CO<sub>2</sub> emissions poses new challenges for research and development at MAHLE: this, however, also opens new market opportunities.



#### DEVELOPMENT OF ENGINE SYSTEMS AND COMPONENTS BUSINESS UNIT //

Business year	2013	2012
Consolidated sales*		
Business unit	2,727	2,887
Share of group sales	2,494	2,623
Capital expenditure on tangible fixed assets*	173	144
Production locations	51	51
Headcount (as at Dec. 31)	29,568	29,888

\* million EUR



## FILTRATION AND ENGINE PERIPHERALS BUSINESS UNIT //

The Filtration and Engine Peripherals business unit develops and produces components and systems for automotive air and liquid management at five large research and development centers and at 32 production locations in Europe, Asia/Pacific as well as in North and South America. MAHLE is one of the leading global automotive suppliers of these technology products in the automotive industry.

### Innovations for efficient vehicles

The development of products for air and liquid management is in line with the trend toward lower CO<sub>2</sub> emissions and fuel consumption. Air filters and air guidance systems make a substantial contribution to meeting these crucial requirements. MAHLE has great innovative potential and a high degree of process expertise in the entire automotive air intake system. Innovations in this area made it possible to achieve above-average growth in the business unit in 2013. New innovative MAHLE products are also used in the different fluid circuits.

A controlled coolant pump developed by MAHLE thus shortens the time required to reach the optimal engine operating temperature and thereby reduces CO<sub>2</sub> emissions. With active up-

stream water separation, it is possible to improve the processing of diesel fuel in complex fuel injection systems, which also lowers emissions. An intake module with integrated indirect charge air cooling and subcooling greatly contributes to the reduction in fuel consumption and to the increase in engine efficiency. MAHLE has developed intake and exhaust systems to enable the use of powertrains with fuel cells. These new technologies consistently expand the product portfolio and support the group's continued growth.

Important innovations are also taking place with regard to material substitution. MAHLE offers low-cost alternatives without compromising on functionality: duroplastic or thermoplastic materials replace aluminum, plastic and metal hybrid systems are being developed in order to achieve ideal load-bearing structures with simultaneous weight optimization.

### Growth, profitability, and investments in the regions

Sales in Europe increased by more than five percent in comparison with the previous year. The Austrian production location in St. Michael ob Bleiburg again generated the greatest sales. The highest growth rates, however, were achieved by plants in Romania and Turkey. Besides the increase in sales, progress was also made with regard to the effectiveness of the implemented process optimization measures. In coming years, sustainable positive effects are expected in terms of both sales and profitability.

The highest proportion of investments associated with customer projects were in the Wustermark/Germany and St. Michael ob Bleiburg/Austria locations. In addition, intensive investments were made in the expansion and construction of the Auengrund development center in Thuringia/Germany for demand-actuated, fully variable controlled pump drives. The above-average growth in sales is based on MAHLE's technological leadership in this area. In this year, so many new customer projects were acquired in this area that the development resources were pushed to their absolute limit and had to be expanded.

The recovery of the passenger car market in North America and the presence of MAHLE on platforms with high demand contributed to a marked sales increase in this region in comparison with the previous year. Additional major air filtration



orders for new engine generations were acquired in the current business year. In order to meet the high demand, MAHLE decided to invest in the short term by building another large location in Mexico.

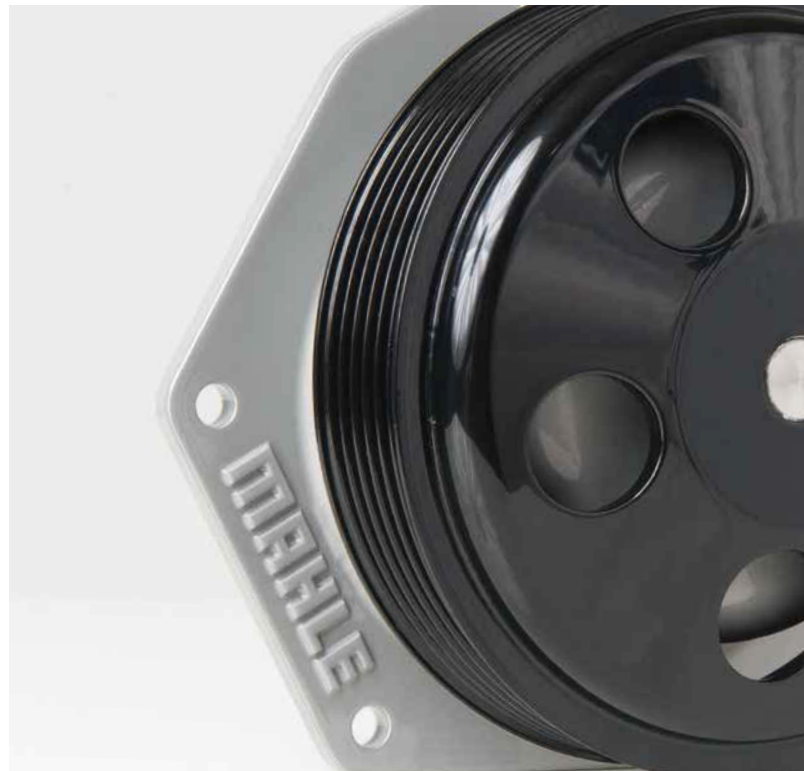
In South America, a high percentage growth in sales from a low level is being recorded. This development is based on numerous production ramp-ups of products and platforms. MAHLE is responding to the threat of falling margins resulting from increasing personnel costs with a productivity improvement initiative.

Fast growth with good profitability was achieved in China in particular. The objective is to further maintain satisfying profitability in this intensely competitive environment. Activities also focus on Southeast Asia, which is regarded as Asia's extended workbench and serves the local automotive market. In South Korea, MAHLE is responding to the pressure on margins with targeted activities to strengthen competitiveness.

The increased investments in the region are in line with the pleasing business development. After production commenced in Kyushu/Japan in the past year and the location at Samut Prakan was significantly expanded, MAHLE laid the foundations for a new location at Wuhan in the Chinese province of Hubei in 2013. Moreover, investments are being made in a tooling production facility owned by MAHLE in Shanghai/China and production is being further expanded in Thailand. In Indonesia, a large building plot was purchased so as to commence production for several new orders already taken from Japanese customers in 2014.

#### 2014: continued positive trend

Building on a sound base, the positive development achieved by the business unit is expected to continue beyond 2014. Furthermore, MAHLE's technological leadership should contribute to a development of sales for the business unit that significantly exceeds general market growth.

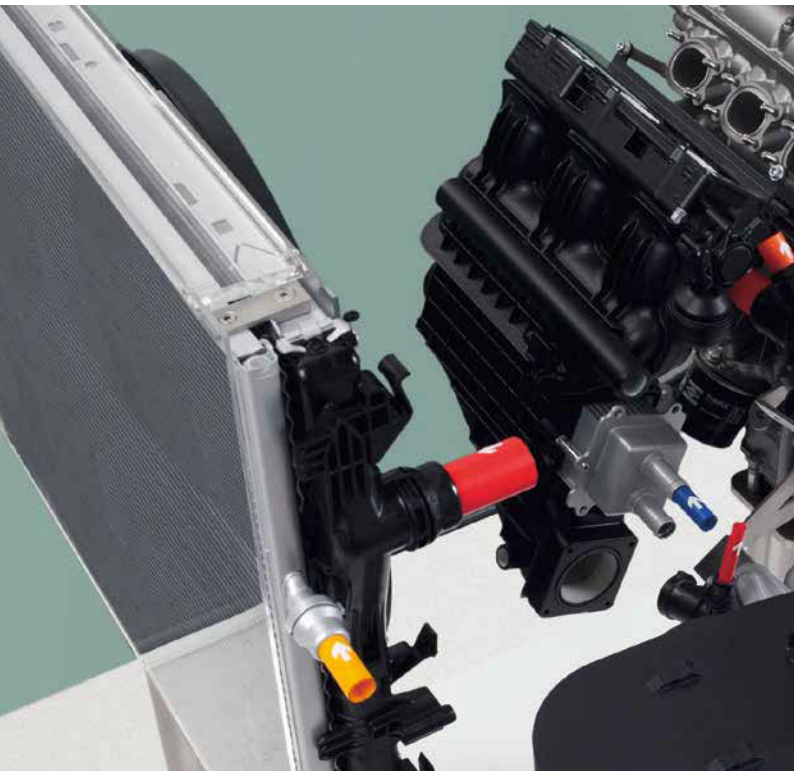


#### DEVELOPMENT OF FILTRATION AND ENGINE PERIPHERALS BUSINESS UNIT //

Business year	2013	2012
Consolidated sales*		
Business unit	2,148	2,113
Share of group sales	1,946	1,926
Capital expenditure on tangible fixed assets*	110	99
Production locations	32	30
Headcount (as at Dec. 31)	9,711	9,292

\* million EUR

## THERMAL MANAGEMENT BUSINESS UNIT //



The Thermal Management business unit is specialized in engine cooling and vehicle air conditioning and, as a systems partner of the international automotive industry in these areas, is one of the leading global suppliers for passenger cars and commercial vehicles. Production takes place within a global network of 27 locations: new products are being developed at four regional research and development centers.

### Greater importance of thermal management

Three major trends are currently driving product development and the markets: the downsizing of engines is a central topic in order to achieve reductions of CO<sub>2</sub> emissions and therefore fuel consumption. Another important trend is powertrain electrification. In the area of air conditioning, the requirement for improved comfort and lower energy consumption must be met. This is where another development comes to the fore: it is expected that the chemical refrigerant currently used in Europe will be replaced by CO<sub>2</sub> as a natural refrigerant in the foreseeable future.

Downsizing will play a growing role primarily in the developed regions of Europe, North America, and Japan. Thermal management will therefore become more complex and the number of components and products will increase. The business unit is well prepared for this development in demand. Innovations, in particular charge air coolers and exhaust gas recirculation systems, have been successfully developed and demanded in growing quantities for a long time. As a result, business development and future prospects in these product divisions are expected to be very positive. Environmental legislation in emerging BRIC countries is considerably weaker, but absolute volumes of new vehicles in these countries are growing rapidly. The global market is divided: in highly advanced regions, the business unit grows primarily thanks to new products, whereas BRIC countries contribute to this increase through volume demand.

### Opposing market developments

The European automotive industry is stagnating. Sales are also restrained due to the fact that manufacturers are increasingly transferring production to regions with growing demand. However, the business unit is able to record sustainable growth at a low level. Sales of engine cooling products increased owing to the effects of downsizing. The introduction of CO<sub>2</sub> as a natural refrigerant in vehicle air conditioning may have a positive impact on growth. The technological strength of the business unit in this segment means that high market penetration can be anticipated.

In Europe, restructuring and rationalization measures dominated the past business year. In eastern Europe, cost advantages as a result of the expansion of locations were exploited; the plant in Ostrava/Czech Republic, in particular, was extended. At western European locations, the degree of automation was further increased. A new concept for HVAC systems with "Flowline" assembly lines helps to make production more flexible.

In North America, the passenger car market developed positively. However, declines were recorded in the commercial vehicle business. Nonetheless, the business unit in North America plays a dominant role in engine cooling as well as air conditioning for heavy commercial vehicles. The business unit successfully returned to two major manufacturers in the current business year. The level of sales in the local currency rose to a small extent, but fell slightly in the euro group currency. A new production location is planned in Mexico to address the market development in North America.



The development of sales in local currency in South America is positive. In Brazil, the EURO V standard was introduced in January 2012 for all newly registered commercial vehicles. Further growth will be achieved in this market thanks to products that have already been proven in Europe.

In Asia, the highest growth will occur in China, while the Indian market is stagnating; sales in Japan and Korea will still be relatively low but positive developments may be achieved in both markets thanks to the large amount of experience gained in downsizing and the recent integration in the MAHLE Group. However, the greatest increase in volume will take place in China, where the joint ventures in particular are developing well. Due to this growth, two new production locations in Shenyang and Chengdu will commence production in the new business year.

#### Positive prospects

The trend toward downsizing will continue to intensify and generate positive effects. Even if the initial expectations relating to powertrain electrification and hybridization have not yet materialized, these technologies will continue to be developed. Demand for the cooling of lithium-ion batteries and high-voltage PTC heaters will grow. The EURO VI legislation provides another opportunity. Within the MAHLE Group, waste heat recovery technologies are currently being developed with commercial vehicle manufacturers in order to be prepared for the years 2018 through 2020. At an international level, a positive development of sales is again expected in 2014 thanks to the growing Chinese market.



#### DEVELOPMENT OF THERMAL MANAGEMENT BUSINESS UNIT //

Business year*	2013
Consolidated sales**	
Business unit	773
Share of group sales	747
Capital expenditure on tangible fixed assets**	38
Production locations***	27
Headcount (as at Dec. 31)	14,698

\* Short business year October to December 2013 of the automotive business of the former Behr Group

\*\* million EUR

\*\*\* Incl. locations of joint ventures

## AFTERMARKET BUSINESS UNIT //

The Aftermarket business unit supplies engine repair shops and the independent vehicle spare parts sector with MAHLE products. Its objective is to offer an extensive spare parts range in original equipment quality for as many vehicle brands as possible. Now with a total of 23 locations, MAHLE has an international network with comprehensive sales and service functions.

The development of sales in the past business year was largely characterized by the discernable growth of local sales due, in particular, to the Europe and Asia regions. The trends in the Brazilian market, an important one for MAHLE, and in North America were in line with those of the previous year. However, the devaluation of key currencies, such as the Brazilian real and the Argentinian peso, and, to some extent, the American dollar—at least in terms of reported sales in the euro group currency—meant some significant falls in sales and growth.

### High-growth air conditioning service

Business in the area of air conditioning servicing expanded significantly; to accommodate this, a new location in York/USA was taken over at the beginning of 2013. Air conditioning

servicing will definitely remain an interesting topic in coming years, as the use of new refrigerants also generates the demand for new air conditioning service units that are adapted accordingly. MAHLE is therefore expanding its range of service solutions alongside the classical vehicle spare parts business.

### Expansion in eastern Europe, Brazil, and China

Two significant investment projects were completed toward the end of the business year. A new distribution center was constructed at Obninsk in the region of Kaluga/Russia for the key markets of Russia and Belarus, thereby addressing the continued increase in demand in these markets. An even more comprehensive project was the construction of the Brazilian logistics and Aftermarket location at Limeira in São Paulo. These investments are in line with the positive growth expectations for the coming years. The Aftermarket business unit has taken into account the sustained growth of the number of vehicles in Asian markets, particularly in China, by further expanding the ranges, logistics structures, and extensive training programs for the qualification of repair shops for the maintenance and servicing of modern vehicles.

### DEVELOPMENT OF AFTERMARKET BUSINESS UNIT //

Business year*	2013	2012
Consolidated sales**		
Business unit	805	797
Share of group sales	796	787
Capital expenditure on tangible fixed assets**	29	7
Locations	23	17
Headcount (as at Dec. 31)	1,670	1,500

\* Consolidation of Behr Hella Service (BHS) joint venture as of October 2013 as well as RTI Technologies

\*\* million EUR



## INDUSTRY BUSINESS UNIT //

All of the group's nonautomotive activities are combined in the Industry business unit. With 21 locations across the world, the unit is active in three divisions: Filtration, Engine Components, and Thermal Systems for industrial applications. Besides the supply of products, the core competence of the business unit is the provision of tailor-made engineering solutions to enable customers to act in a sustainable manner, i.e., save energy, reduce emissions, eliminate pollutants.

The objective is to achieve technology and market leadership in selected applications segments and niches; this has already been achieved in some areas: engine components worldwide, thermal management in Europe, industrial filtration in the oil and gas sectors, and factory equipment.

### Increased globalization

In the past business year, the economic environment was very difficult. Sales adjusted for exchange rate effects fell slightly. The markets of the industry sectors that are relevant for the business unit declined both in Europe and the USA. As the business unit currently still generates around 85 percent of its sales in Europe, the impact of the European crisis was not offset by other regions.

While a slight recovery is expected in Europe for 2014, public investments continue to decline as a result of the sovereign debt crisis. Many planned projects therefore had to be postponed or did not materialize. Good opportunities continue to exist in eastern Europe and Russia, where the business unit is pursuing active business development. The strengths are in filtration solutions for the food industry and in supplying cooling systems to local manufacturers of railway vehicles.

In order to level out the economic imbalance between individual regions more effectively, new activities are currently focused on Asia and on China in particular. In China, the fast-paced construction of high-speed trains, which are supplied with MAHLE cooling systems, offers particularly good opportunities. The construction of wind farms is also making progress in China; the country is now the largest wind power plant operator. Entry into the service business has been successful here. In the coming years, activities in Asia are to be driven forward as a matter of priority. Moreover, larger investments in a significant expansion of the vertical range of manufacture are also planned.



