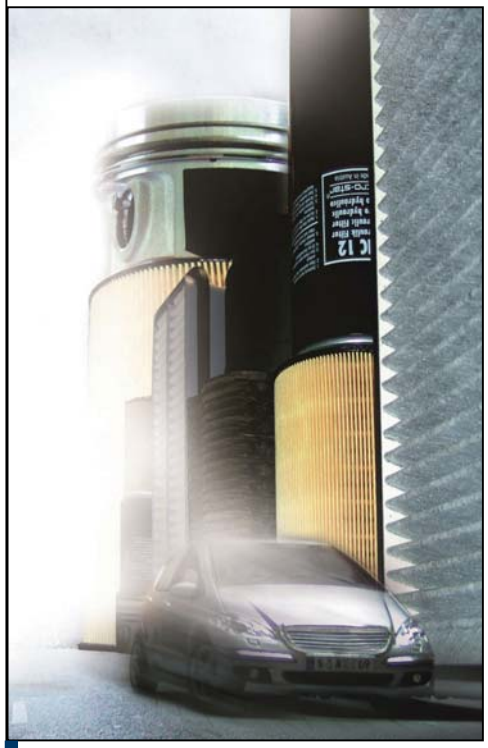
MAHLE

Driven by performance

06/09/2010, 10:00 to 12:00 h



Press release on the business development in the 1st half of 2010 and outlook for the MAHLE Group

Agenda

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- Business environment/economic situation in the automotive industry
- Business development in 2010 and outlook
- Development of the MAHLE Group
- Preview of the IAA 2010

Production of passenger cars and light commercial vehicles 2009/2010 [in thousand pcs.]

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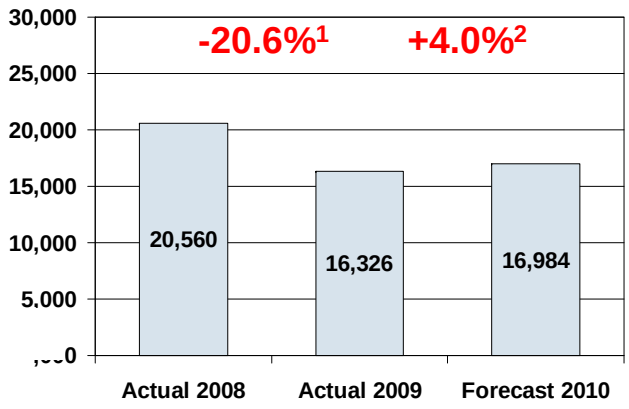
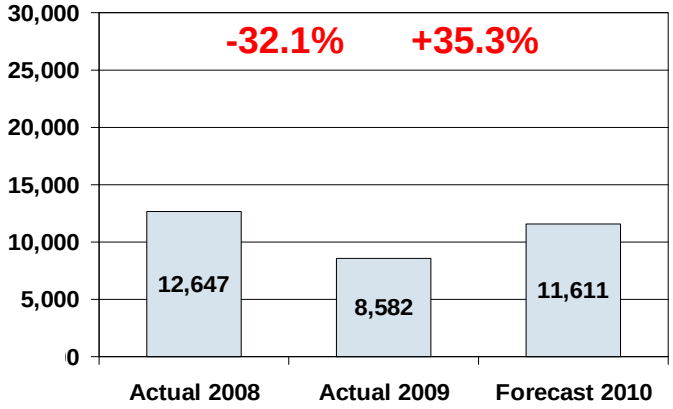
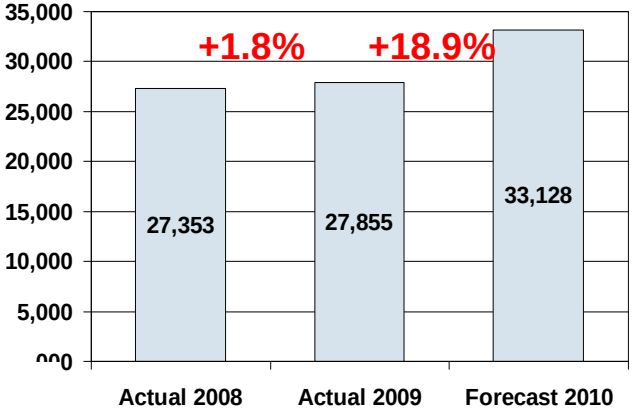
Europe



