



Technology with Vision

# Company Presentation

**HELLA KGaA Hueck & Co.**

FY 2016/17



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# HELLA – Company Presentation FY 2016/17

## Agenda

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- Financial Highlights FY 2016/17
- Financial Results FY 2016/17
- Outlook

BACKUP



# Positive sales growth and strong EBIT increase in FY 2016/17

## Financial Highlights FY 2016/17

### Sales

- **HELLA Group** currency and portfolio adjusted **sales grew by 4.3%** YoY to 6.6 bill. EUR
- Acceleration of adjusted **sales growth to 6.5%** in **Q4**

### Profitability

- **Adjusted Gross Profit margin** at **27.5%** (+0.5%-points YoY), **Q4** at **27.6%** due to higher Automotive margin after efficient project ramp-ups
- **Adjusted EBIT** +57 mill. EUR (+12.0% YoY) at **534 mill. EUR**, **Q4** +29 mill. EUR (+22.3% YoY) at **161 mill. EUR**
- **Adjusted EBIT margin** at **8.1%** (+0.6%-points YoY), **Q4** adj. EBIT margin +1.1%-points at 8.9% due to lower R&D ratio and higher Gross Profit margin

### Liquidity

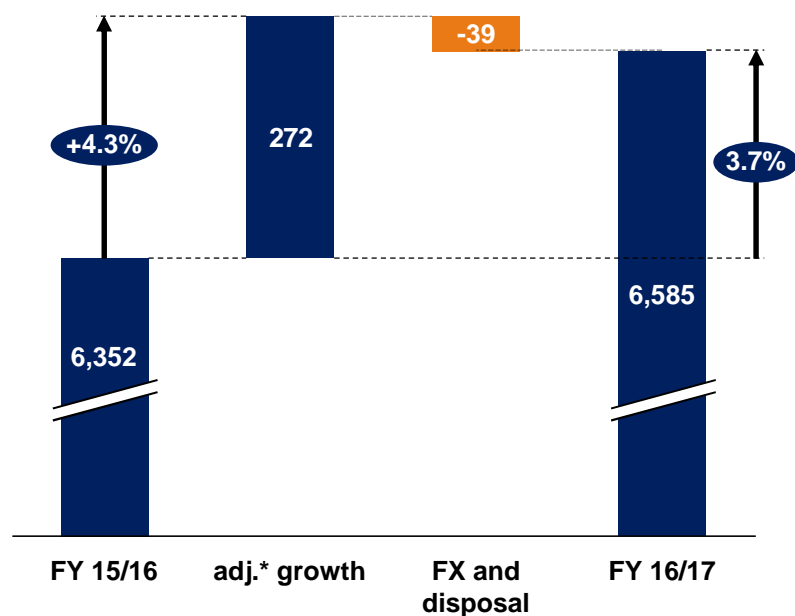
- **Adjusted Free Cash Flow** from operating activities<sup>1</sup> **decreased** by **6 mill. EUR** (-3.9% YoY) to **149 mill. EUR** mainly due to **higher net CAPEX**, **Q4** -31 mill. EUR to **43 mill. EUR**
- **Cash and short term financial assets** of **1,098 mill. EUR**, debt repayment of 300 mill EUR in September 2017

1) Calculation of adj. Free Cash Flow from operating activities revised by reclassification of interest payments, see page 13 and APPENDIX