### DEVELOPMENT OF INDUSTRY BUSINESS UNIT //

Business year	2013	2012
Consolidated sales*		
Business unit	458	474
Share of group sales	445	465
Capital expenditure on tangible fixed assets*	12	16
Production locations	21	23
Headcount (as at Dec. 31)	2,246	2,275

\* million EUR

## PROFIT CENTERS //

### MOTORSPORTS AND SPECIAL ENGINES

The Motorsports and Special Engines profit center develops and produces components for motorsport applications as well as for use in high-performance road vehicles. The profit center also undertakes the partial and full assembly of engines through to cold and hot tests. The products are used in vehicles of all racing series from Formula 1, the German Touring Masters (DTM), and the U.S. NASCAR series, through to smaller categories, such as Formula 3. Vehicles equipped with MAHLE products have been taking first place at the 24 Hours of Le Mans since 1970. And rally world champions have been reaching the finish line with MAHLE products since 2001.

In 2013, significant growth was achieved with engine components for high-performance road vehicles in comparison with the rather weak previous year. Investments were made in this area in order to take advantage of the growth opportunities. The restructuring measures in the manufacturing and assembly units in England are one topic of the coming year.

Changes to the Formula 1 rules with regard to downsizing and increased engine service life set new challenges for the profit center. With the development of new technologies for motorsport and the growing variety of engineering and services provided, the decline in numbers built for Formula 1 can be countered again in 2014 and continued profitability secured.

### ENGINEERING SERVICES

MAHLE's Engineering Services business segment (MAHLE Powertrain) assists vehicle and engine manufacturers, Tier 1 customers, and the aftermarket with comprehensive engineering services and test systems for powertrains and vehicles. Across the world, employees in the development centers are working on the continued development of existing powertrains as well as new designs and technologies. The most important

topics are currently the reduction of CO<sub>2</sub> emissions, downsizing, turbocharging, injection technologies, friction loss minimization, alternative fuels, thermal management, and hybrid systems. This year, the Engineering Services profit center again achieved improved profitability that exceeds planning, and was able to substantially overshoot forecast sales and results in England in particular.

### SMALL ENGINE COMPONENTS

The product range of the Small Engine Components profit center includes cylinder assemblies and heads, pistons, piston rings and pins, connecting rods, and cylinder liners, as well as valves for hand-held combustion engines for the manufacturers of professional chainsaws, blowers, or lawn mowers, among other things. In addition, the profit center manufactures products for customers in the recreational industry. MAHLE is a supplier of

durable, low-emission engines for motorcycles, snowmobiles, personal watercraft, and other recreational vehicles. This market segment grew in the 2013 business year, a growth from which the location in Rankweil/Austria in particular benefited. The German location of Markgröningen, which specializes in industrial applications, was faced with capacity adjustments due to weak market demand.

## MECHATRONICS

The Mechatronics profit center covers the production and marketing of several new product families. The latest and most promising product is the electrical wastegate actuator, which opens and closes the wastegate flap in the exhaust gas turbocharger at a continuously variable high actuation speed, thereby

achieving very precise boost pressure regulation as well as lower exhaust gas emissions and consumption values. In the medium and long term, it is intended to significantly expand the product range in this sector to accompany the growing powertrain electrification, among other things.

## THERMOSTATS AND VALVES

Behr Thermostats and Valves (BTT), which is operated within the group as the Thermostats and Valves profit center, is a wholly owned subsidiary of the Thermal Management business unit. It develops and produces thermostatic control systems across the world for the automotive industry and industrial engineering. BTT products are used in passenger cars, commercial vehicles,

and heavy machinery, such as wind power plants and hydraulic systems. BTT is a market leader in Europe, has a strong market position in Asia with locations in China and Korea, and shows significant growth potential for the American markets. Alongside its core business in global vehicle production, BTT is an exclusive supplier of MAHLE Aftermarket.

## CONTROL UNITS

The Behr-Hella Thermocontrol (BHTC) joint venture, which corresponds to the Control Units profit center at MAHLE, develops and produces control units for vehicle air conditioning. The product range comprises three segments: the development of climate operator controls, the development of software for climate control, as well as the development and production of power electronics for blower motors and electric booster heaters. BHTC works directly with all OEM customers in order to sustainably improve the function, service life, quality, and reliability of the products.

## FRONT-END MODULES

HBPO GmbH, the Front-end Modules profit center located in Lippstadt/Germany, is a joint venture between three global innovation and market leaders: the lighting and electronics specialist Hella, the specialist in painted plastic parts and plastic systems Plastic Omnium Auto Exterior, and MAHLE Behr. The partners develop, manufacture, and distribute jointly assembled intelligent front-end modules for vehicle construction, such as cooling modules, headlights, and bumpers for all vehicle classes. The focus is on the introduction of new products, the continued optimization of just-in-sequence deliveries, the automation of production, and an increased presence in eastern Europe as well as in Asia and North America, among others. HBPO currently manufactures at 21 locations. In the medium-term, further significant capacity increases are planned.

### Profit Centers:

Motorsports and Special Engines

Engineering Services

Small Engine Components

Mechatronics

Thermostats and Valves (consolidation as of October 2013)

Control Units (consolidation as of October 2013)

Front-end Modules (consolidation as of October 2013)

## DEVELOPMENT OF ALL PROFIT CENTERS AND SERVICES //

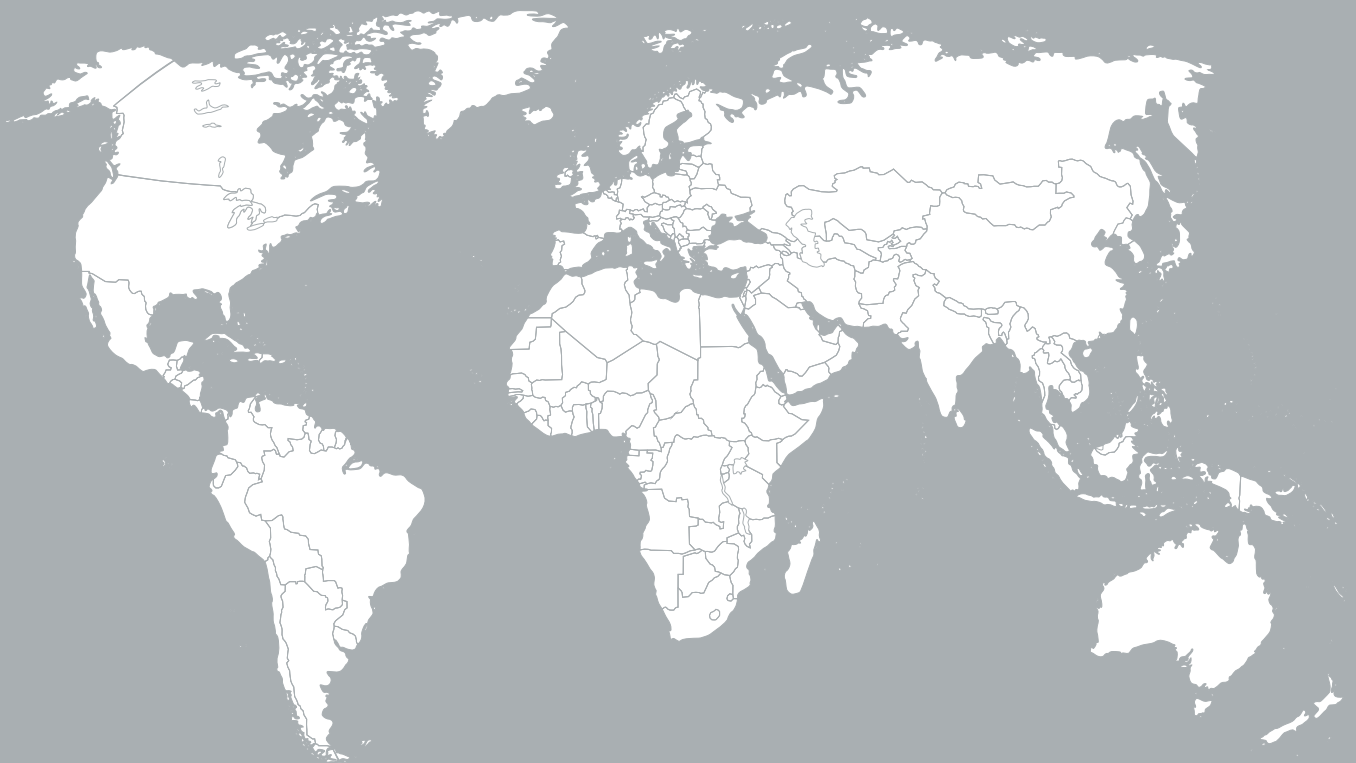
Business year	2013	2012
Consolidated sales*		
Profit Centers	785	639
Share of group sales	512	359
Capital expenditure on tangible fixed assets*	50	57
Production locations	48	12
Headcount (as at Dec. 31)	6,452	4,707

\* million EUR



## RESEARCH AND DEVELOPMENT IN A GLOBAL NETWORK //

Since it was founded almost 100 years ago, research and development has been in MAHLE's DNA. It all started in a small repair shop for engine testing in Stuttgart/Germany, where Ernst Mahle developed the innovations that contributed to the success story of the combustion engine. Today, ten major research and development centers (Tech Centers) throughout the world work together to improve engine and vehicle service life and performance—with lower fuel consumption and emissions, and enhanced comfort. New solutions tailored to the specific requirements of local markets are also emerging.



Fleet consumption and CO<sub>2</sub> reduction are subjects that unite the automotive world. In this respect, all manufacturers and Tier 1 suppliers are faced with the same challenges. Significant success was achieved in the last few years—helped to a large extent by the MAHLE product portfolio.

Our ten major Tech Centers grant us a presence in all world regions. Our engineers regularly exchange experiences and discuss new findings, thereby ensuring the efficient transfer of technology. At the same time, MAHLE operates a number of smaller competence centers for key projects and, last but not least, many of our production plants are equipped with autonomous testing facilities. We also cooperate with external research associations, societies, and colleges across the world in order to identify further potential for the development of efficient vehicle technologies.

In this context, a balance must be maintained between diversification and standardization. These two parameters are directly linked because a high level of standardization is what enables the range of products, but at the same time it is also a limiting factor. Individual influences through culture, politics, and market-specific requirements must, however, be taken into account and will continue to have an impact on diversification. It is then interesting to seek out synergy and scale effects in markets that initially appear to have fundamentally different technological orientations—especially as stimuli that cross regional boundaries may arise.

As a globally operating group with a strongly decentralized organizational structure that is oriented toward the regions, MAHLE is optimally equipped for this task. Furthermore, our local presence means that we can establish long-term business relationships with customers.

#### **FROM A CENTRAL LABORATORY TO A GLOBAL RESEARCH AND DEVELOPMENT NETWORK**

As early as in the 1930s, research and development activities at MAHLE are combined in a central laboratory. Building work begins on a major engine testing center in Stuttgart/Germany in 1973; in 2002, the new construction of the MAHLE headquarters creates space for expansion.

By this point, MAHLE already has a network of R&D centers in key world regions: in 1996, a R&D center in São Paulo/Brazil joined the center in Stuttgart thanks to the mergers of MAHLE Ltda. and Metal Leve S.A. In 1998, a Tech Center was founded at Farmington Hills in Detroit/USA. And the acquisitions of Tennex and Izumi provided research and development centers in Tokyo/Japan. All these centers increasingly function as pools of expertise for global projects.

In 2005, MAHLE takes over the engine developer Cosworth, now trading as MAHLE Powertrain, bringing in research and development centers in Northampton/Great Britain and Novi in the U.S. state of Michigan. MAHLE can now intensify its efforts in the area of engineering services. In 2006, MAHLE commissions its sixth research and development center—in Shanghai/China. In 2012, this center gains three new building complexes, and is now one of the leading R&D centers in China.

Additional development locations in England and the United States are added at the start of 2007 in connection with the acquisition of the engine parts business of Dana.

With the opening of the Tech Center in Jundiaí near São Paulo/Brazil in 2008, the development activities of all corporate departments in South America are concentrated in one location. The employees carry out all of the MAHLE Group's research and development activities for South America, and operate the design and sales departments. In addition, the use of second- and third-generation biofuels forms a focal point.

In June 2013, MAHLE celebrates the opening of the new North America headquarters. The now expanded research and development center is also located at the large campus in Farmington Hills, which unites the Engineering Services and Test Systems divisions of MAHLE Powertrain with the Tech Center of the Engine Systems and Components business unit under one roof.

With the acquisition of the majority share in Behr in autumn 2013, three additional Tech Centers in Stuttgart/Germany, Troy, Michigan/USA, and Pune/India are integrated in the global network.



## EUROPE

### Germany: Stuttgart-Bad Cannstatt

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- Founded in 1920
  - Year current location was built: 1952
  - R&D employees: 940
  - Tech Center surface area: 13,700 sqm
- 

The Tech Center is one of the oldest and largest R&D centers in the world. This is the heart of MAHLE, because it is where the company was founded and where our headquarters have always been located. However, the heart of the automobile lies in Stuttgart/Germany, because this is where it was invented; the region has become the traditional center of vehicle construction. Major manufacturers are headquartered here or have a presence with key production locations. In addition, the cooperation with colleges and think tanks provides MAHLE with huge potential.

The Tech Center is involved in all business segments of the MAHLE Group—from engine systems and components, filtration and engine peripherals, through to industrial applications.

## EUROPE

### Germany: Stuttgart-Feuerbach

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- Founded in 1905, part of the MAHLE Group since 2013
  - Year current location was built: 1941
  - R&D employees: 1,035
  - Tech Center surface area: 18,000 sqm
- 

In 1905, Julius Friedrich Behr laid the foundation for his company—and thereby also for the Tech Center in Stuttgart-Feuerbach/Germany. In 1937, the world's first climatic wind tunnel for passenger cars was built here. This made it possible to investigate engine cooling without costly test drives. Legendary vehicles, such as the Mercedes Silver Arrows, were tested and equipped with radiators from this location. Oil coolers for the initial VW Beetle prototypes were created jointly with the Porsche development office. Today, this Tech Center has become our competence center par excellence for cooling and air conditioning, with one of the most advanced climatic wind tunnels, an engine cooling tunnel, and many other test facilities. The Tech Center has been part of the MAHLE Group since 2013.