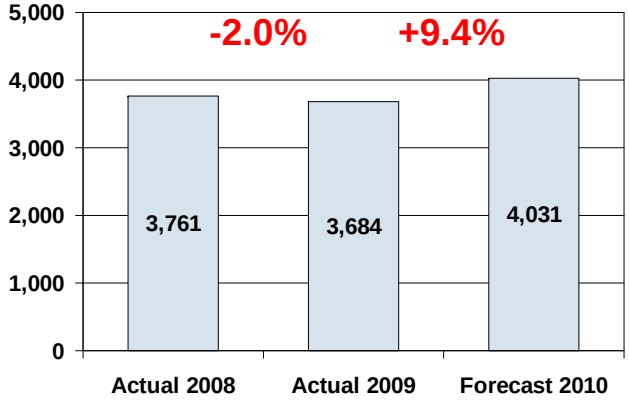
NAFTA



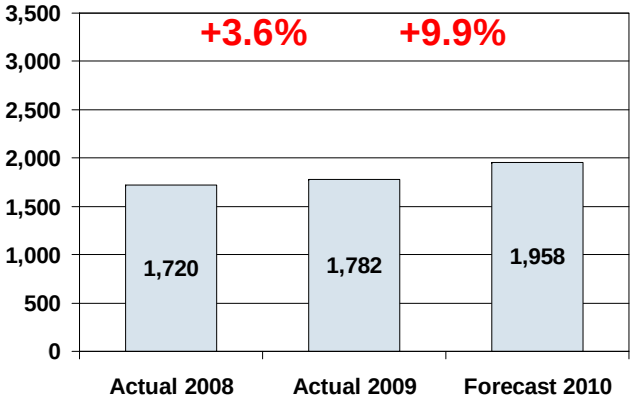
Asia/Pacific



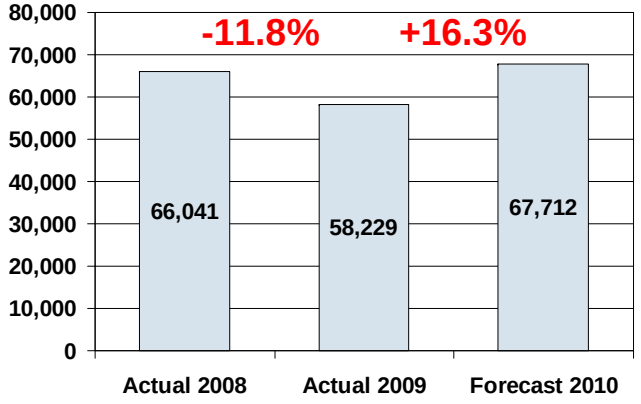
Mercosur



ROW



World market



Source: CSM AutoBase June 2010

[1] Comparison Actual 2009 with Actual 2008
[2] Comparison Forecast 2010 with Actual 2009

Production of heavy commercial vehicles and buses (>6 t) 2009/2010 [in pcs.]

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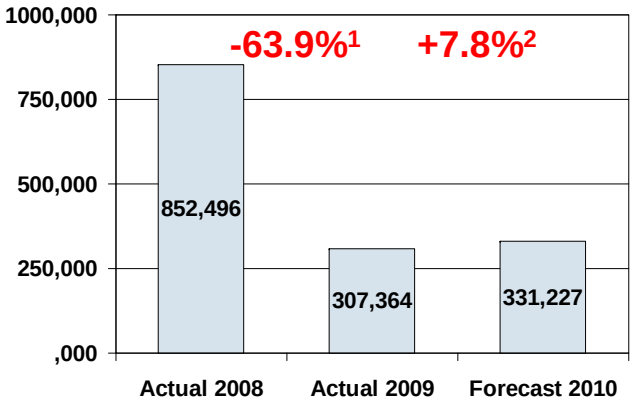
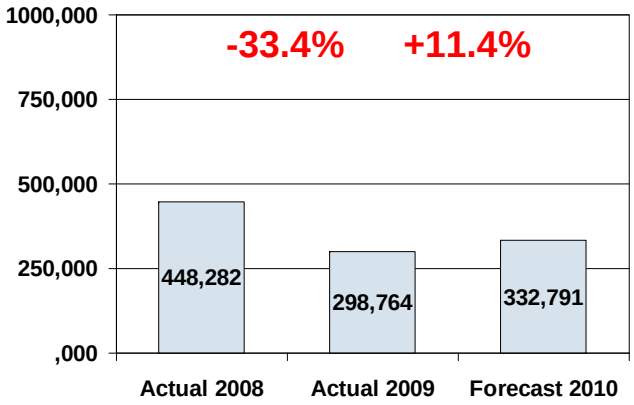
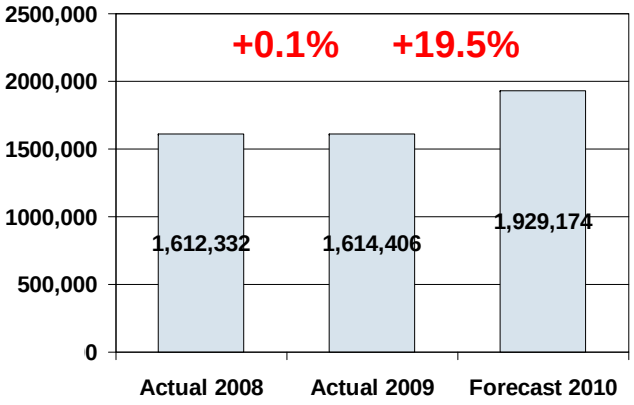
Europe