# HELLA top line growth with expected development in FY 16/17

## Financial Highlights FY 2016/17

### HELLA group sales (EUR millions)



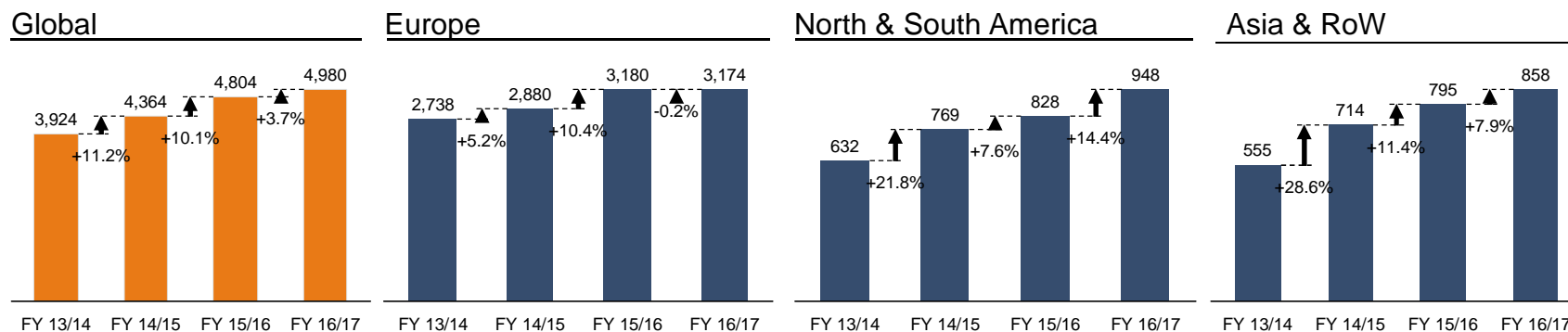
### Comment

- **Currency and portfolio adjusted growth HELLA Group at 4.3%**
- **HELLA reported Group sales increased by 233 mill. EUR (+3.7%) to 6,585 mill. EUR:**
  - **Automotive + 3.8% to 5,029 mill. EUR. Demand for energy management products drives electronic business. Growth in electronics and lighting impacted by the preparation for ramp-ups in H1 FY16/17. H2 FY 16/17 with strong increase in growth dynamics**
  - **Aftermarket +3.7% to 1,222 mill. EUR with positive development in all segments**
  - **Special Applications +0.3% to 385 mill. EUR, portfolio adjusted sales growth at 5.2%**

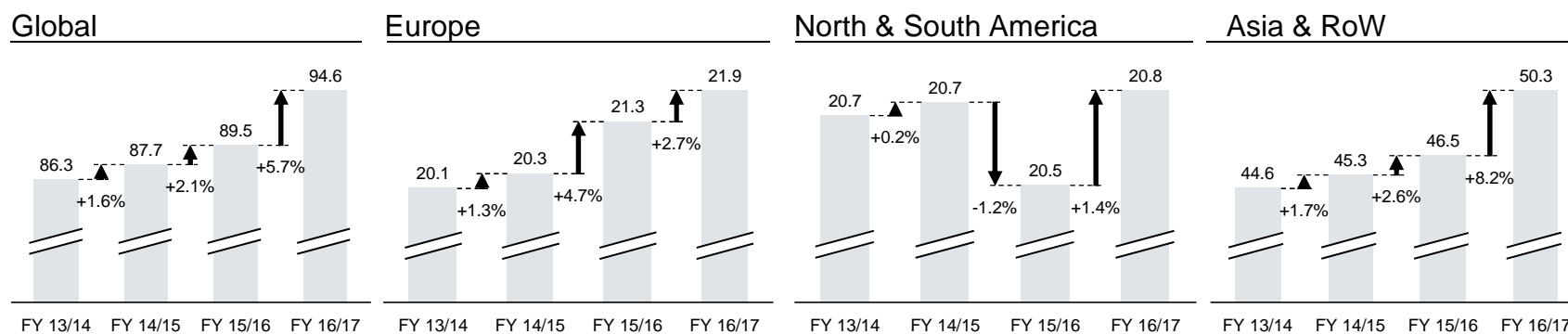
# Automotive growth in H2 FY 16/17 above market

## Financial Highlights FY 2016/17

### HELLA Automotive external sales by region (in EUR millions)



### Light vehicle production (in million units)



### HELLA Automotive growth vs. market (Light vehicle production growth):

+9.6%	+8.0%	-2.0%	+3.9%	+5.7%	-2.9%	+21.6%	+8.9%	+13.0%	+27.0%	+8.7%	-0.3%
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Please note that where sums and percentages in the presentation have been rounded, differences may arise as a result of commercial rounding.  
Source: HELLA; IHS (as of July 2017)



# HELLA – Company Presentation FY 2016/17

## Agenda

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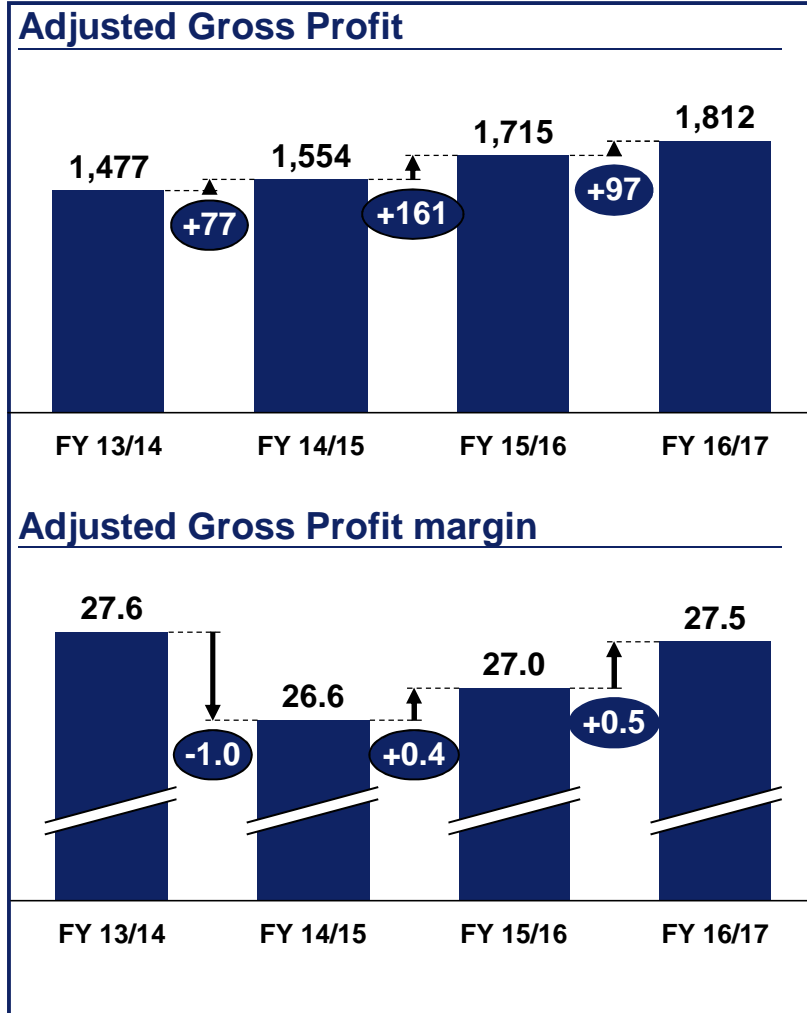
- Financial Highlights FY 2016/17
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BACKUP