# MAHLE TECH CENTERS WORLDWIDE //

## NORTH AMERICA

USA: Detroit, Farmington Hills

USA: Detroit, Troy

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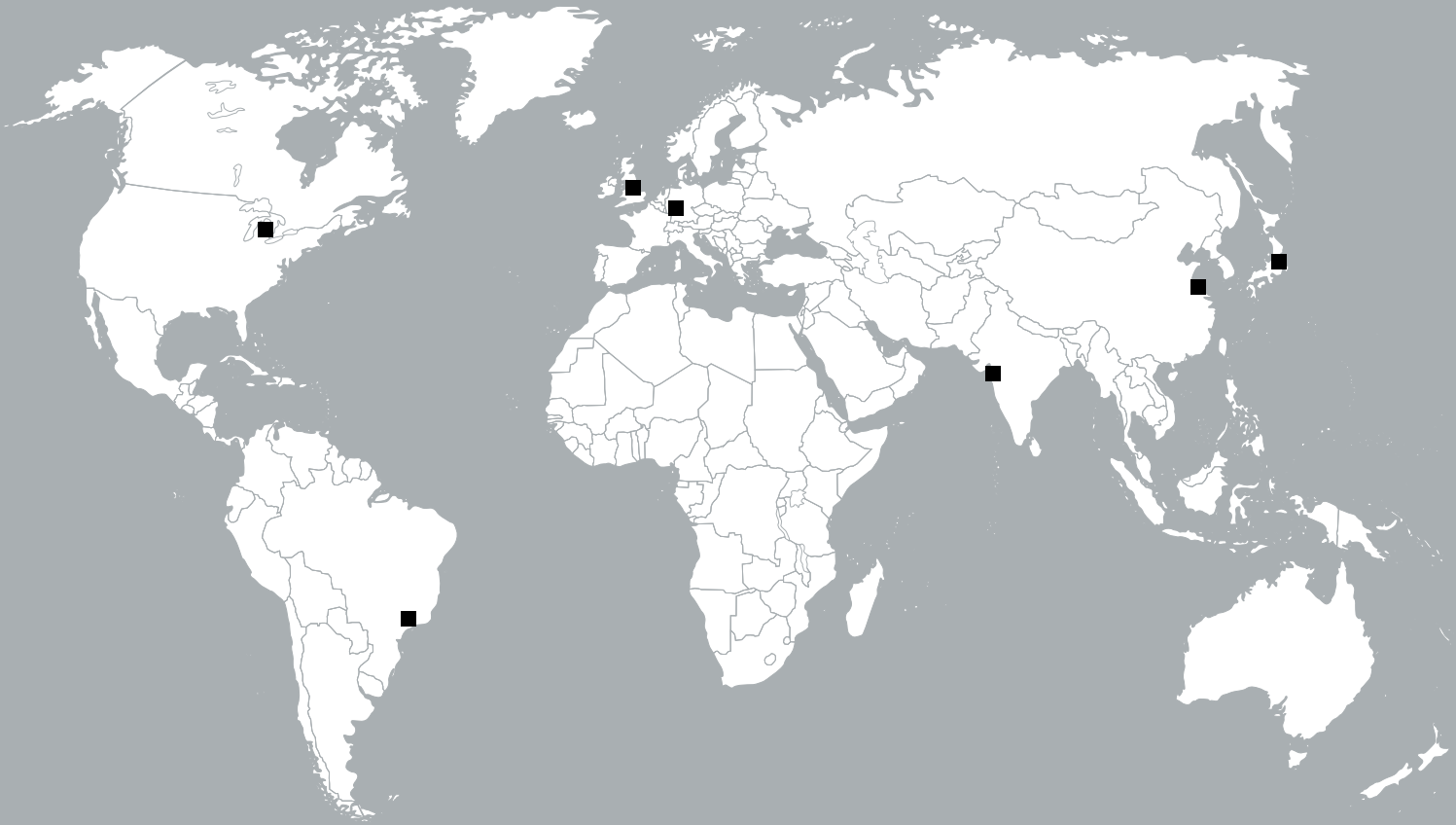
## EUROPE

Germany: Stuttgart-Bad Cannstatt

Germany: Stuttgart-Feuerbach

Great Britain: Northampton

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## SOUTH AMERICA

Brazil: São Paulo, Jundiaí

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## ASIA

China: Shanghai

Japan: Tokyo, Kawagoe

Japan: Tokyo, Okegawa

India: Pune



# MAHLE TECH CENTERS WORLDWIDE //



## EUROPE

### Great Britain: Northampton

- Founded in 1958, part of the MAHLE Group since 2005
- Year current location was built: 1988
- R&D employees: 152
- Tech Center surface area: 7,500 sqm

MAHLE Powertrain, founded over 50 years ago by Mike Costin and Keith Duckworth as “Cosworth Engineering,” has now been part of the MAHLE Group since 2005. Research and development at this location relates to numerous projects for the optimization and ongoing development of the conventional combustion engine and alternative vehicle powertrains, as well as industrial applications. MAHLE Powertrain also supports central group research and advanced engineering by building prototype engines and complete vehicles.

## NORTH AMERICA

### USA: Detroit, Farmington Hills

- Founded in 1998
- Year current location was built: 1998
- R&D employees: 170
- Tech Center surface area: 17,170 sqm

In June 2013, MAHLE celebrated the opening of the new North America headquarters. A large campus was built in Farmington Hills to house the corporate functions of MAHLE Industries, Incorporated. Furthermore, the R&D center has once again significantly expanded—the Engineering Services and Test Systems divisions of MAHLE Powertrain now share the same building as the research and development center of the Engine Systems and Components business unit. Various test systems and four engine test benches are available for ideal product development and testing. Most of the test bench technology, including 19 live test benches for passenger car and commercial vehicle engines, is just under 300 kilometers away in Muskegon.







**ASIA**

**China: Shanghai**

- Founded in 2006
- Year current location was built: 2006
- R&D employees: 285
- Tech Center surface area: 15,900 sqm

The Tech Center is currently undergoing its third stage of expansion. Development is carried out on piston systems, cylinder components, valve train systems, air, fuel, and oil management systems, as well as industrial filtration products. In the future, Bosch Mahle Turbo Systems will also develop exhaust gas turbochargers here and manufacture them in an adjacent production location. By the end of 2014, a total of about 410 employees will be working at the location, which also houses the headquarters of MAHLE in China.

**ASIA**

**Japan: Tokyo, Kawagoe**

- Founded in 1945, part of the MAHLE Group since 2001
- Year current location was built: 1963
- R&D employees: 205
- Tech Center surface area: 7,100 sqm

The research and development work at the Tech Center in Kawagoe covers the area of filtration and engine peripherals—from air and fuel through to oil management, this center provides considerable technological expertise to the group. Together with the Tech Center in Stuttgart-Bad Cannstatt/Germany, it is the most important research and development location of the Filtration and Engine Peripherals business unit. In 2014, the first research and development activities of the new Thermal Management business unit will be established here for Japanese customers.





**ASIA**

**China: Shanghai**

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**ASIA**

**Japan: Tokyo, Kawagoe**

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- Founded in 1945, part of the MAHLE Group since 2001
  - Year current location was built: 1963
  - R&D employees: 205
  - Tech Center surface area: 7,100 sqm
- 

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# MAHLE TECH CENTERS WORLDWIDE //



## ASIA

### Japan: Tokyo, Okegawa

- Founded in 1938, part of the MAHLE Group since 2001
- Year current location was built: 1992
- R&D employees: 42
- Tech Center surface area: 3,200 sqm

The Tech Center in Okegawa benefits from its proximity to the production locations of automobile and engine manufacturers in the greater Tokyo area. The proximity to customers makes it possible to provide solutions that are optimally tailored to the market—focusing on commercial vehicle applications. This Tech Center is a specialist in the development of piston systems. Eight live engine test benches are part of the basic equipment.

## ASIA

### India: Pune

- Founded in 1997, part of the MAHLE Group since 2013
- Year current location was built: 2007
- R&D employees: 291
- Tech Center surface area: 3,650 sqm

The Tech Center, which was newly constructed in 2007, is a key strategic location for MAHLE in the emerging automotive market of India. The industrial city of Pune is about 150 kilometers southeast of Mumbai, the most important port city in India. The Tech Center focuses on cooling and air conditioning, providing extensive engineering services in these areas. Within the MAHLE Group, it provides support primarily for the development centers of the Thermal Management business unit in Germany and North America.







Visco® Clutch BCS 250 and Visco® Fan 100

# 02 //

## MANAGEMENT REPORT

“The development activities of the Thermal Management as well as the Filtration and Engine Peripherals business units are combined here. Besides numerous test benches, we have one of the most advanced thermodynamic wind tunnels in the world. This enables us to bring the road into the laboratory by means of realistic measurement and test conditions, and to provide our customers with extensive development services. The Troy Wind Tunnel is designed to enable testing for a wide range of applications and vehicle sizes, including the largest commercial vehicles. And, naturally, we are particularly proud of this.”

*John Tepas (left), Head of Product Development North America Thermal Management, and JD Kehoe (right), Head of Product Development North America Filtration and Engine Peripherals, at the Research and Development center in Troy (Detroit), Michigan/USA*



## GLOBAL ECONOMY REMAINS VOLATILE //

The restrained growth of the global economy and regional differences in the automotive markets determine the development in 2013.

### Overall economic development

In its January report, the International Monetary Fund (IMF) estimated the average growth of the global economy in 2013 to be 3.0 percent in comparison with 3.1 percent in the previous year. A slight improvement was recorded in key advanced economies during the course of the year. The emerging markets fell short of growth expectations, partly due to cyclical developments, partly, according to the IMF, to a general decrease in growth potential.

In Europe, signs of recovery, starting from a low level, were observed in certain countries. After 18 months of recession, the euro zone has been on a growth course since the second quarter of 2013. However, the development in the southern peripheral countries in particular remains fragile and is only stabilizing slowly. Improved competitiveness and increasing exports in these countries were not yet sufficient to offset the weak domestic demand.

In the United States, the economy continued to recover, albeit in a more restrained manner than in the previous year. According to the IMF, the U.S. economy grew by 1.9 percent in 2013 (previous year: 2.8 percent). The economic situation in the United States was supported by the recovering real estate market, the capital gain of private households, and the easing of bank requirements for the granting of credit; uncertainties arose, however, as a result of the dispute over the United States federal budget. In South America, both Brazil and Argentina achieved higher economic growth rates in the period under report than in the previous year. The economic development in South America was adversely affected by comparatively high inflation rates and a difficult political climate in several countries.

In Japan, the massive devaluation of the yen and the high government spending in the 2013 business year led to a revival of the economy. In China, economic growth stabilized after the government yet again introduced a series of measures to strengthen the economy. Overall, the Chinese economic growth in the period under report remained, at 7.7 percent, in line with the previous year's level. In India, the economy only grew slowly in the 2013 business year compared with the dynamism of earlier years.

The development of exchange rates was very volatile in the difficult global economic environment. The loss in value of the average exchange rate of the Japanese yen against the euro alone amounted to over 26 percent in the period under report. The Brazilian real fell by around 14 percent against the euro, and the Indian rupee by around 13 percent. The rate of the U.S. dollar against the euro fluctuated between 1.27 and 1.39. This development was critical both for the procurement of raw materials and for the conversion of specific data as part of the global accounting of international suppliers.

### Development of the markets for passenger cars and light commercial vehicles

According to estimates of the IHS market research institute, the global production of passenger cars and light commercial vehicles increased by 4.0 percent to 84.8 million units in the 2013 business year. There were regional differences in the development of the markets.

The western European market had a weak start, but showed signs of recovery as the year progressed. While production was still lower during the first half-year than in the same period of the previous year, it increased in the second half compared with the same period of the previous year. Besides the development in Germany, a positive trend also emerged in the crisis states in the second half-year, although some production figures in 2013 did not yet reach the low value of the previous year. In central and eastern Europe, production was slightly above the level of the previous year.

In North America, the production of passenger cars and light commercial vehicles continued to increase. At 16.2 million units, the North American production reached its highest level in ten years. With a rise in production of 7.5 percent, the development of the United States in particular was dynamic. In the South America region, an overall increase in the production of passenger cars and light commercial vehicles was recorded in 2013 with 4.5 million units produced; whereas production declined in the last few months compared with the previous year. During this time, sales stimulus programs had led to a strong rise in demand and production in 2012.

In the Asia/Pacific region, the greatest absolute increase in the production of passenger cars and light commercial vehicles worldwide was recorded in 2013. With 43 million units produced, the figure increased by 2.3 million units. The main driver was the sustained positive development of the Chinese market. In 2013, Chinese production achieved a volume of 21.3 million units (+14.5 percent) for the first time. In the year under report, one quarter of all passenger cars and light commercial vehicles manufactured worldwide were therefore produced in China. Adversely impacted by the restrained overall economic development and high financing costs, the production of passenger cars and light commercial vehicles in India did not achieve the production volume of the previous year. In Japan, the production volume also declined in comparison with the previous year as government buying incentives supported the market in the previous year and the catch-up effect following the natural disaster in 2011 generated a significant economic boost.

#### Development of the markets for medium-sized and heavy-duty commercial vehicles

At 3.4 million units, the global production of medium-sized and heavy-duty commercial vehicles increased in the 2013 business year in comparison with the previous year; it did not, however, reach the level of 2011.

In Europe, the weak market environment had a negative impact on commercial vehicle production. Although production stabilized in the last few months of the business year, it remained below the previous year's level overall. Besides the improvement in economic conditions, the anticipatory effects prior to the introduction of the new EURO VI emission standard contributed to the slight recovery of the European commercial vehicle market at the end of the year.

The North American commercial vehicle production was also below the previous year's level. In the first few months of the business year in particular, marked declines in the production volume were recorded. However, in South America commercial vehicle production noticeably increased again in the year 2013 following a weak previous year.

Production in the Asia/Pacific region exceeded the previous year's value. In the important Chinese market, the production of medium-sized and heavy-duty commercial vehicles rose again markedly to 1.2 million units, after two years of declining production figures. This positive development was supported among others by the anticipatory effects before the introduction of the new China IV emission standard. In India, however,

the number of commercial vehicles produced was again lower than the previous year's value. Supported by the expansionary economic policy, commercial vehicle production in Japan continued to rise. Japanese commercial vehicle production remained around the previous year's level.

#### Development of the markets for off-highway applications

The market development for off-highway applications—in particular construction machines—was only subdued in the 2013 business year. Significant losses were recorded above all in North America. The production of construction machines also declined in the Asia/Pacific region. The previous year's value was not achieved in either the Chinese market or in Japan and India. In contrast, the global market for agricultural machines developed more positively and the production volume improved overall.

### WORLDWIDE AUTOMOBILE PRODUCTION //

Numbers in 1,000s

Business year	2013	2013	2012	2012
	Passenger cars & light comm. vehicles	Commercial vehicles (incl. buses)	Passenger cars & light comm. vehicles	Commercial vehicles (incl. buses)
America	20,718	742	19,725	680
North America	16,178	477	15,434	487
South America	4,540	265	4,291	193
Asia/Pacific	43,029	2,070	40,774	1,991
Japan	9,066	369	9,434	365
China	21,261	1,215	18,568	1,055
Europe	19,508	575	19,298	595
Germany	5,631	131	5,549	144
Other countries	1,532	4	1,714	3
<b>Total</b>	<b>84,787</b>	<b>3,391</b>	<b>81,511</b>	<b>3,269</b>

Source: IHS Automotive, figures for passenger cars and light commercial vehicles (last updated: March 2014); figures for commercial vehicles (last updated: February 2014)

## BUSINESS DEVELOPMENT OVERVIEW //

In the 2013 business year, MAHLE generated sales of EUR 6,941.3 million. Sales of the MAHLE Behr Group were first included in the group sales from October 2013.

For the MAHLE Group, 2013 was a business year characterized by the ongoing strategic development of the product portfolio. Total sales increased by 12.7 percent to EUR 6,941.3 million in comparison with the previous year. Aside from regionally varied business development and significant negative exchange rate effects, changes to the consolidation group had a positive overall impact on group sales.

With closing as of September 30, 2013, the majority acquisition of the company's shares in the former Behr Group was concluded. MAHLE Behr is a leading industrial company with high-quality technological products for thermal management that are used for applications in passenger cars and commercial vehicles. The acquisition provides MAHLE the opportunity to expand its product portfolio with a complementary range of products in a market that has considerable growth and future potential. With over 16,000 employees, the former Behr Group generated annual sales of more than EUR 3.7 billion together with the proportionately consolidated joint ventures in the 2013 business year.

The entity trading as MAHLE Behr has been fully consolidated in the MAHLE Group since October 2013. The automotive business of MAHLE Behr is incorporated in the group's organizational structure within the new Thermal Management business unit. The functional and regional organization of the new unit is analogous to other automotive business units of the group. Behr Thermo-tronik (BTT) and the joint ventures Behr-Hella Thermocontrol (BHTC) and Hella Behr Plastic Omnium (HBPO) are now managed as profit centers in the group. The MAHLE Group thus consists of five business units and seven profit centers. An overview of the group organization is given in the picture on the right.

Overall, changes to the consolidation group had a positive impact on sales of EUR 956.7 million. Besides sales from MAHLE Behr between October and December, sales from the acquisition of the U.S. company RTI Technologies are also included. Effects from strategic investments in Kokusan Denki Co., Ltd., a Japanese specialist in mechatronic products, and in the joint venture Bosch Mahle Turbo Systems

are not included in sales as they are accounted for using the equity method. At the end of the business year, the group also increased its participation in the Indian piston manufacturer MAHLE India Pistons Limited to 100 percent. Furthermore, MAHLE continued the optimization of its product portfolio in a targeted manner with the divestment of its sinter activities in Switzerland.

As mentioned above, MAHLE recorded significant negative foreign currency exchange rate effects of EUR -311.7 million in the period under report compared with the previous year when converting sales figures into the euro group currency as a result of the distinct global positioning of the group. In particular, the Japanese yen, the Brazilian real, and the U.S. dollar had an adverse impact.

### Business units and profit centers

The various business units experienced mixed fortunes in terms of the development of sales. The previous year's level and growth expectations in local currency were sometimes exceeded, and sometimes not.

The Engine Systems and Components business unit generated sales of EUR 2,494.5 million (previous year: EUR 2,623 million) in a difficult market environment. On the one hand, negative exchange rate effects related to the conversion into the euro group currency led to substantial burdens. On the other hand, business development was adversely affected by the partly weak commercial vehicle and off-highway market as well as the market weakness of some European passenger car manufacturers. Sales increases in the power cell modules and valves product segments were unable to fully offset declines in other segments. As a measure to adjust capacities, passenger car piston production at the French location near Colmar was discontinued at the end of 2013. The Filtration and Engine Peripherals business unit, in contrast, continued to develop successfully and recorded sales of EUR 1,946.4 million in the year under report, following EUR 1,925.5 million in the 2012 business year. Adjusted for negative exchange rate effects of EUR 107.8 million, the business unit achieved solid sales growth of 6.7 percent in comparison with the previous year.