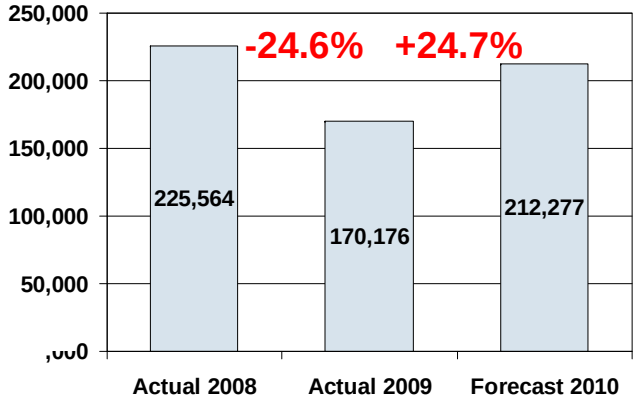
NAFTA



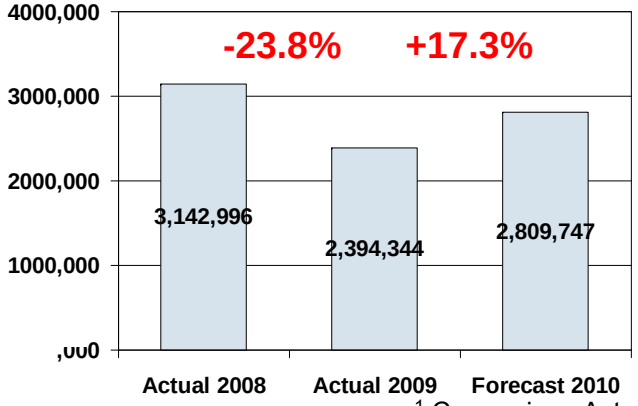
Asia/Pacific



Mercosur



World market



. Source: CSM AutoBase June 2010

[1] Comparison Actual 2009 with Actual 2008
[2] Comparison Forecast 2010 with Actual 2009

Sales in comparison with previous year – 1st half-year

[Mio. EUR]

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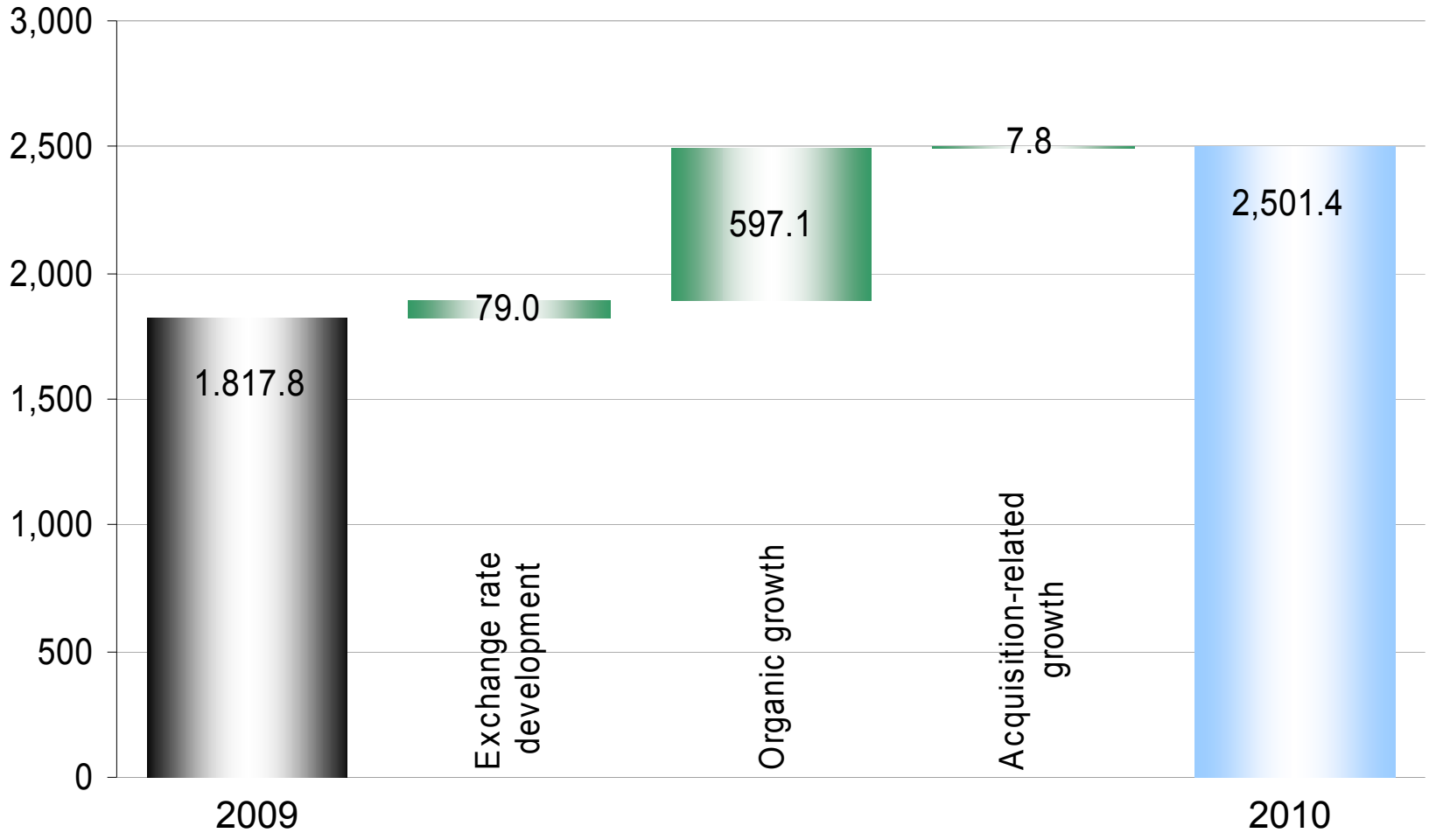