## BUSINESS UNITS

### Sales and Application Engineering

### Advanced Engineering

Engine Systems  
and Components

Filtration and  
Engine Peripherals

Thermal  
Management

Aftermarket

Industry

## PROFIT CENTER

Motorsport and  
Special Engines

Engineering  
Services

Small Engine  
Components

Mechatronics

Thermostats  
and Valves

Control Units

Front-end  
Modules

The Filtration and Engine Peripherals business unit benefited from the increasing complexity of engine peripherals in downsizing engines and the technological strength of the group. As part of the expansion of the production footprint, the business unit carried out extensive investments in the Asia/Pacific region.

The new Thermal Management business unit generated sales of EUR 747 million between October and December 2013, thereby contributing 10.8 percent to group sales in the 2013 business year.

The Aftermarket business unit recorded sales totaling EUR 795.8 million in the 2013 business year, thus slightly outperforming the previous year's value (+1.1 percent). The conversion of foreign sales into the euro group currency had a negative impact on the sales figures, especially due to the Brazilian real and the Argentinian peso. Positive effects arose from changes to the consolidation group, in particular the proportionate consolidation of the Behr Hella Service (BHS) joint venture from October 2013 and the acquisition of the U.S. workshop supplier RTI Technologies. Adjusted for exchange rate effects, the business unit experienced growth of 7.3 percent, of which 4.5 percent was attributable to organic growth. In the Industry business unit, significantly lower customer demand in the large engines market segment, above all, led to a decline in sales of 4.2 percent to EUR 445.4 million. The profit centers achieved sales of EUR 512.1 million (previous year: EUR 358.8 million). As of October 1, 2013, the sales of Behr Thermot-tronik and the proportionate sales of the joint ventures Behr-Hella Thermocontrol and Hella Behr Plastic Omnium were recorded in the profit centers for the first time.

### Development across the regions

The MAHLE Group has a very strong global market presence owing to over 140 production locations in 28 countries, local

research and development centers in the four core regions, and an international supplier network. This leads to a very balanced customer portfolio, allowing all customers to be supported locally.

A description of the business development (country of manufacture) in the individual regions is given below.

### Europe

In the Europe region, the MAHLE Group achieved sales of EUR 3,432 million during the period under report, corresponding to a growth of 19.7 percent. The share of group sales amounted to 49.5 percent (previous year: 46.5 percent). The full consolidation of MAHLE Behr as of October 2013 contributed EUR 573.1 million to the region's sales. The restrained economic situation in the automotive industry had a negative impact on business development, especially in the first half of the year.

In the Engine Systems and Components business unit, the difficult market environment led to a moderate decline in sales of 2.5 percent to EUR 1,179.7 million. The drop was predominantly attributable to the development of sales in the first few months of 2013. In the second half of the year, stabilization became increasingly apparent and sales grew in comparison with the same period of the previous year. The Filtration and Engine Peripherals business unit generated sales of EUR 664.2 million in the Europe region, thus reporting an increase of 5.3 percent in comparison with the previous year. Romania and Turkey, in particular, achieved high growth rates. In Romania, the sales growth relates among others to air filter modules, oil mist separators, and cabin air filters. The localization of these products was completed in the 2013 business year. The controlled pump systems product segment, which was established in recent years, remained the focus of the business unit, and its capacity was also considerably increased in the past year.

The European units of the new Thermal Management business unit generated sales of EUR 434.4 million between October and December 2013. With innovative products and designs, the business unit thereby benefits from growing environmental requirements and development trends in the engine cooling and vehicle air conditioning sectors.

At EUR 383.2 million, sales of the Aftermarket business unit rose significantly by 10.9 percent. Most notably, the filter products business in the German spare parts market and in eastern Europe increased. The takeover of sales activities for thermostats also developed positively, which were transferred from Behr Thermot-tronik to the MAHLE Aftermarket sales organization at the end of the 2012 business year. At EUR 381.3 million, the Industry business unit was unable to maintain the level of sales of the previous year (-2.9 percent). The higher sales figures in process filtration were only partly able to offset the weak demand in the large engines market segment, in particular. In Europe, the profit centers reported sales of EUR 389.2 million (+35.1 percent). The sales increase is due to the inclusion of the sales of Behr Thermot-tronik as well as the proportionate sales of the joint ventures Behr-Hella Thermocontrol and Hella Behr Plastic Omnium as of October 1, 2013.

### North America

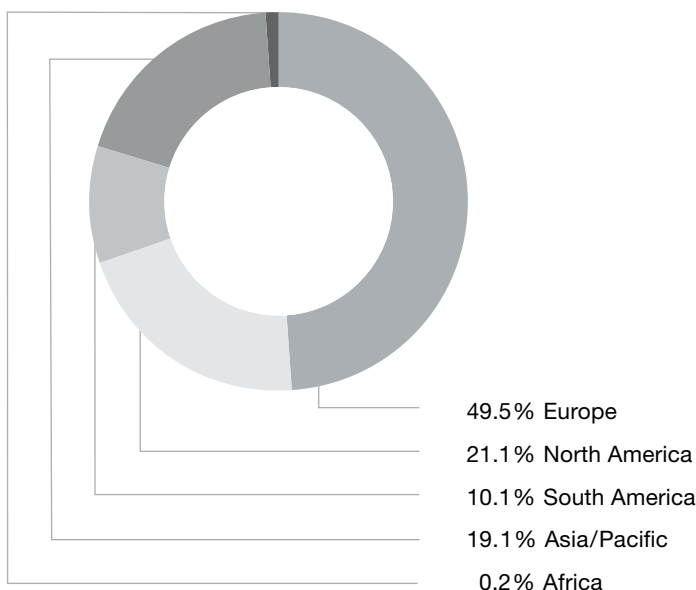
In the North America region, sales rose by 16.6 percent to EUR 1,467.7 million, primarily as a result of positive changes to the consolidation group. In contrast, exchange rate effects had a negative impact on the conversion into euro group sales. Adjusted for consolidation and exchange rate effects, the group achieved growth of 1.4 percent in North America. The North American units thus contributed 21.1 percent (previous year: 20.4 percent) to total group sales.

The weak business development in the commercial vehicle industry and, above all, the decline in business with off-highway applications led, together with negative exchange rate effects, to a drop in sales of 6.7 percent to EUR 559.2 million in the Engine Systems and Components business unit in the 2013 business year. However, indications of a recovery in the North American commercial vehicle production were noticed in the last few months. Preparations for the production ramp-up of assembled passenger car camshafts for globally operating manufacturers with production locations in North America were driven forward in the year under report. Sales in the Filtration and Engine Peripherals business unit, which operates predominantly in the passenger car sector, developed positively and at EUR 511.6 million increased by 6.0 percent in comparison with the previous year. The growth in sales of the business unit therefore exceeded the growth in production of passenger cars and light commercial vehicles, which rose by 4.8 percent in the comparison period. Production ramp-ups of products for Japanese manufacturers had a major contribution in this development.

With sales of EUR 189.4 million between October and December, the new Thermal Management business unit had a share of 12.9 percent in group sales in the North America region. In Mexico, initial steps were taken toward an extensive plant expansion in order to increase production capacities.

At EUR 121.1 million, sales of the Aftermarket business unit remained close to the previous year's level. The first consolidation of the workshop equipment business of RTI Technologies at the York location in Pennsylvania/USA had a positive impact. Both the business development in the U.S. market and the export sales in other regions were weaker than in the previous business year. Moreover, negative currency exchange rate effects adversely affected sales reported in euro. The North America business in the Industry business unit also experienced a negative development. At EUR 35.4 million, sales in this business unit fell below the previous year's figure of EUR 40.9 million. The profit centers further increased their sales as a result of the first consolidation of Behr Thermot-tronik, Behr-Hella Thermocontrol, and Hella Behr Plastic Omnium.

## SALES BY REGIONS //



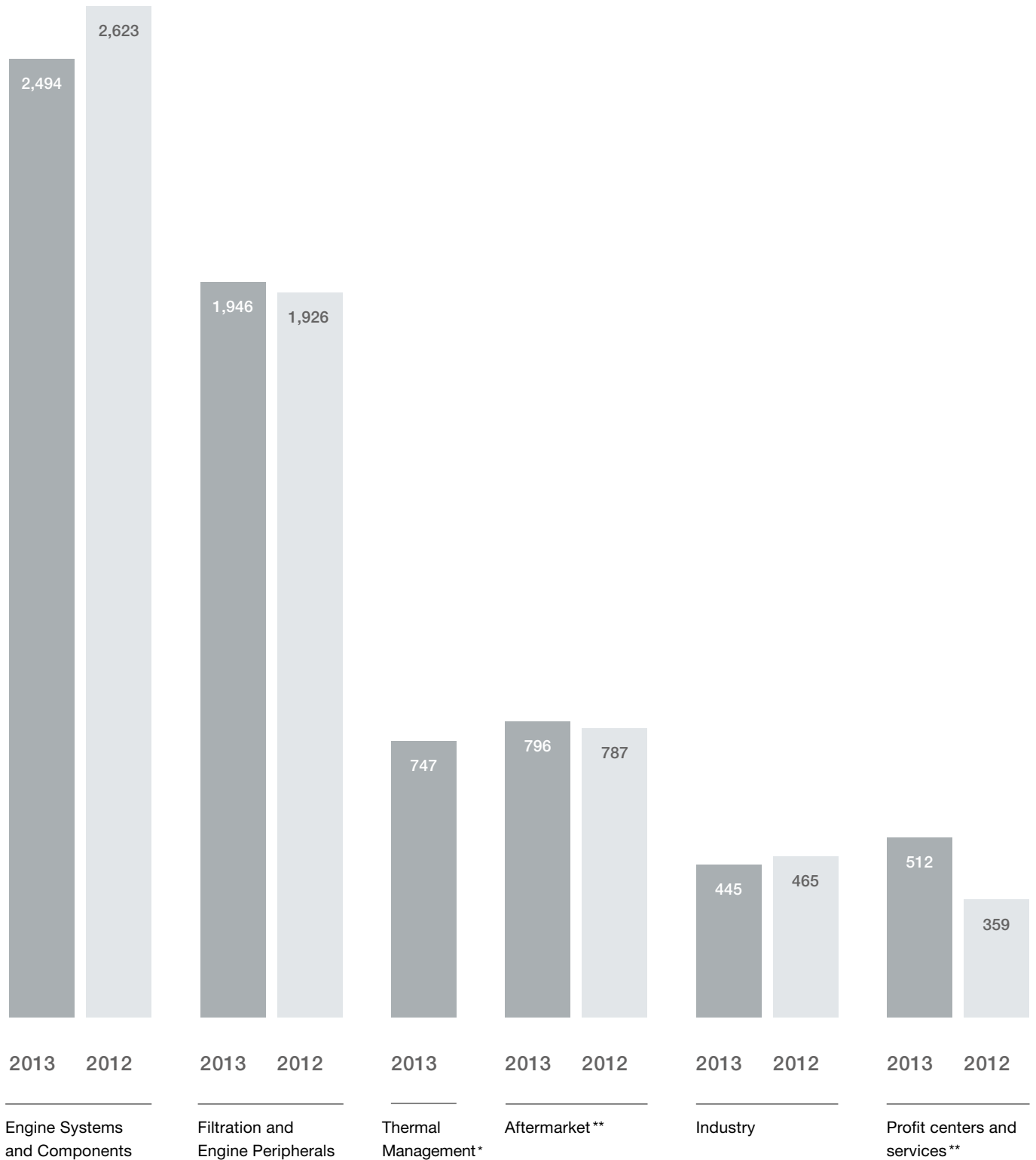


## DEVELOPMENT OF THE BUSINESS UNITS, PROFIT CENTERS, AND SERVICES //

Consolidated sales in million EUR

\* Inclusion of sales of the new Thermal Management business unit for the period of October to December 2013

\*\* Inclusion of sales of BHS (Aftermarket) and of BTT, BHTC, HBPO (profit centers and services) for the period of October to December 2013 as well as RTI Technologies (Aftermarket)



### South America

In the South America region, the MAHLE Group achieved sales of EUR 703.3 million, thereby falling short of the previous year's value by 3.7 percent. The decline was entirely due to negative foreign currency exchange rate effects of the sales reported in euro. Adjusted for foreign currency exchange rate effects, sales increased by 11.0 percent, of which 6.7 percent was attributable to organic growth.

The Engine Systems and Components business unit generated sales of EUR 340.6 million in the 2013 business year in comparison with EUR 374.9 million in the previous year. The business unit increased sales of heavy-duty steel pistons and camshafts, among other things, but it was not sufficient to offset the huge negative exchange rate effects. The development of sales of the Filtration and Engine Peripherals business unit in South America was very positive in 2013. At EUR 71.2 million, growth of 36.6 percent was reported, primarily as a result of series production ramp-ups of air intake modules and air filters and the associated increase in market share.

The new Thermal Management business unit recorded sales of EUR 27.4 million between October and December.

The development of sales of the Aftermarket business unit was adversely impacted by significant foreign currency exchange rate effects. With a total of EUR 221.7 million (previous year: EUR 250.5 million), the unit contributed 31.5 percent to MAHLE Group sales in the South America region. As in the past business year, successful business development was noted particularly in Argentina. Sales from the Industry business unit did not reach the previous year's level. The profit centers recorded a decline in sales in the period under report to EUR 39.4 million (previous year: EUR 49.5 million).

### Asia/Pacific

At EUR 1,325.2 million, sales in the Asia/Pacific region came in slightly above the previous year's level. Considerable negative foreign currency exchange rate effects adversely impacted the euro sales figures. In Japan alone, the devaluation of the Japanese yen led to a reduction of 20.9 percent in sales in euro. Adjusted for negative foreign currency exchange rate effects, the Asian units reported growth of 12.2 percent, of which 3.7 percent was attributable to organic growth.

The Engine Systems and Components business unit recorded a nominal decline in sales at EUR 415 million, but achieved an increase of 5.1 percent in sales adjusted for foreign currency exchange rate effects despite heterogeneous regional market development. Growth thereby exceeded that of commercial vehicles. While significant gains in all key product segments

were realized in China, the difficult development of the entire automotive industry had an adverse effect on sales in India. The development of sales in Japan was also restrained in the period under report, after government incentives and the catch-up effect following the natural disaster had stabilized the market in the previous year. Adjusted for negative foreign currency exchange rate effects, sales of the Filtration and Engine Peripherals business unit slightly exceeded the previous year's level. At EUR 699.3 million, the business unit contributed 52.8 percent to total group sales in the Asia/Pacific region. The development of sales was supported by the continued strong growth in the Chinese market; the declining production of passenger cars and light commercial vehicles in Japan had a negative effect. In order to bolster production capacities, the business unit made extensive investments in new production locations in China, Thailand, and Indonesia.

The Asian units of the new Thermal Management business unit reported sales of EUR 83.7 million between October and December.

With respective sales of EUR 68.8 million and EUR 25.8 million, the Aftermarket and Industry business units also recorded declining nominal sales while showing increasing sales in local currency. The positive development of sales in India and exports from the Singapore logistics location to Southeast Asia supported the business development in the Aftermarket business unit. The profit centers significantly increased sales in the Asia/Pacific region.

### Africa

With Durban and Port Elizabeth, locations in Africa were added to the group's production network for the first time, thanks to the majority acquisition of the company's shares in the former Behr Group. These units generated sales of EUR 13.2 million from October to December in the 2013 business year.

## CONTINUED INCREASE IN TECHNOLOGICAL STRENGTH //

In the year under report, MAHLE was able to further improve its innovative strength. The global key development areas were efficiency improvements in the powertrain as well as CO<sub>2</sub> reduction.

With the integration of the thermal management specialist Behr, the MAHLE Group has gained three additional large research and development centers and further improved its innovative strength. MAHLE thereby has a local presence in the automotive industry regions with a network of ten major local research and development centers. At the end of 2013, over 4,500 people were employed in the field of research and development worldwide. Overall, EUR 336.2 million was spent group-wide on research and development in 2013, which corresponds to a ratio of 4.8 percent (previous year: 4.7 percent).

Development focused on innovative solutions that take account of the increase in the thermal and mechanical loads of engine components and contributed to an efficiency improvement of the powertrain. The EVOTEC® 2 piston was further developed for gasoline engines. The weight can be significantly reduced with a much longer service life, thereby achieving improved frictional loss and lower CO<sub>2</sub> emissions. A new development with a salt core cooling channel also meets the requirements of future gasoline engines with high turbocharging that are subject to high loads. Steel pistons for passenger car diesel engines were developed to readiness for series production. In comparison with aluminum pistons, steel pistons contribute to efficiency improvements in the areas of frictional loss as well as piston temperature and the tuning of the combustion process. High thermal stability is achieved, and wear as well as friction are reduced thanks to new oil control rings with improved scraping properties and new compression rings with the MAHLE "Ceram Slide" coating.

Development work focused on air and liquid management that allows for a further reduction in CO<sub>2</sub> emissions and a decrease in fuel consumption. An active fuel prefilter was developed for diesel engines. This prefilter removes water and dirt from the fuel in a separate cycle, thereby ensuring the significantly safer operation of modern high-pressure injection

systems. Reduced emissions and CO<sub>2</sub> values in partial- and full-load operation are achieved with MAHLE's cascaded charge air cooling. The available air mass increases and contributes to an improved combustion process.

Developments in engine cooling and air conditioning focused on reducing energy and fuel consumption. The recently developed two-level cooling module allows higher cooling capacities with reduced package and improved flow rates. An indirect condenser is used in this process. The weight of the Visco® fans fitted in commercial vehicle applications was reduced and significant improvements were once again achieved with regard to control behavior, noise levels, and efficiency. In the future, four-zone HVAC modules will be used for climate comfort in the cabin with identical cooling capacity and improved filter performance. These modules require less energy and have a lower weight. Heating systems based on high-voltage PTC heating elements and a modular cooling concept for lithium-ion batteries are essential for the success of vehicles with hybrid and electric drives. For electric vehicles, the MAHLE range extender was further developed for two additional performance levels.

Promising new developments were also accomplished in the nonautomotive field: combined oil pump/filter modules for the safe and reliable oil supply of transmissions in wind power plants are now in the validation phase at several system manufacturers. Thanks to MAHLE ultrafiltration membranes, problems with the Legionella bacteria in domestic hot water systems can be efficiently and sustainably resolved in the future. These filter membranes were state certified for use with drinking water.

## SLIGHT EASING IN PROCUREMENT MARKETS //

The slight easing of procurement market prices was accompanied by an increased number of supplier insolvencies.

During the 2013 business year, there was a limited easing of material costs in the year-on-year comparison. In the first half of the year, costs fell in almost all of MAHLE's key material groups. Raw materials, such as aluminum, nickel, and copper, as well as steel and scrap fell temporarily to the level of long-range average values. Resins also recorded a cost reduction in the first half of the year due to the lower price of crude oil among other things. Only cellulose, the basis for filter paper, exhibited a slight increase. Part of the cost reductions was shared with customers in the form of price adjustments as a result of contractual agreements.

In the second half of the year, a slight increase in the price levels of many raw materials occurred, among others as a result of the decommissioning of production capacities. Raw material suppliers increasingly adjusted their offer in line with reduced demand, and price increases are therefore already looming for 2014. In 2013, the MAHLE Group already endeavored to counter these increases with the rigorous standardization of materials in particular in the field of resins, as well as the approval of alternative supply sources.

In Europe, electricity and gas prices eased slightly. However, a significant increase in levies for renewable energies led to a noticeable increase in electricity costs for the German plants. North America recorded a varied development: while gas prices were subject to significant increases, electricity only rose moderately. Energy prices also increased in Asia, whereas individual countries developed unevenly. In South America, Brazil in particular benefited from state-regulated electricity price reductions. MAHLE endeavors to minimize costs by continuously optimizing processes and avoiding peak loads during high tariff periods. Furthermore, projects involving the use of energy efficient equipment, optimized worksteps, and energy recovery are being implemented in order to reduce energy costs.

In 2013, the delayed start of customer projects and deviations from planned quantities released negatively affected the MAHLE Group in individual cases. The number of supplier insolvencies also increased in 2013. Nonetheless, customer supply was safeguarded at all times by means of promptly initiated and implemented countermeasures and preventive risk management, although it was necessary to accept in some cases significant price increases from suppliers. Risk management was continuously improved to guarantee supply to customers. A key component is rigorous supplier development and adherence to a multisupplier strategy for critical parts.

## PRODUCTION AND HUMAN RESOURCES //

Innovative and reliable products secure the MAHLE Group's long-term success. The qualified and committed employees of the group are a key factor in ensuring high standards and maintaining technological strength.

### Production

MAHLE has a local presence at more than 140 production locations in 28 countries. The number of production locations once again rose considerably during the period under report as a result of the integration of the MAHLE Behr Group. The group is now represented on five continents with production locations. The improvement of the production footprint was again driven forward in 2013. On the one hand, actions were taken to reduce overcapacities in western Europe. On the other hand, forward-looking expansion-related investments were made in key growth markets.

Besides its excellent international market presence, the group's high standard of quality is a crucial competitive factor. While product development focuses on failure prevention methods, the production process concentrates on quality assurance strategies. The central key figures for the quality evaluation of series supply are thus the number of customer complaints and the quantity of defective products shipped. Both key figures improved once more during the period under report. In 2013, numerous customers continued to recognize the quality of MAHLE products and systems with awards. As part of the integration of the MAHLE Behr Group, joint quality processes and standards were established, a standardized monthly quality management report introduced, and common quality targets defined for the 2014 business year.

Comprehensive workplace safety and environmental protection are essential corporate principles of the group and core prerequisites for safe and environmentally friendly production. MAHLE has therefore established and continually developed processes and actions across locations to ensure a responsible approach to natural resources. MAHLE can look back on many successful projects during the 2013 business year, above all in the area of energy management. The management and evaluation of all activities relating to workplace safety, health care, and environmental protection (HSE) are performed using a key figure system among other things. An annual HSE audit confirms the effectiveness of the overall system.

### Human resources

As at the reference date of December 31, 2013, the headcount totaled 64,345 and was therefore 35.0 percent above the previous year's value. The increase by 16,683 employees was mainly due to the integration of the MAHLE Behr employees. First, the integration is reflected in the new Thermal Management business unit that employed a total of 14,698 employees at the end of the year. Second, the number of employees in the Aftermarket business unit and in the profit centers increased by over 2,000 with the integration of MAHLE Behr. In total, about 16 percent of all employees work in the Aftermarket and Industry business units as well as in the profit centers and services. The Engine Systems and Components business unit had 29,568 employees (previous year: 29,888 employees), and there were 9,711 employees in the Filtration and Engine Peripherals business unit (previous year: 9,292 employees). In view of the ongoing sluggish market development, short-time work was employed in several European plants during the 2013 business year. The global sickness absence rate (excluding joint ventures) was 3.9 percent (previous year: 3.5 percent), and the labor turnover rate was 3.4 percent (previous year: 3.2 percent).

Qualified and committed employees underpin the future growth and sustainability of the group. Great importance was therefore once again assigned to training and further education in 2013. MAHLE spent EUR 7.4 million on continuous qualification in the year under report (previous year: EUR 6.9 million). Worldwide, MAHLE employees attended 53,426 qualification activities. In addition, a substantial amount of training was carried out. As part of the certification of HR activities, working conditions, and development opportunities for employees, MAHLE received the outstanding automotive employer award in Germany and Austria.



## SIGNIFICANT BUSINESS EXPANSION WITH STABLE PROFIT SITUATION //

The strategic ongoing development of the product portfolio and the associated first-time consolidation of the MAHLE Behr Group shaped the development of business, balance sheet, and cash flow in the 2013 business year.

### Results of operations

In the 2013 business year, the MAHLE Group increased its sales by 12.7 percent in comparison with the previous year to EUR 6,941.3 million. The increase was largely influenced by the first-time consolidation of the former Behr Group as of October 1, 2013. Organic sales growth, however, remained short of expectations. In addition to the weak business development in Europe in particular during the first few months, the development of sales was adversely affected by massively negative exchange rate effects of EUR 311.7 million related to the conversion of foreign sales into the euro group currency. The development of the Japanese yen, the Brazilian real, and the U.S. dollar had a particularly negative effect. Adjusted to the previous year's exchange rates, an organic sales growth of 1.9 percent was achieved.

Gross profit exceeded the previous year's level at EUR 1,410.6 million. However, a decline to 20.3 percent in gross margin was recorded, largely due to special effects. The first consolidation of the MAHLE Behr Group as of October 1, 2013 thus had a positive effect on gross profit, but the depreciation and amortization of EUR 25.7 million on obligatorily disclosed hidden reserves in accordance with the German Commercial Code (HGB) as part of the purchase price allocation adversely affected profit. Significant expenses for restructuring measures also had a negative impact. In Europe, the MAHLE Group expects continued restrained market development in the next few years for established products in particular and therefore took actions in the 2013 business year to reduce overcapacities.

At EUR 306.5 million, the result from ordinary activities improved as expected in comparison with the previous year's value; the return on sales amounted to 4.4 percent. The net income for the year also exceeded the previous year's level at EUR 235.6 million and with a return of 3.4 percent. The slight reduction in administrative and selling expenses by 0.3 percentage points and the improved financial result of EUR –116.2 million (previous year: EUR –136.8 million) had a positive effect. The financial result of the previous year was influenced by negative special effects of the former Behr Group. In contrast, a positive result was recorded for the former Behr Group in the financial result for the first nine months of the 2013 business year. Furthermore, the group achieved a considerably lower tax ratio of 17.0 percent in the 2013 business year compared with 37.1 percent in the previous year. This decline was predominantly a result of deferred tax income arising from improved earnings prospects in individual companies as well as from one-time effects due to changes in the statutory framework in Mexico. Moreover, the reversal of deferred tax liabilities on disclosed hidden reserves as part of the purchase price allocation had a positive impact.

In view of the subdued business development in the first few months as well as the one-off expenses relating to restructuring, a satisfactory result was achieved in 2013.

### CONSOLIDATED INCOME STATEMENT //

Figures in million EUR

Business year	2013		2012	
Sales	6,941.3	100.0%	6,159.5	100.0%
Cost of sales	-5,530.7	-79.7%	-4,849.6	-78.7%
Gross profit on sales	1,410.6	20.3%	1,309.9	21.3%
Selling expenses and general administrative expenses	-698.0	-10.1%	-642.5	-10.4%
Research and development expenses	-336.2	-4.8%	-289.4	-4.7%
Other operating income and expenses	46.3	0.7%	25.9	0.4%
Financial result	-116.2	-1.7%	-136.8	-2.3%
Income from ordinary activities	306.5	4.4%	267.1	4.3%
Taxes	-70.9	-1.0%	-118.5	-1.9%
<b>Net income</b>	<b>235.6</b>	<b>3.4%</b>	<b>148.6</b>	<b>2.4%</b>

### Net assets

In the 2013 business year, the balance sheet total of the MAHLE Group increased by EUR 1,877.5 million to EUR 6,125.8 million. The balance sheet extension was solely due to the full consolidation of the MAHLE Behr Group. Foreign currency exchange rate effects reduced the balance sheet total by EUR 252.9 million. Key balance sheet data such as equity ratio and net financial liabilities were structured in a solid manner despite the considerable increase in the balance sheet total.

As at the balance sheet date, fixed assets increased by EUR 1,015.4 million to EUR 2,936.1 million; the proportion of fixed assets in the balance sheet total rose from 45.2 percent to 47.9 percent. This development resulted predominantly from the increase of EUR 472.9 million in intangible assets to EUR 599.6 million as well as the growth of EUR 606.7 million in tangible fixed assets to EUR 2,167.3 million and is mainly due to the first full consolidation of the MAHLE Behr Group. As part of the purchase price allocation in accordance with the German Commercial Code (HGB), trademark rights of trade names, customer relationships, and technologies acquired were recorded as additional intangible assets. The tangible fixed assets of the former Behr Group at market value were included in the group's tangible fixed assets for the first time. Moreover, investments, which significantly exceeded depreciation, led to an increase in tangible fixed assets. In contrast, the financial assets showed a decline to EUR 169.3 million due to the change to the full consolidation of the MAHLE Behr Group.

The full consolidation of the MAHLE Behr Group and the associated first consolidation effects also led to a significant increase in current assets. This was counteracted once again by foreign currency exchange rate effects. Adjusted for first consolidation and foreign currency exchange rate effects, inventories fell slightly—this was owing among others to the improvement in operating working capital management. Besides first consolidation effects, the increase in trade receivables to EUR 1,346.8 million (previous year: EUR 881.8 million) resulted from the positive business development in the fourth quarter. As

at the balance sheet date, the MAHLE Group held securities and liquid funds of EUR 465.5 million (previous year: EUR 335.9 million). The increased level of cash and cash equivalents takes into account the considerable business expansion.

The development of the liabilities side was also characterized by significant first consolidation effects. At the end of the business year, equity totaled EUR 2,207.5 million in comparison with EUR 1,775.2 million in the previous year. Taking into account the first-time integration of the MAHLE Behr Group, there is still a solid capital base with an equity ratio of 36.0 percent. Adjusted for first consolidation effects, the increase in accruals for pensions to EUR 466.3 million is primarily due to interest rate effects resulting from the reduction in the discount factor as well as lower interest income from the related plan assets. Liabilities to banks rose in the 2013 business year to over one billion euro; the share of the balance sheet total increased to 17.1 percent (previous year: 16.5 percent). Maturities in this case are mainly between two and five years. The full consolidation of the MAHLE Behr Group and the high level of strategic investments in corporate acquisitions played a key role in this increase. The increase in trade payables to EUR 797.9 million (previous year: EUR 482.4 million) and in other payables to EUR 481.7 million (previous year: EUR 215.9 million) also primarily arose from first consolidation and foreign currency effects. Without taking into account the first consolidation effects, a decline was recorded in other payables; trade payables were slightly above the previous year's level.

As at December 31, 2013, there were significant off-balance-sheet transactions of EUR 77.2 million (previous year: EUR 74.1 million) in connection with building and land leasing agreements and of EUR 153.3 million (previous year: EUR 90.5 million) in connection with factoring. The increase in the latter is largely due to factoring of the newly consolidated MAHLE Behr Group. The off-balance-sheet transactions led to a strengthening of the liquidity situation as well as the diversification of financing sources.

### Capital expenditure

The capital expenditure on tangible fixed assets of the MAHLE Group amounted to EUR 397.4 million in the 2013 business year, thereby exceeding the investment value of the previous year by EUR 73.6 million. Measured in terms of group sales, this corresponds to an investment ratio of 5.7 percent. The ratio of capital expenditure on tangible fixed assets to depreciation was 139.8 percent in comparison with 120.3 percent in the previous year; EUR 102.7 million related to technical equipment and machinery and EUR 223.2 million related to prepayments and assets under construction.

In 2013, the capital expenditure on tangible fixed assets of the MAHLE Group was above all geared toward creating the necessary conditions for further growth. Investments were largely made to prepare for additional series orders and to implement new production technologies. Key individual projects in this area were the preparation of the production ramp-up of passenger car diesel steel pistons for European customers and investments in production capacities for the production of assembled passenger car camshafts in North America and Asia for globally operating manufacturers. Furthermore, the group invested in new installations to increase the level of automation as well as in projects to rationalize production processes.

MAHLE also invested extensively in key growth markets in order to further intensify its proximity to markets and customers. In this context, important projects included the new construction of the Brazilian logistics and Aftermarket location at Limeira near São Paulo and the investment in a new logistics center in Obninsk/Russia. Investments were carried out in Brazil due to increasing delivery orders and the introduction of new products; in Russia, the decision was made on the basis of the increasing demand for quality spare parts in Russia and Belarus. Further investments were made in new production locations in China and Indonesia in order to create capacities for several new orders that have already been taken. The new locations will start production in 2014.

Overall, around 57.7 percent of capital expenditure on tangible fixed assets in the 2013 business year were made in non-European markets. As in previous years, there was a major investment focus on the Asia/Pacific region, which received 25.3 percent of the capital expenditure on tangible fixed assets. In the 2014 business year, capital expenditure on tangible fixed assets—again due to the integration of the MAHLE Behr Group—will increase to substantially over EUR 500 million.

Furthermore, the group invested extensively in strategic acquisitions in the 2013 business year. The largest investment was the increased share in the MAHLE Behr Group to 50.71 percent as part of the long-term development of the group. The unit trading as MAHLE Behr has been fully consolidated since October 2013. Furthermore, MAHLE acquired a share of 30.82 percent in the Tokyo-listed company Kokusan Denki Co., Ltd., a specialist for mechatronic products, invested further in the joint venture Bosch Mahle Turbo Systems, and increased its participation in the Indian piston manufacturer MAHLE India Pistons Limited to 100 percent.