Sales contribution by region
1st half-year 2008 – 1st half-year 2010

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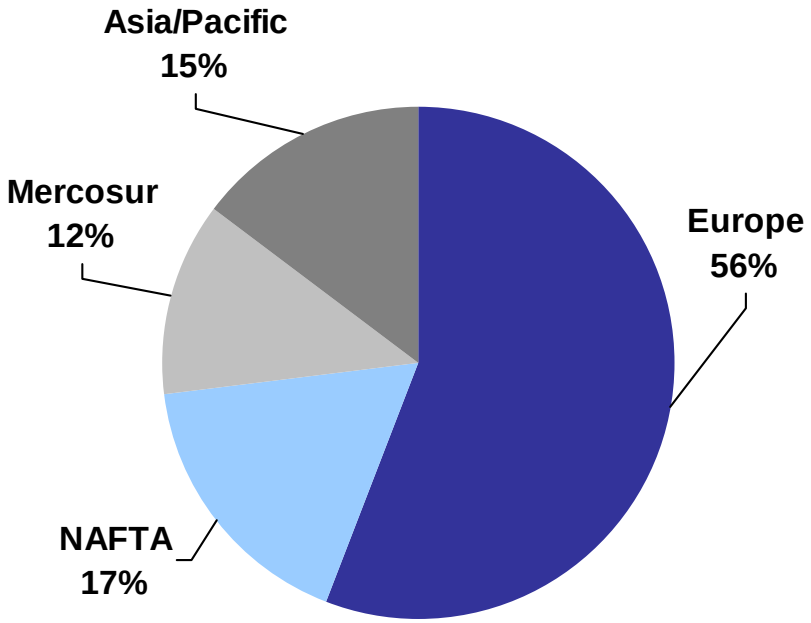
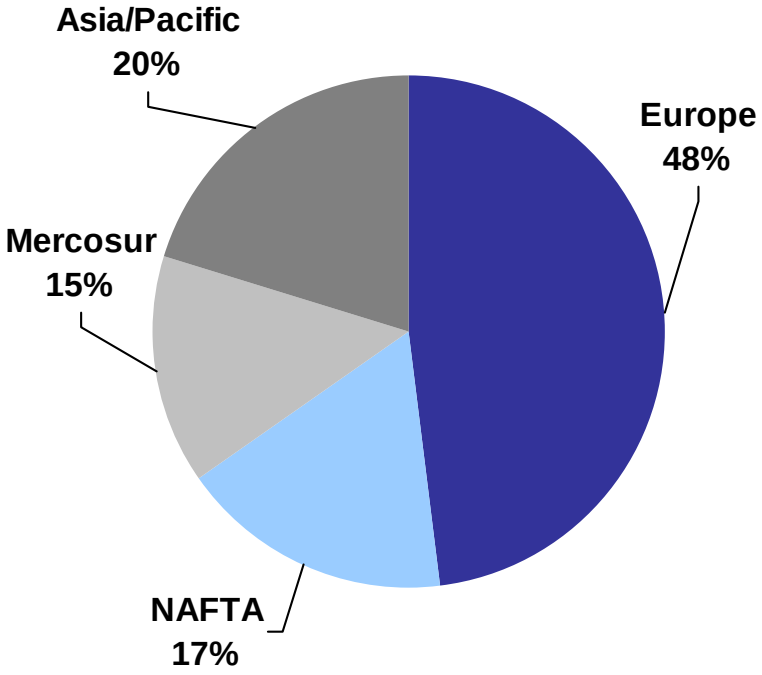
Total 2,669 million EUR

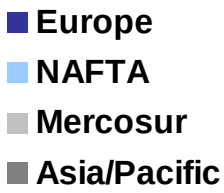


1 – 6/2008

Total 2,501 million EUR

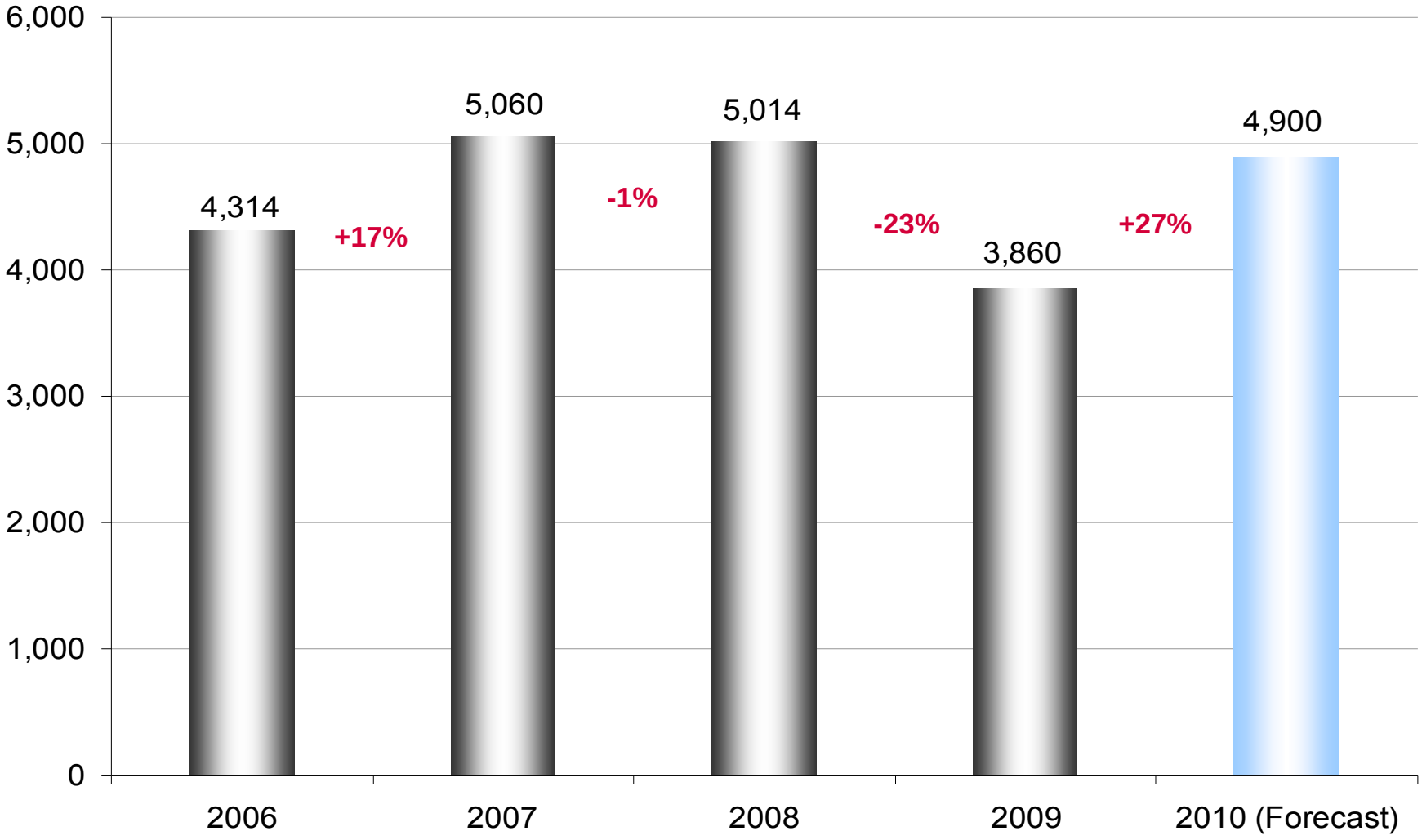


1 – 6/2010



Sales development

[million Euro]



Headcount development

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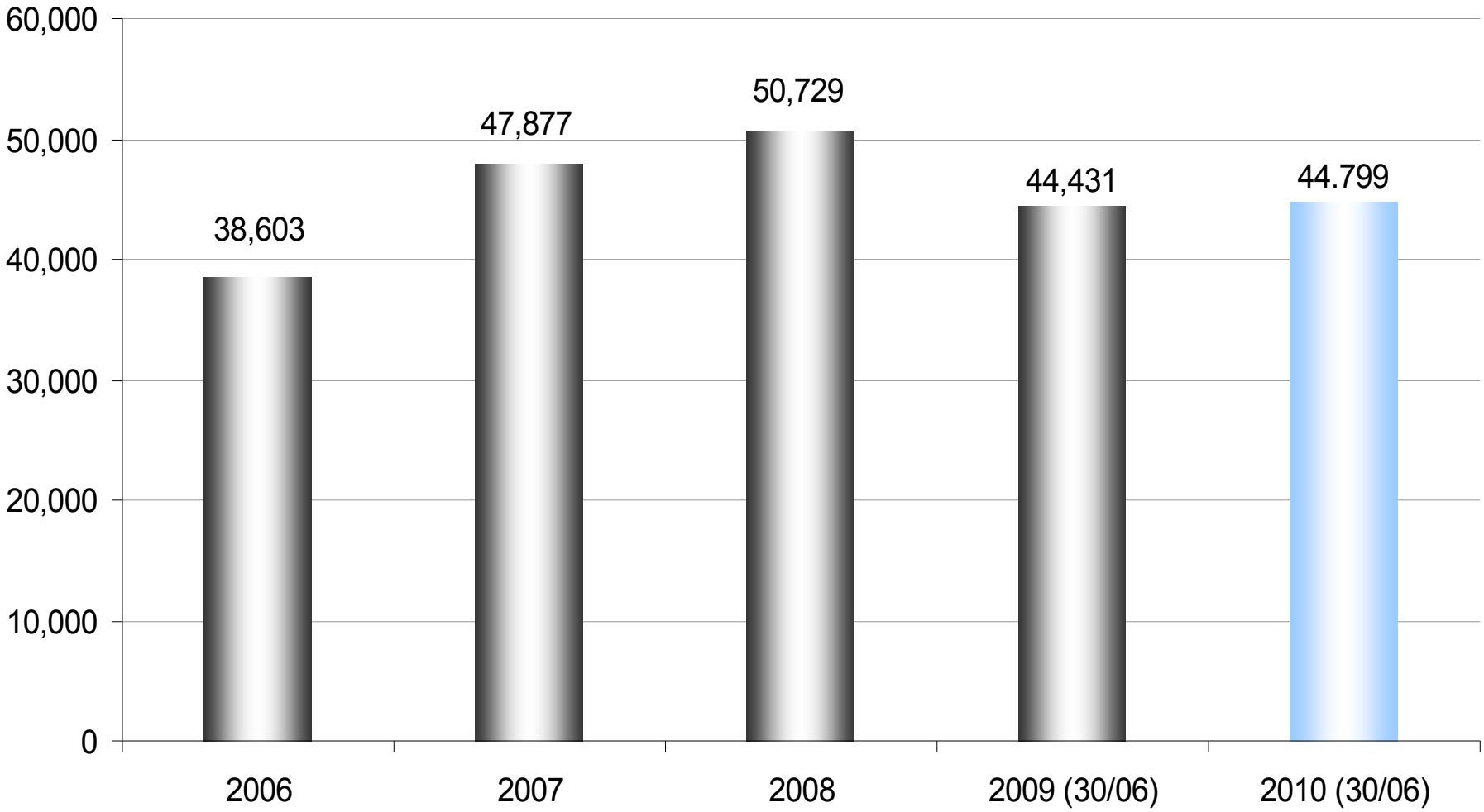