### Financial position

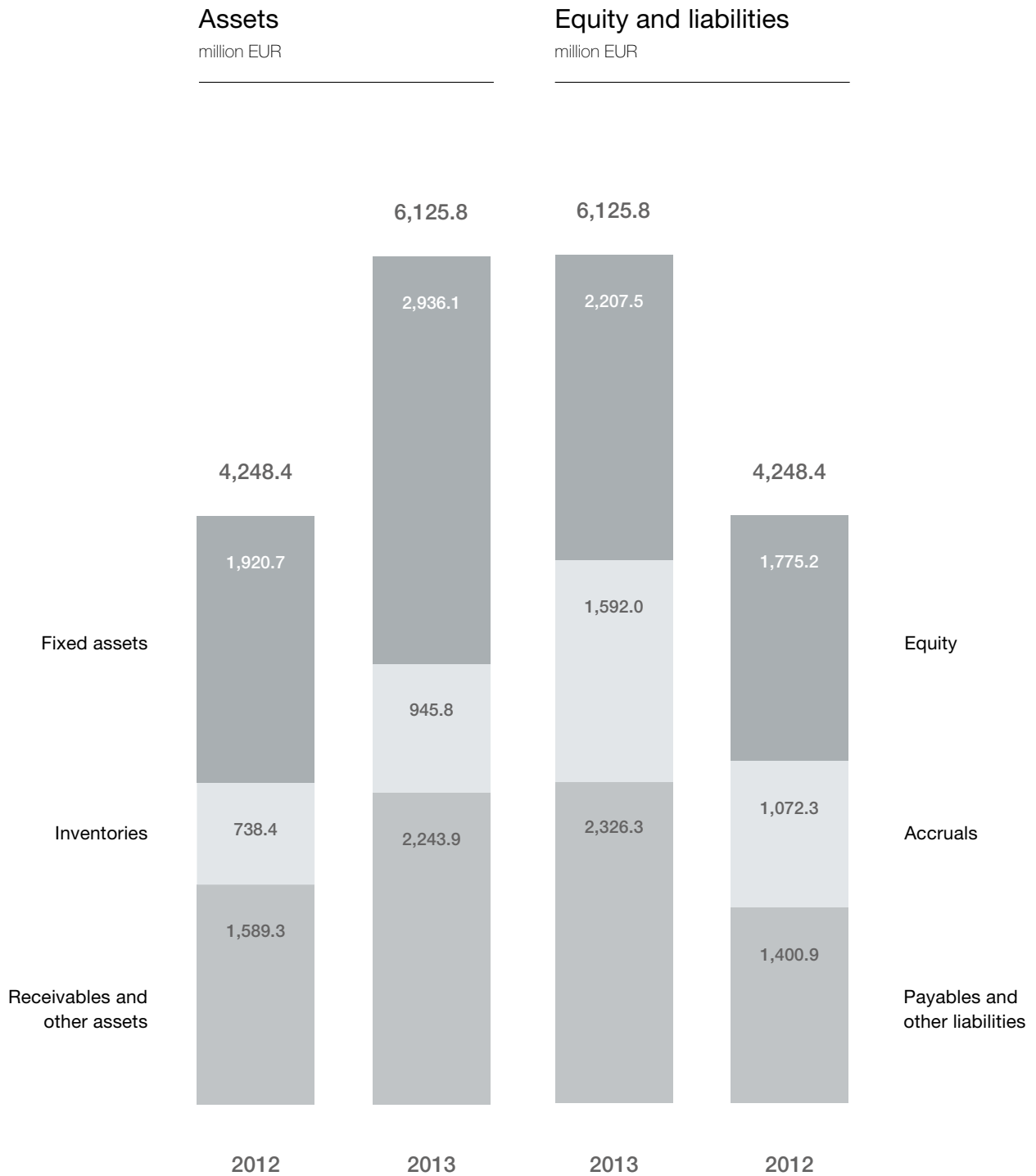
In the 2013 business year, cash flow from operating activities of EUR 487.5 million was achieved (previous year: EUR 580.8 million). The decline in comparison with the previous year is largely due to the increase in trade receivables as well as non-operating items, such as deferred tax assets.

The high capital expenditure on tangible fixed assets and payments for strategic investments in corporate acquisitions led to a cash outflow from investing activities of EUR 599.2 million (previous year: EUR 364.9 million). The expenditure for tangible fixed assets was fully covered by the cash flow from operating activities. Besides its own cash flow, the group used bank loans and bonded loans to finance the acquisitions, in particular that of the majority share of the MAHLE Behr Group. Overall, the cash flow from financing activities totaled EUR 68 million (previous year: EUR –371.5 million).

Changes to cash funds that arose as a result of exchange rate movements, consolidation group, and valuation procedures—in particular the change to the full consolidation of the MAHLE Behr Group—came to EUR 173.5 million. The cash inflow in the reporting period thus amounted to EUR 129.7 million.

In the 2013 business year, MAHLE concluded a medium-term syndicated loan agreement for EUR 1,250 million to serve as a cash reserve. As part of the strategy of integrated group financing, the syndicated loan agreement replaces separate loans of the former Behr Group and the MAHLE Group.

BALANCE SHEET STRUCTURE OF THE MAHLE GROUP //



## OPPORTUNITY AND RISK REPORT //

As a globally operating company, MAHLE is exposed to a variety of opportunities and risks. The future success of the group also depends on timely and targeted opportunity and risk management.

The established opportunity and risk management system of the group is designed to identify, assess, and control business and financial opportunities and risks associated with business operations. A significant part of the rules of the German Corporate Governance Code, although not legally binding for the MAHLE Group as a privately held and foundation-owned company, have been applied voluntarily insofar as they are suitable and appropriate with regard to the shareholder and governance structure of MAHLE. On the basis of inspection plans that change every year, the viability of the opportunity and risk management system is checked regularly by means of globally active internal auditors. The system is characterized by the following focus areas:

### Market and technological trends

The identification of opportunities and risks at an early stage is ensured by systematic monitoring of market and technological trends. Information from these analyses is used in decision making on future business segments and new production processes. Derived measures are included in the strategic or budget planning and their implementation is monitored in the monthly management reporting. The MAHLE Group addresses opportunities and risks arising from the increasing environmental awareness of the markets and new statutory requirements toward reducing emissions by incorporating relevant topics into international research and development activities at an early stage. Efficiency technologies as well as downsizing, the MAHLE range extender, and turbocharging enable the group to market competitive and innovative products. Moreover, the nonautomotive range offers the possibility to further expand business activities.

A slowing of the global economy or changes to the political framework in individual countries can have a significant impact on the group's business development within the various regions. In light of prevailing uncertainties, the MAHLE Group's global orientation represents a major stabilizing factor. By continuously expanding its international orientation and with a heavily diversified customer and product portfolio, the MAHLE Group is aiming to achieve optimum dispersion of regional market and customer risks. Potential declines in

demand in individual markets or from individual customers may be absorbed at least partially by counteracting market cycles in other regions and make it possible to benefit from regional growth potential.

### Procurement and production

Minimizing risks arising from the procurement markets represents another main focus of risk management. Risks in the form of unexpected supply bottlenecks and/or price increases in purchasing are counteracted by means of regular supplier evaluations, use of alternative raw material sources and materials, and preservation of supplier independence. Furthermore, procurement risks are reduced by appropriate stock buffers and OTC hedging transactions.

The MAHLE Group operates production locations in every key region. This enables MAHLE to regularly exchange best practices and various production philosophies to continuously optimize production processes. Unforeseeable circumstances, unexpected technical faults, accidents, and human error can impair production operations at the locations. Potential operative risks are counteracted by means of safety standards, optimized production processes, and high quality standards. The MAHLE Group is audited and certified in accordance with all major external standards and specifications, and is thus subjected to substantial external checks that serve to limit risks. Possible damages and resulting disruptions of operations, as well as other damage events and liability risks, are covered to an economically prudent degree by means of insurance policies.

### Finance management

A systematic and group-wide finance management system ensures the optimum use of financing opportunities from the banking and capital market. The liquidity risk is covered by diversified financing facilities with staggered maturity profiles that considerably exceed the group's foreseeable financial requirements. The financing mix is designed while taking into account security, flexibility, and yield considerations. It aims to secure financial independence, limit financing risks, and allow the group to exploit business opportunities at all times.



Currency risks are identified by using a group-wide planning and reporting system. Risks are being hedged with a 24 months horizon. The hedging is executed based on standardized group-wide hedging principles which include no market forecast or own opinion. As a rule, hedging activities relate to OTC FX forwards or swaps in the form of portfolio hedges. The use of derivative financial instruments is necessarily linked to the existence of an operational underlying transaction, whereby expected and not yet invoiced currency risks are covered with continuously declining hedging grades. The resulting hedging relationships generate valuation units in accordance with the critical term match method. According to the value-at-risk analyses, the interest rate risk is low. Counterparty risks with financial institutions arise from OTC hedging activities and other financial transactions. These are identified and evaluated in a group-wide uniform reporting system. If predefined thresholds are exceeded, the counterparty risk is influenced by the targeted spread of transactions.

#### **Human resources, IT, and accounting**

The recruitment of top quality employees, their continued promotion and qualification, and their long-term retention in the group represent a major factor for MAHLE's sustainable success. A comprehensive personnel marketing concept affords crucial opportunities for recruiting highly qualified employees by means of early and direct contact with potential applicants. At the same time, this reduces the risk of delaying or not finding suitable staff for vacant positions. In order to guarantee the group's long-term success and benefit from chances arising from market and technological changes, personnel requirement planning is linked with developments in the relevant markets and with strategically relevant technologies and business segments. The risk of losing employees in strategically important corporate positions is counteracted by means of performance-related remuneration systems, an employee- and goal-oriented leadership style, modern pension schemes, and numerous advanced training activities. Creating a positive and open working atmosphere and allowing a wide scope for individual creativity strengthen the employees' loyalty to the group.

In the area of information technology, security technologies protect against unauthorized access to data or misuse of data by internal and external parties. Server and storage systems allow data to be recovered at short notice in emergency and crisis situations. The defined security standards are geared toward not only the technical specifications of the hardware and software but also functional security structures and organizational provisions. In addition to detailed backup and

recovery procedures, the risk of severe disruptions is reduced, among other things, by securing access procedures as well as mirroring and archiving data on a daily basis.

With regard to the accounting process, the internal controlling and risk management system is aimed at ensuring compliance and effectiveness of accounting and financial reporting. Besides guidelines and principles, the system also includes measures to prevent and uncover reporting errors. The consolidated financial statements are created centrally with reporting data transferred from subsidiaries. Besides systematic controls, compliance with group guidelines is ensured by means of specialist advice and manual checks, as well as the validation of the data for plausibility by the group accounting department.

#### **Regulations and legislations**

The implementation of directives alongside organizational and work instructions ensures that statutory requirements are observed. Internal and external experts are integrated in the processes from an early stage to minimize risks arising from fiscal, occupational, competition, patent, antitrust, and environmental regulations and legislations. Seminars, interactive e-learning courses, and memos regarding specific regulations and changes provide employees with regular information about new developments across all relevant areas of responsibility.

An accounting provision in the form of an accrual was created in the previous year for the investigation proceedings brought against the Behr Group in May 2012 by European and U.S. antitrust authorities for suspected restrictive practices in automotive thermal systems.

#### **Overall assessment**

Overall, no risks that could endanger the continued existence of the group are currently observable.

## OUTLOOK //

Taken as a whole, a positive market trend is anticipated for 2014. The development of the group will be shaped by the integration of the MAHLE Behr Group among other things.

### Overall economic development

The International Monetary Fund (IMF) forecasts a strengthening of global economic activities in 2014. In contrast to the past few years, positive stimuli are now primarily expected from the advanced economies. While the growth in economic output in the emerging markets should continue to significantly exceed that in the advanced economies, it will not achieve the level of earlier years. In its January forecast, the IMF predicts the global economy to grow by 3.7 percent overall in 2014.

Economic development is expected to continue stabilizing in Europe in 2014, but differences between individual countries will still be significant. The IMF anticipates a rise in gross domestic product of 2.8 percent for the United States in 2014. In view of the improved economic prospects, the U.S. Federal Reserve has introduced a change of course in its monetary policy and started to slow the pace of the expansionary policy. Analysts expect stabilization at the previous year's level in Brazil. At 7.5 percent, a solid but comparatively moderate growth is estimated for the Chinese economy. In India, the development of the economy may gain momentum again. Growth in line with the previous year's level is expected for the Japanese economy in 2014. Any burden—due to higher consumption taxes—should be offset at least to some extent by temporary fiscal stimuli.

### Development of the vehicle markets

Analysts at the forecasting institute IHS predict that the production number of passenger cars and light commercial vehicles will rise to a total of 87.3 million units (+2.9 percent) in the 2014 business year. Based on the current situation, moderate growth in the European production of passenger cars and light commercial vehicles seems feasible. Analysts continue to forecast positive development in the production of passenger cars and light commercial vehicles in the North America region, with the growth level normalizing further after the strong recovery of the previous years. In the South America region, a

challenging market development seems probable in view of expiring government incentives. The volume produced in the Asia/Pacific region is estimated to increase in 2014. While a declining development is anticipated in Japan, the solid trend in Chinese production should underpin the market.

For 2014, analysts expect an increase in the global production of medium-sized and heavy-duty commercial vehicles. However, the predictions for the European commercial vehicle market in particular are subject to uncertainties. In 2013, the pending introduction of the new EURO VI emission standard led to anticipatory effects. The resulting impact on 2014 is difficult to estimate, a negative influence on the market is probable. Positive effects may arise from the possible introduction of a new toll category. MAHLE expects an increase of production in North America. A trend toward a weak market development is anticipated in China. The delayed introduction of the China IV emission standard resulted in anticipatory effects in 2013.

In 2014, MAHLE anticipates overall a moderate growth for off-highway applications in the markets for agricultural and construction machinery. The North American production of construction machines is expected to stabilize and increase moderately.

### Development of the MAHLE Group

In 2014, MAHLE expects significantly increased sales in connection with the acquisition of the majority of shares of the former Behr Group on September 30, 2013. In line with its new positioning, the MAHLE Group is targeting sales of around EUR 10 billion in 2014, which is subject to the general development of the automotive markets and exchange rate developments. In the 2014 business year, an increase in income compared with the previous year is also expected, but to a comparatively moderate extent since the depreciation and amortization of obligatorily disclosed hidden reserves as part of the purchase price allocation will have a negative impact.

With a view to implementing the integration of the MAHLE Behr Group into the group target organization, the 2014 business year will be one of transition for MAHLE. There are plans to unite the following interdisciplinary functions: sales, advanced engineering, purchasing of nonproduction materials, finance and accounting, IT, quality and environment, legal, corporate communications/PR, and HR. Implementation commenced in 2013 and should be completed swiftly in the 2014 business year.

The integration of the MAHLE Behr Group has significantly expanded the group's product portfolio and thus set important new areas of emphasis for the future development of the group. Following the acquisition of the minority holding in 2010, cooperation was immediately established between MAHLE Advanced Engineering and the corresponding department of the former Behr GmbH & Co. KG. This cooperation will continue to intensify as the integration progresses. The targeted expansion of the product portfolio is to be pursued in the 2014 business year. Thus, MAHLE also plans to continue its expansion in the field of mechatronics and increased its share in Japanese mechatronics specialist Kokusan Denki to 38.87 percent at the start of 2014. The aim is to establish a long-term presence of the group in key technology and growth fields in order to continue strengthening its competitive position in view of current technological challenges. In order to assure future competitiveness, MAHLE is also driving forward the continuous expansion of its international orientation. In the 2014 business year, four new plants in China and Indonesia will commence production. In Mexico, preparations for new plants are also progressing. A new logistics center for the independent spare parts market with double capacity was opened in Brazil at the beginning of the year. In Russia, a large Aftermarket logistics center also began operations at the start of 2014. Extensive expansion-related investments are planned in Romania in the next few years. In the new group structure, capital expenditure on tangible fixed assets will clearly exceed EUR 500 million in 2014. Capital expenditure on tangible fixed assets will preferably be further financed using cash flow from operating activities.

The solid equity base and strengthened liquidity thanks to the continued diversification of financing sources have paid off against the backdrop of volatile markets. This course of action is to be continued in the 2014 business year in order to assure financial independence in the long term.

No events occurred after the conclusion of the 2013 business year that would impact the group's annual financial statements.

This report contains forward-looking statements that rely on current estimates of future developments. Such statements are subject to risks and uncertainties that are beyond MAHLE's control or which cannot be precisely estimated by MAHLE, and which may cause the actual facts and figures to deviate from these statements.