MAHLE Behr Industry in Stuttgart/Germany

Driven by performance

MAHLE implements take-over of majority share in Behr Industry

In 2009, the industry division of Behr Group achieved sales of 178 million euros and currently employs approximately 950 employees in five locations in Germany and the USA.

MAHLE Behr Industry in Stuttgart/Germany

MAHLE Behr Industry in Reichenbach/Germany

MAHLE and Behr sign share agreement
Production locations

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* MAHLE Behr Industry

Charge air cooling and exhaust gas cooling for low emission and high efficiency engines

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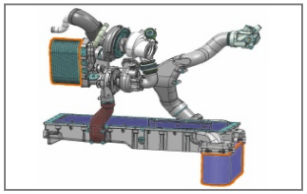
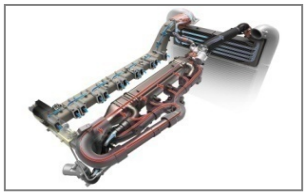
Behr product and technology

Products	Description
Indirect charge air cooling for passenger cars 	■ Indirect charge air cooling increases power output, increases efficiency and reduces emissions of turbocharged engines ■ To further reduce emissions it is possible to implement control strategies for the charge air temperature
Indirect charge air cooling for Heavy Duty Vehicles 	■ Heavy Duty Vehicles benefit from turbocharging and indirect charge air cooling significantly, e.g. exhaust gas aftertreatment like SCR may not be necessary
Exhaust gas cooling 	■ Cooled exhaust gas recirculation (EGR) reduces emissions without need of additional reducing agents, e.g. urea ■ Cooled EGR can be combined with other emission reduction systems or can be used solely to comply with emission regulation

Vehicle cabin climate control – HIPEX, high voltage PTCs and heat pumps for future powertrains

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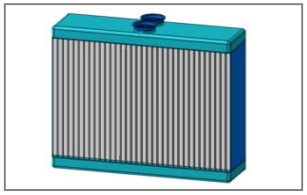
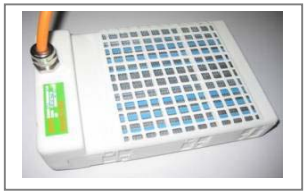
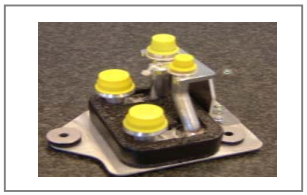
Behr product and technology

Product	Description
Behr HIPEX 	■ High power radiator, operates with low volume flows ■ Integrating HIPEX in a modified heating circuit reduces thermal losses significantly and uses the engine's heat more efficiently ■ Implementing vehicle cabin climate control in the Thermal Management strategy of the complete vehicle reduces volume flows and peripheral equipment costs
High voltage PTC 	■ Usage for battery electric vehicles (BEVs) with voltage levels up to 300 Volts ■ Information: BEV do not generate the heat to warm up the vehicle cabin
Heat pump 	■ Heat pumps can be used for BEVs instead of high voltage PTCs. A high voltage PTC reduces the vehicle's operating range due to its power consumption ■ In average 20 per cent of the electrical energy available in BEVs is used to warm up the vehicle cabin. A heat pump can reduce this figure almost by half

Integration of powertrain thermal management and vehicle cabin climate control for future vehicles