## WORLDWIDE AUTOMOBILE PRODUCTION //

Numbers in 1,000s

Business year	2014	2014	2013	2013
	Passenger cars & light comm. vehicles	Commercial vehicles (incl. buses)	Passenger cars & light comm. vehicles	Commercial vehicles (incl. buses)
<b>America</b>	21,293	820	20,718	742
North America	16,761	537	16,178	477
South America	4,532	283	4,540	265
<b>Asia/Pacific</b>	44,449	2,107	43,029	2,070
Japan	8,425	394	9,066	369
China	23,116	1,168	21,261	1,215
<b>Europe</b>	19,723	632	19,508	575
Germany	5,604	141	5,631	131
<b>Other countries</b>	1,804	3	1,532	4
<b>Total</b>	<b>87,269</b>	<b>3,562</b>	<b>84,787</b>	<b>3,391</b>

Source: IHS Automotive, figures for passenger cars and light commercial vehicles (last updated: March 2014); figures for commercial vehicles (last updated: February 2014)



# 03 //

## CONSOLIDATED FINANCIAL STATEMENTS

“MAHLE is a reputable company with a long tradition. I greatly appreciate being part of the MAHLE family. For me, the cooperation with colleagues across continents is always rewarding. We are all actually focusing on one topic: energy efficiency. However, when viewed closely, it is all about providing solutions that perfectly meet the needs of each and every customer. The markets still differ greatly today—including those within Asia. We will soon welcome our new colleagues from the Thermal Management business unit here, which is also where the application development of exhaust gas turbochargers for Asia will be based.”



## CONSOLIDATED BALANCE SHEET //

as at December 31, 2013

### Assets

in EUR '000

		Dec. 31, 2013	Dec. 31, 2012
<b>Fixed assets</b>			
Intangible assets			
Purchased concessions, industrial and similar rights and assets, and licences in such rights and assets	480,540		20,110
Goodwill	113,706		106,506
Prepayments	5,342		29
	<b>599,588</b>		<b>126,645</b>
Property, plant, and equipment			
Land, leasehold rights, and buildings including buildings on third-party land	782,795		524,662
Technical equipment and machinery	1,014,732		807,804
Other equipment, fixtures, and furniture	106,301		68,530
Prepayments and assets under construction	263,422		159,593
	<b>2,167,250</b>		<b>1,560,589</b>
Financial assets			
Shares in affiliated companies	10,315		18,111
Shares in associated companies	118,232		187,906
Equity investments	3,885		5,831
Long-term securities	28,414		16,794
Other loans	8,451		4,858
	<b>169,297</b>		<b>233,500</b>
		<b>2,936,135</b>	<b>1,920,734</b>
<b>Current assets</b>			
Inventories			
Raw materials, consumables, and supplies	334,187		216,992
Work in process	179,475		173,175
Finished goods and merchandise	452,680		339,487
Prepayments	23,070		8,760
Prepayments received	-43,585		0
	<b>945,827</b>		<b>738,414</b>
Receivables and other assets			
Trade receivables	1,346,772		881,767
Receivables from affiliated companies	5,083		10,959
Receivables from companies in which investments are held	8,771		8,404
Other assets	253,230		163,405
	<b>1,613,856</b>		<b>1,064,535</b>
Securities	2		110
Cash in hand, bank balances, and cheques	465,501		335,791
		<b>3,025,186</b>	<b>2,138,850</b>
Prepaid expenses		14,477	14,457
Deferred tax assets		134,415	174,309
Excess of plan assets over post-employment benefit liability		15,608	0
		<b>6,125,821</b>	<b>4,248,350</b>

## Equity and liabilities

in EUR '000

		Dec. 31, 2013	Dec. 31, 2012
<b>Equity</b>			
Subscribed capital	150,000		150,000
Capital reserves	166,430		166,430
Revenue reserves	1,537,348		1,343,341
Equity impact from currency translation	-171,994		-47,675
Unappropriated retained earnings	7,162		5,095
Minority interests	518,544		158,036
		<b>2,207,490</b>	<b>1,775,227</b>
<b>Accruals</b>			
Accruals for pensions and similar obligations	466,323		397,438
Accruals for taxes	52,692		36,910
Other accruals	1,072,996		637,932
		<b>1,592,011</b>	<b>1,072,280</b>
<b>Liabilities</b>			
Liabilities to banks	1,046,765		702,585
Payments received on account of orders	11,492		33,204
Trade payables	797,861		482,393
Liabilities on bills accepted and drawn	3,269		2,525
Liabilities to affiliated companies	4,537		5,324
Liabilities to companies in which investments are held	3,859		19,724
Liabilities on hybrid bond	103,609		0
Other liabilities	221,787		152,811
thereof from taxes:	62,087 (prev. yr. 48,972)		
thereof relating to social security and similar obligations:	29,602 (prev. yr. 21,777)		
		<b>2,193,179</b>	<b>1,398,566</b>
<b>Deferred income</b>			
		<b>133,141</b>	<b>2,277</b>
		<b>6,125,821</b>	<b>4,248,350</b>

**CONSOLIDATED INCOME STATEMENT //**

from January 1 to December 31, 2013

in EUR '000	2013	2012
<b>Sales</b>	<b>6,941,294</b>	<b>6,159,464</b>
Cost of sales	-5,530,660	-4,849,599
<b>Gross profit on sales</b>	<b>1,410,634</b>	<b>1,309,865</b>
Selling expenses	-395,493	-367,498
General administrative expenses	-302,451	-274,892
Research and development expenses	-336,229	-289,427
Other operating income	248,335	199,928
thereof income from currency translation:	83,531 (prev. yr. 74,453)	
Other operating expenses	-202,012	-174,004
thereof expenses from currency translation:	-82,853 (prev. yr. -70,332)	
	<b>-987,850</b>	<b>-905,893</b>
Investment income	245	57
Income from other securities and long-term loans	1,322	1,232
Result from associated companies	-12,520	-71,934
Other interest and similar income	11,371	23,496
thereof from affiliated companies:	262 (prev. yr. 269)	
thereof income from discounting:	886 (prev. yr. 665)	
Impairment of financial assets and of securities	-3,821	-3,004
thereof from affiliated companies:	-2,573 (prev. yr. 0)	
Expenses from the transfer of losses	-3,598	-4,224
Interest and similar expenses	-109,247	-82,466
thereof to affiliated companies:	-72 (prev. yr. 0)	
thereof expenses from discounting:	-35,362 (prev. yr. -25,036)	
<b>Income from ordinary activities</b>	<b>306,536</b>	<b>267,129</b>
Taxes on income	-52,161	-98,978
thereof income (prev. yr. expenses) from deferred income taxes:	51,485 (prev. yr. -5,659)	
Other taxes	-18,806	-19,597
<b>Net income</b>	<b>235,569</b>	<b>148,554</b>
thereof profit applicable to minority shareholders:	57,154 (prev. yr. 40,947)	
thereof loss applicable to minority shareholders:	-23,801 (prev. yr. -9,372)	

## CONSOLIDATED CASH FLOW STATEMENT //

from January 1 to December 31, 2013

in EUR '000	2013	2012
<b>Cash funds at the beginning of the period</b>	<b>335,791</b>	<b>504,927</b>
<b>Cash flow from operating activities</b>	<b>487,453</b>	<b>580,834</b>
Net result (including minority's share of result)	235,569	148,554
Write-downs/write-ups on noncurrent assets	351,231	323,207
Increase/decrease in accruals	49,127	-24,962
Other noncash income and expenses	18,054	77,799
Profit/loss on disposals of property, plant, and equipment and from the sale of shares in group member companies	5,720	-18,905
Increase/decrease of inventories, trade receivables, and other assets not related to investing or financing activities	-132,996	93,505
Increase/decrease of trade payables, and other liabilities not related to investing or financing activities	-39,252	-18,364
<b>Cash flow from investing activities</b>	<b>-599,226</b>	<b>-364,904</b>
Proceeds from disposals of property, plant, and equipment	4,777	17,830
Purchase of property, plant, and equipment	-397,386	-323,786
Proceeds from disposals of intangible assets	157	643
Purchase of intangible assets	-11,036	-5,603
Proceeds on disposals of noncurrent financial assets	6,505	8,087
Acquisition of noncurrent financial assets	-78,788	-85,279
Receipts from disposal of shares in subsidiaries and business units	3,223	23,235
Acquisition of shares in subsidiaries and business units	-126,786	-22
Payments/receipts in connection with the short-term financial management of cash investments	108	-9
<b>Cash flow from financing activities</b>	<b>67,988</b>	<b>-371,482</b>
Cash receipts from issue of capital	1,650	1,070
Cash payments to owners and minority shareholders (dividends)	-25,045	-33,518
Cash proceeds from issuing bonds/loans and short- or long-term borrowings	497,831	259,691
Cash repayments of bonds/loans or short- or long-term borrowings	-406,448	-598,725
<b>Total cash flow</b>	<b>-43,785</b>	<b>-155,552</b>
Change in cash funds from exchange rate movements and valuation procedures	-41,464	-13,584
Change in cash funds from changes in the consolidation group	214,959	0
<b>Cash funds at the end of the period</b>	<b>465,501</b>	<b>335,791</b>

## KEY CHANGES TO THE CONSOLIDATION GROUP //

The composition of the companies included in the consolidated financial statements changed substantially as a result of the first consolidation of the MAHLE Behr Group. Until September 30, 2013, the shares in MAHLE Behr GmbH & Co. KG were valued according to the equity method (36.85%). As of October 1, 2013, MAHLE Beteiligungen GmbH acquired the majority of the shares in MAHLE Behr GmbH & Co. KG (50.71%) and thus achieved a controlling influence.

With the first consolidation of the MAHLE Behr Group, the assets, liabilities, as well as prepaid expenses and deferred income transferred to the consolidated financial statements were revalued and/or recorded as part of the purchase price allocation, whereby the hidden reserves for land and buildings as well as technical equipment and machinery included in tangible fixed assets, in particular, led to a higher valuation in comparison with the annual financial statements of the subsidiaries. The trademark rights of trade names, customer relationships as well as technologies acquired and the corresponding subsidies received from customers were also recorded in the consolidated balance sheet.

As the adjustment of the previous year's figures to the new consolidation group would involve a disproportionate effort, the information below is provided so as to make the consolidated financial statements of the current year comparable with the previous year's statements.

Consolidated balance sheet	Dec. 31, 2013 MAHLE Group	Dec. 31, 2013 MAHLE Group without MAHLE Behr Group	Dec. 31, 2012 MAHLE Group
in EUR '000			
Intangible assets	599,588	106,702	126,645
Property, plant, and equipment	2,167,250	1,549,997	1,560,589
Financial assets	169,297	405,472	233,500
Inventories	945,827	678,626	738,414
Receivables and other assets	1,613,856	1,120,457	1,064,535
Securities	2	2	110
Cash-in-hand, bank balances, and cheques	465,501	283,724	335,791
Prepaid expenses	14,477	10,531	14,457
Deferred tax assets	134,415	206,951	174,309
Excess of plan assets over post-employment benefit liability	15,608	15,608	0
Equity	2,207,490	1,842,250	1,775,227
Accruals	1,592,011	1,090,400	1,072,280
Liabilities	2,193,179	1,442,992	1,398,566
Deferred income	133,141	2,428	2,277
Equity ratio	36.0%	42.1%	41.8%



Consolidated income statement	2013 MAHLE Group	2013 MAHLE Group without MAHLE Behr Group	2012 MAHLE Group
in EUR '000			
Sales	6,941,294	5,998,577	6,159,464
Cost of sales	-5,530,660	-4,723,530	-4,849,599
Selling expenses	-395,493	-359,550	-367,498
General administrative expenses	-302,451	-266,566	-274,892
Research and development expenses	-336,229	-286,327	-289,427
Other operating income and expenses	46,323	31,971	25,924
Financial result	-116,248	-97,390	-136,843
<b>Income from ordinary activities</b>	<b>306,536</b>	<b>297,185</b>	<b>267,129</b>
Taxes on income	-52,161	-50,506	-98,978
Other taxes	-18,806	-17,013	-19,597
<b>Net income</b>	<b>235,569</b>	<b>229,666</b>	<b>148,554</b>

Consolidated cash flow statement	2013 MAHLE Group	2013 MAHLE Group without MAHLE Behr Group	2012 MAHLE Group
in EUR '000			
<b>Cash funds at the beginning of the period</b>	<b>335,791</b>	<b>335,791</b>	<b>504,927</b>
Cash flow from operating activities	487,453	411,910	580,834
Cash flow from investing activities	-599,226	-550,469	-364,904
Cash flow from financing activities	67,988	126,977	-371,482
<b>Total cash flow</b>	<b>-43,785</b>	<b>-11,582</b>	<b>-155,552</b>
Change in cash funds from exchange rate movements and valuation procedures	-41,464	-41,538	-13,584
Change in cash funds from changes in the consolidation group	214,959	1,053	0
<b>Cash funds at the end of the period</b>	<b>465,501</b>	<b>283,724</b>	<b>335,791</b>

## NOTES TO THE CONSOLIDATED BALANCE SHEET //

The Kokusan Denki Group was consolidated according to the equity method for the first time on April 1, 2013. Offsetting the investor's share of the associate's equity against the carrying amount resulted in a difference of EUR 26,389k, which includes goodwill of EUR 899k. As at December 31, 2013, the difference was rolled forward to EUR 26,196k, including goodwill of EUR 809k.

Receivables and other assets	Carrying amount Dec. 31, 2013	Thereof with a remaining term of more than one year
in EUR '000		
Accounts receivables		
Trade receivables	1,346,772	84
Receivables from affiliated companies	5,083	0
Receivables from companies in which investments are held	8,771	0
Other assets	253,230	17,666
<b>Total</b>	<b>1,613,856</b>	<b>17,750</b>

In the previous year, trade receivables (EUR 159k), as well as other assets (EUR 17,020k), had a remaining term of more than one year.

Other assets contain receivables from shareholders amounting to EUR 4k (previous year: EUR 0k). Prepaid expenses include among others the differences between net loan proceeds and liabilities to banks (debt discounts) amounting to EUR 41k (previous year: EUR 0k).

The group's unappropriated retained earnings equal that of the parent company and contain the amount carried forward from the previous year of EUR 95k.

Liabilities	Carrying amount Dec. 31, 2013	Thereof with a remaining term of up to one year	Thereof with a remaining term of more than 5 years
in EUR '000			
Liabilities to banks	1,046,765	206,697	29,963
Payments received on account of orders	11,492	10,950	0
Trade payables	797,861	797,104	190
Liabilities on bills accepted and drawn	3,269	3,269	0
Liabilities			
to affiliated companies	4,537	4,537	0
to companies in which investments are held	3,859	3,859	0
Liabilities on hybrid bond	103,609	3,609	100,000
Other liabilities	221,787	163,786	118,469
<b>Total</b>	<b>2,193,179</b>	<b>1,193,811</b>	<b>248,622</b>

In the previous year, liabilities to banks (EUR 191,345k), payments received on account of orders (EUR 32,654k), trade payables (EUR 481,802k), liabilities on bills accepted and drawn (EUR 2,525k), liabilities to affiliated companies (EUR 5,324k), liabilities to companies in which investments are held (EUR 19,724k), and other liabilities (EUR 121,341k) had a remaining term of less than one year.

Other liabilities contain payables to shareholders amounting to EUR 111k (previous year: EUR 42k). Payables to shareholders have a remaining term of less than one year.

Of the liabilities to banks, EUR 7,841k is secured by property liens and EUR 26,418k by similar rights.

### Contingent liabilities

in EUR '000	
Contingents from notes	1,916
Guarantees	995
Warranties	834

To our knowledge, the underlying obligations can be fulfilled in all cases by the companies concerned. We do not expect the contingent liabilities to be claimed.

## NOTES TO THE CONSOLIDATED INCOME STATEMENT //

The income statement of the MAHLE Group has been prepared according to the cost of sales method. Sales are thus set against the expenses incurred in their realization, which is allocated in principle to the functions production, sales, general administration, and research and development.

The cost of sales comprises the material and production costs incurred in the realization of sales, the landed costs of the trade business, and the costs of the allocation to accruals for warranties. Furthermore, this item also contains depreciation and amortization on the hidden reserves disclosed as part of the purchase price allocation of the acquisition of MAHLE Behr. These include technologies, technical equipment and machinery, and land and buildings.

The selling expenses include, in particular, personnel and non-personnel expenses, depreciation allocated to the sales function, as well as logistics, market research, sales promotion, shipping and handling, and advertising costs. Furthermore, it also contains amortization on the hidden reserves disclosed as part of the purchase price allocation of the acquisition of MAHLE Behr. This includes trademark rights and customer relationships.

The general administration expenses include personnel and non-personnel expenses as well as depreciation allocated to the administrative function.

The personnel and non-personnel expenses and depreciation allocated to the research and development function are substantial to the MAHLE Group. In order to present the economic status of the group more clearly, they have been included as separate items in the breakdown.

Other operating income contains EUR 80,510k income related to the reversal of accruals from other periods.