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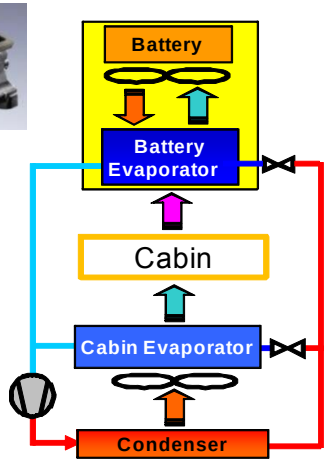
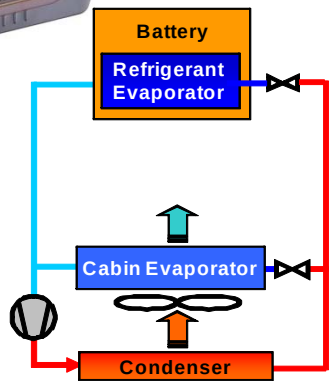
Behr product and technology

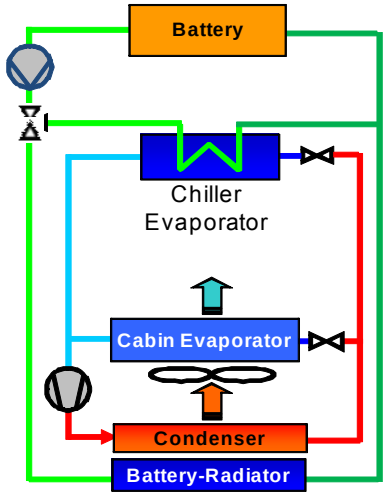
a) Air cooling



b) Direct refrigerant cooling



c) Secondary loop cooling



	a) Air cooling	b) Direct refrigerant cooling	c) Secondary loop cooling
Simplicity of interface battery ⇔ cooling system	+	0	0
Package	– –	+ +	0
Simplicity of system, weight	0	+ +	–
Acoustics	–	+	+
Energy efficiency	0	0	+ +
Integration of heating function	0	– –	+ +
Target Applications	HEV (SUV), EV	HEV, PHEV	EV, PHEV, HEV


IAA
SEPTEMBER 23 - 30, 2010
IN HANNOVER, GERMANY
VISIT MAHLE
IAA 2010, HALL 12, BOOTH C25

Innovative cooling and air-conditioning solutions by MAHLE Behr Industry

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In today's engines, thermal management plays an increasingly important role. Following its acquisition of Behr Industry, MAHLE is now active in the market of complete cooling and air-conditioning solutions for off-highway vehicles and industrial applications.

Cooling module for building and agricultural machines

Exhaust gas recirculation combined with reduced fuel consumption

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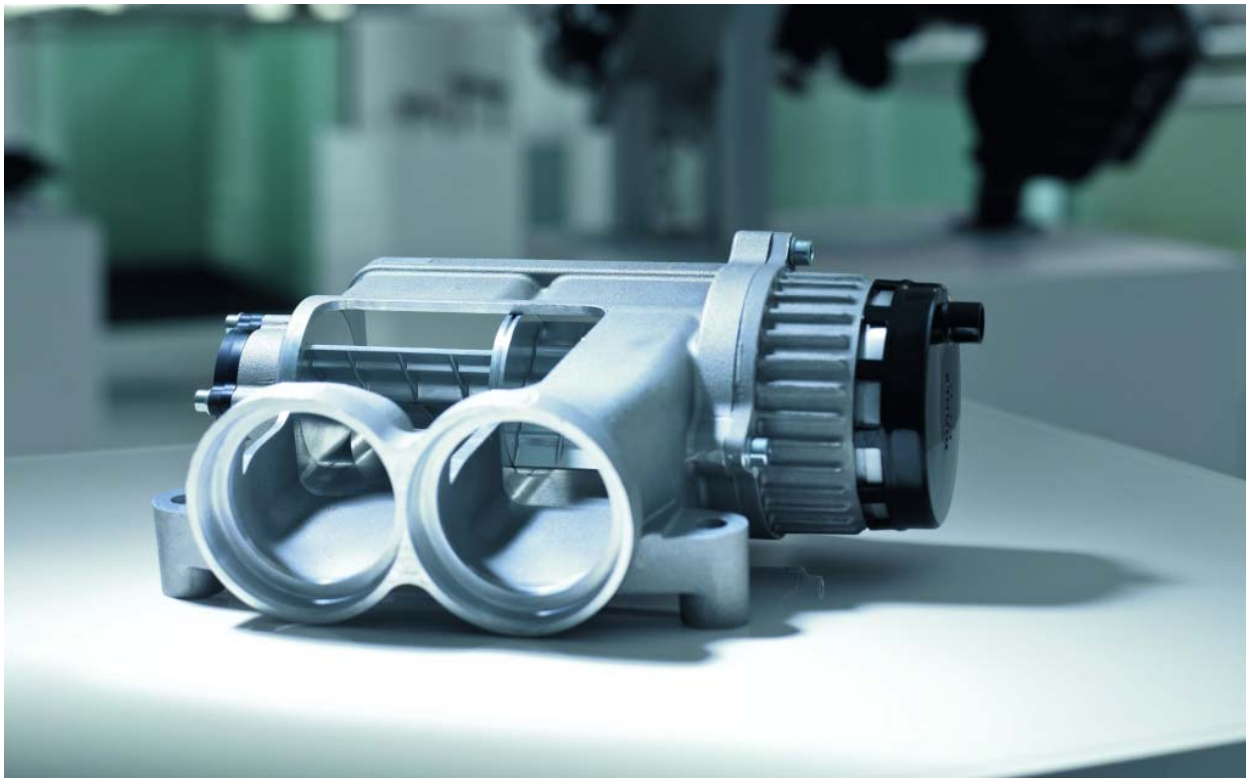
Better fuel economy and lower pollution emissions are top priority on the development agenda. With innovative demand-controlled exhaust gas recirculation, MAHLE is able to reduce NO_x emissions while lowering fuel consumption.



Charge air valve (SLV)

State-of-the-art mechanical system lowers CO_2 emissions

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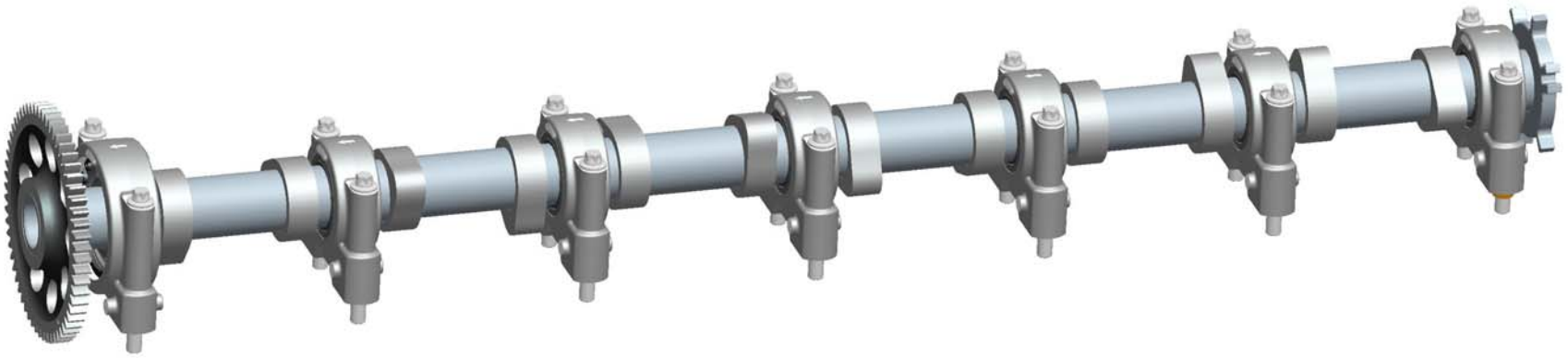
Lightweight composite camshafts fitted with low-friction rolling bearings offer significant CO_2 savings potential in commercial vehicle engines.



Rolling bearing camshaft

Filtration is environmental protection

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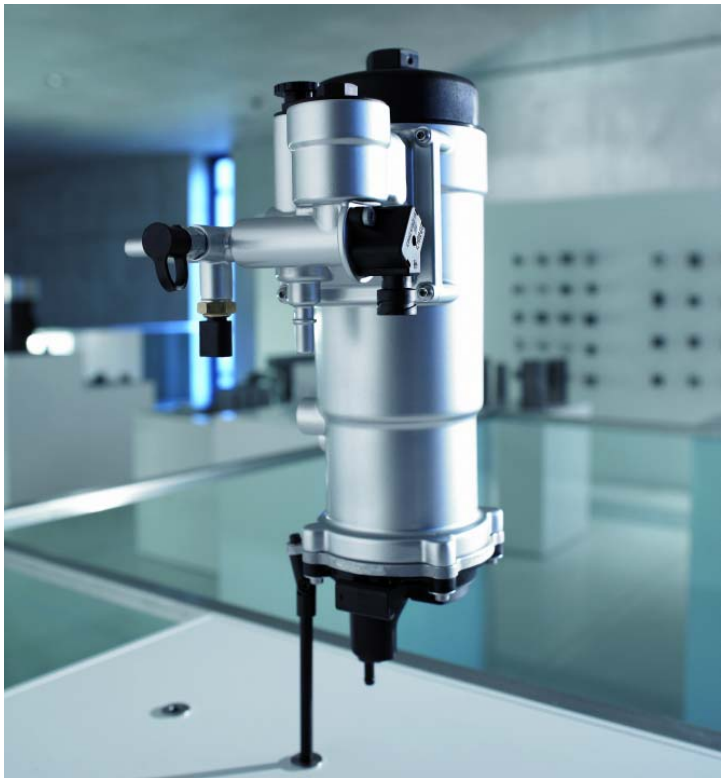
The environmental compatibility of commercial vehicle diesel engines is defined primarily by an optimal combustion process with low pollution emissions. However, other media in the engine must also undergo intensive treatment with a view to sustainable environmental protection—the fuel and engine oil, for example.



BlueDrain® system

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Thank you for your attention.