### Sales by area of operation

in EUR '000

Business unit Engine Systems and Components	2,494,481
Business unit Filtration and Engine Peripherals	1,946,383
Business unit Thermal Management	747,039
Business unit Aftermarket	795,847
Business unit Industry	445,415
Profit centers and services	512,129
<b>Total</b>	<b>6,941,294</b>

### Sales by geographical market (target area)

in EUR '000

Europe	3,181,680
North America	1,606,149
South America	613,252
Asia/Pacific	1,476,313
Africa	63,900
<b>Total</b>	<b>6,941,294</b>

### Personnel expenses

in EUR '000

<b>Total</b>	<b>1,874,131</b>
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### Depreciation, amortization, and impairments of intangible and tangible fixed assets

in EUR '000

<b>Total</b>	<b>348,451</b>
thereof impairments	5,929

### Result from associated companies

in EUR '000

Investor's share in associates' net income/net loss of the year	-11,012
Effects of roll-forward of the difference	-1,508
<b>Result from associated companies</b>	<b>-12,520</b>

### Subsequent accounting of the purchase price allocation of the acquisition of MAHLE Behr

in EUR '000

Depreciation and amortization within cost of sales	25,689
Amortization within selling expenses	6,449
Release of subsidies within other operating income	6,872
Release of deferred tax liabilities	7,018

## OTHER NOTES //

### Average annual number of employees (excluding apprentices)

Direct employees	26,966
Indirect employees	23,530
<b>Total</b>	<b>50,496</b>

The total average annual number of employees includes a pro rata figure of 470 employees from proportionately consolidated companies.

Derivatives in accordance with Secs. 285, 314 of the HGB not yet settled as at the balance sheet date can be broken down as follows:

Derivatives in EUR '000	Nominal amounts	Fair value*
Transactions relating to interest	359,544	-5,743
Transactions relating to currency	858,844	-43,009
Transactions relating to currency and interest	17,788	1,627
Transactions relating to commodities	18,103	-1,413

\* The fair value of currency- and commodities related transactions corresponds to the market value of the derivatives as at the balance sheet date, which is identified in accordance with the net present value method. All interest-related transactions are based on recognized financial/mathematical models.

The derivative contracts as at December 31, 2013, are placed exclusively with banks. Evaluation units were established for hedging transactions with an effective relationship to the underlying transaction. Accruals of EUR 7,080k were set up for all other hedging transactions that have resulted in anticipated losses.

### Remuneration of the members of the Management Board of MAHLE GmbH (parent company)

in EUR '000	
Supervisory Board	237
Management Board	7,611

The total remuneration of the Management Board comprises fixed and variable components. The fixed portions for the 2013 business year came to EUR 2,082k, and the variable compensation for 2013 to EUR 5,438k. The remuneration shown also includes an adjustment for the previous year. The fixed portions include benefits in kind, which consist primarily of the noncash benefits of having company cars.

Remunerations paid to former members of the Management Board and their descendants totaled EUR 1,409k.

An amount of EUR 15,150k is set aside for this group of persons in the pension accruals as at December 31, 2013.

The total fee for the business year charged by PricewaterhouseCoopers AG, the group auditor, pursuant to Sec. 314, Para. 1, no. 9 of the HGB, consists of the following:

### Auditor's fee

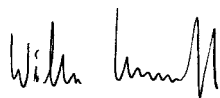
in EUR '000	
Audit of financial statements	832
Other assurance services	35
Tax advisory services	132
<b>Total</b>	<b>999</b>

Stuttgart/Germany, March 14, 2014

The Management Board of MAHLE GmbH



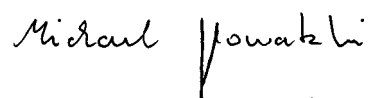
Heinz K. Junker



Wilhelm Emperhoff



Arnd Franz



Michael Glowatzki



Rudolf Paulik



Jörg Stratmann



Bernhard Volkmann

## AUDITOR'S REPORT //

The auditor has issued the following opinion on the complete consolidated financial statements and the group management report:

We have audited the consolidated financial statements prepared by MAHLE GmbH, Stuttgart/Germany, comprising the balance sheet, the income statement, the cash flow statement, the statement of changes in equity, and the notes to the consolidated financial statements, together with the group management report for the business year from January 1 to December 31, 2013. The preparation of the consolidated financial statements and the group management report in accordance with German commercial law is the responsibility of the parent company's Management Board members. Our responsibility is to express an opinion on the consolidated financial statements and the group management report based on our audit.

We conducted our audit of the consolidated financial statements in accordance with § (Article) 317 HGB ("Handelsgesetzbuch": "German Commercial Code") and German generally accepted standards for the audit of financial statements promulgated by the Institut der Wirtschaftsprüfer (Institute of Public Auditors in Germany) (IDW). Those standards require that we plan and perform the audit such that misstatements materially affecting the presentation of the net assets, financial position, and results of operations in the consolidated financial statements in accordance with (German) principles of proper accounting and in the group management report are detected with reasonable assurance. Knowledge of the business activities and the economic and legal environment of the group and expectations as to possible misstatements are taken into account in the determination of audit procedures. The effectiveness of the accounting-related internal control system and the evidence supporting the disclosures in the consolidated financial statements and the group management report are examined primarily on a test basis within the framework of the audit. The audit includes assessing the annual financial statements of the companies included in consolidation, the determination of the companies to be included in consolidation, the accounting and consolidation principles used; and significant estimates made by the company's Management Board members, as well as evaluating the overall presentation of the consolidated financial statements and the group management report. We believe that our audit provides a reasonable basis for our opinion.

Our audit has not led to any reservations.

In our opinion based on the findings of our audit, the consolidated financial statements comply with the legal requirements and give a true and fair view of the net assets, financial position, and results of operations of the group in accordance with (German) principles of proper accounting. The group management report is consistent with the consolidated financial statements and as a whole provides a suitable view of the group's position and suitably presents the opportunities and risks of future development.

Stuttgart/Germany, March 18, 2014

PricewaterhouseCoopers  
Aktiengesellschaft  
Wirtschaftsprüfungsgesellschaft

Dieter Wißfeld  
Wirtschaftsprüfer  
(German Public Auditor)

ppa. Renate Berghoff  
Wirtschaftsprüferin  
(German Public Auditor)



## MEMBERS OF SUPERVISORY BOARD //

**Dr. rer. pol. Dr. rer. pol. h.c. Klaus P. Bleyer**

Chairman

Former Chairman of the Management Board of ZF Friedrichshafen AG, Friedrichshafen/Germany

**Bernd Hofmaier-Schäfer**

Deputy Chairman

Chairman of the Central Works Council of MAHLE Group Germany and Deputy Chairman of the European Works Council

**Rolf Allmendinger**

Former Chairman of the Supervisory Board of WMF Aktiengesellschaft, Geislingen/Germany

**Dietmar Bichler**

effective October 24, 2014

Chairman of the Management Board of Bertrandt AG, Ehningen/Germany

**Kai Steffen Bliesener**

until September 13, 2013

Former Press Relations Officer of Industriegewerkschaft Metall Baden-Württemberg, District Administrative Office, Stuttgart/Germany

**Herbert Bossert**

until April 18, 2013

Chief Operation Officer of the European Works Council of MAHLE Group Germany

**Martin Bücher**

Executive Secretary and Deputy Chairman of the Central Works Council of MAHLE Group Germany

**Prof. Dr. jur. Wolfgang Fritzemeyer**

LL.M., Attorney-at-Law

Baker &amp; McKenzie, Munich/Germany

**Josef Häring**

effective April 18, 2013

Chairman of the Works Council of Rottweil plant

**Dr. rer. pol. Rolf A. Hanssen**

until April 18, 2013

Former Chairman of the Management Board of MTU Friedrichshafen GmbH, Friedrichshafen/Germany

**Karin Himmelreich**

effective October 24, 2013

Managing Director MP Transaction, Frankfurt/Germany

**Hans D. Jehle**

until April 18, 2013

Former President of MAHLE, Inc., Morristown/USA

**Jürgen Kalmbach**

effective April 18, 2013

Chairman of the Works Council of Stuttgart plant

**Patryk Krause**

effective October 25, 2013

Clerk Industriegewerkschaft Metall, Stuttgart/Germany

**Thomas R. Letsch**

Former Vice President Sales and Application Engineering Commercial Vehicles of MAHLE Group

**Uwe Meinhardt**

effective April, 2013

First Authorized Representative of Industriegewerkschaft Metall District Administrative Office, Stuttgart/Germany

**Dr. Uwe Mohr**

effective April 18, 2013

Vice President Corporate Research and Advanced Engineering of MAHLE Group

**Dr. Franz-Josef Paefgen**

effective April 18, 2013

Former CEO of Bentley Motors Ltd. and President of Bugatti International S.A.

**Gerhard Pietsch**

until July 13, 2013

Former Managing Director of the MABEG e.V. Association to promote and advise the MAHLE Group, Stuttgart/Germany

**Prof. Dr.-Ing. Stefan Pischinger**

Director and Professor, Institute of Combustion Engines, RWTH Aachen/Germany

**Willi Ritter**

until April 18, 2013

Chairman of the Works Council of Stuttgart plant

**Hansjörg Schmierer**

until April 18, 2013

Managing Director of Industriegewerkschaft Metall Local Administrative Office, Stuttgart/Germany

**Prof. Dr.-Ing. Dr.-Ing. e.h. Hans-Joachim Schöpf**

Former Executive Vice President R&D at Mercedes Car Group of Daimler AG

**Manfred Steidle**

Chairman of the European Works Council and Deputy Chairman of the Central Works Council of MAHLE Group Germany

**Annette Szegfű**

effective October 25, 2013

Secretary Management, Industriegewerkschaft Metall, Frankfurt/Germany

**Georg Weiberg**

effective August 1, 2013

Former Head of Global Truck Engineering, Daimler AG, Stuttgart/Germany

**Thomas Wörner**

effective October 25, 2013

Chairman of the Works Council of MAHLE Behr and Chairman of the Works Council of the location MAHLE Behr GmbH & Co. KG in Stuttgart/Germany

## REPORT OF THE SUPERVISORY BOARD //

In March 2013, the members of the Supervisory Board were newly elected in accordance with the regulations of the 1976 Codetermination Act; the constituent meeting of the new Supervisory Board took place on April 18, 2013. The Supervisory Board would like to express its thanks to member Gerhard Pietsch, who stepped down on July 31, 2013, for his many years of constructive cooperation. Georg Weiberg was appointed member of the Supervisory Board by the shareholders for the remaining term of office. The Supervisory Board would also like to thank member Kai Bliesener, who retired in September, for his commitment and close cooperation. The Stuttgart district court ("Amtsgericht Stuttgart") appointed Annette Szegfü as his successor. The amendment to the Articles of Association of September 24, 2013, increased the number of members of the Supervisory Board from 16 to 20. The shareholders elected Karin Himmelreich and Dietmar Bichler as new members. New employee representatives Patryk Krause and Thomas Wörner were appointed by the Stuttgart district court. The Supervisory Board thanks the new members for their willingness to be involved in this committee and take on responsibility.

In the 2013 business year, the Supervisory Board met the responsibilities incumbent on it in accordance with the law, Articles of Association, and Rules of Procedure. It monitored and advised on the activities of the Management Board, as detailed below. The Supervisory Board was involved in all decisions of fundamental importance.

Group sales increased to EUR 6,941 million; this sales growth, however, primarily relates to the full consolidation of the new Thermal Management business unit starting from the fourth quarter of 2013. As a result of the weakness of the passenger car business in Europe, of the commercial vehicle, off-road, and industrial business, and negative exchange rate effects in Asia as well as North

and South America, it was not possible to achieve any growth. The actions planned and implemented by the Management Board ensured that the targeted return on sales was achieved.

During the year under report, the Supervisory Board was informed regularly, promptly, and comprehensively through verbal and written reports from the Management Board and during meetings on the status and development of the market and the business of the company and the MAHLE Group, as well as its business units. The Supervisory Board held three ordinary meetings.

With the acquisition of the majority shareholding in the MAHLE Behr Group, a key step was made toward the integration of the new Thermal Management business unit in the MAHLE Group. MAHLE's strong presence in the sustainable growth region of Asia was further strengthened by the construction of four new plants in China and Indonesia that are to commence production in 2014. New logistics centers were built in Brazil and Russia for the Aftermarket business unit.

The Supervisory Board was continuously informed about the business situation of MAHLE Behr and the status of the antitrust proceedings. The majority acquisition of the MAHLE Behr Group was approved by the Supervisory Board as of October 1, 2013. The Supervisory Board encouraged the Management Board to drive forward and implement the integration of MAHLE Behr as the new Thermal Management business unit in 2014, and approved the required organizational measures to achieve this in its meeting of December 3, 2013.

As head of the Thermal Management business unit, Dr. Jörg Stratmann was appointed a member of the Management Board of MAHLE GmbH by the Supervisory Board with effect from January 1, 2014.

Discussions also focused on the long-term development of the group in the industry business segment as well as the expansion of the product portfolio in the area of mechatronics.

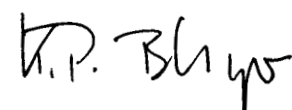
The newly appointed auditors PricewaterhouseCoopers AG audited the annual financial statements and management reports of the MAHLE Group and of MAHLE GmbH for the 2013 business year, rendering an unqualified audit opinion. The Supervisory Board agreed with the results of the audit following in-depth analysis of the audit reports and the report from the auditors in the Supervisory Board meeting.

The Supervisory Board approves the annual financial statements and the management reports of the MAHLE Group and of MAHLE GmbH, and does not raise any objections to the appropriation of income as proposed by the Management Board.

The Supervisory Board would like to thank the members of the Management Board and all employees across the globe for their successful commitment in 2013.

Stuttgart/Germany, April 16, 2014

For the Supervisory Board



Dr. Klaus P. Bleyer  
Chairman



## MANAGEMENT BOARD //

**Prof. Dr.-Ing. Heinz K. Junker**

Chairman and CEO

Business Unit Industry,  
Profit Centers Engineering Services, as well as  
Motorsports and Special Engines;  
Research and Advanced Engineering,  
Corporate Planning, Corporate Communications

**Wilhelm Emperhoff**

Corporate Executive Vice President and General Manager  
Business Unit Filtration and Engine Peripherals,  
Profit Center Mechatronics

**Arnd Franz**

Corporate Executive Vice President and General Manager  
Automotive Sales and Application Engineering (effective February 1, 2013)  
Business Unit Aftermarket

**Michael Glowatzki**

Corporate Executive Vice President  
Human Resources, Legal

**Dr. Rudolf Paulik**

Corporate Executive Vice President and General Manager  
Business Unit Engine Systems and Components,  
Profit Center Small Engine Components,  
Corporate Quality Management

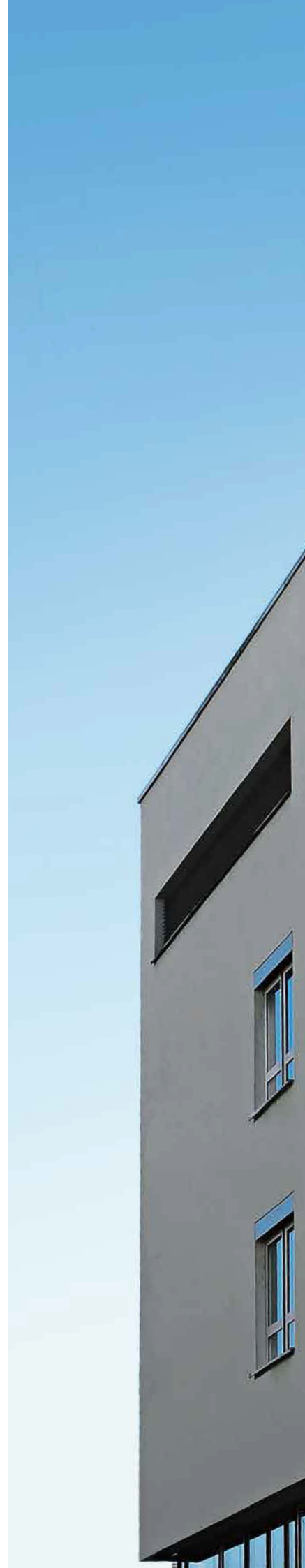
**Dr. Jörg Stratmann**

(effective January 1, 2014)

Corporate Executive Vice President and General Manager  
Business Unit Thermal Management,  
Profit Centers Thermostats and Valves,  
Control Units as well as Front-end Modules

**Dr. rer. pol. Bernhard Volkmann**

Corporate Executive Vice President and Chief Financial Officer  
IT Services, Insurances, Internal Audit



**MAHLE**



## FINANCIAL CALENDAR 2014 //

April 17, 2014  
Annual Press Conference

September 8, 2014  
Half-year Press Conference

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