# Improved productivity in Automotive results in GPM increase

## Financial results FY 2016/17

EUR millions and % sales



Adj.  
Gross  
Profit

Adj.  
Gross  
Profit  
Margin

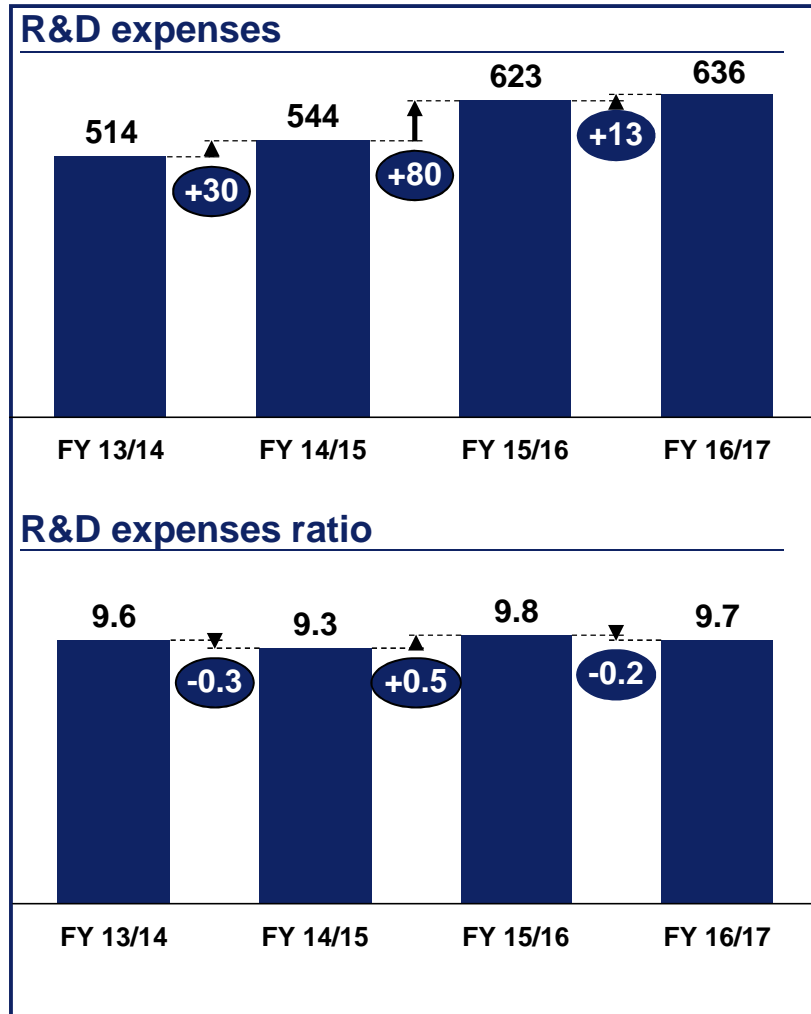
- Adjusted Gross Profit increased by 97 mill. EUR (+6%) to 1,812 mill. EUR
- Adjusted Gross Profit margin improved by 0.5%-points to 27.5%.
- Efficient production ramp-ups, positive product mix effect with increasing content and high utilization drove margin



# High R&D expenses to secure future growth

## Financial results FY 2016/17

EUR millions and % sales



R&D

- **Absolute R&D** expenses increased by 13 mill. EUR (+2% YoY) to **636 mill. EUR** mainly to **prepare future projects** and to secure **technology leadership**
- Focus on advanced **lighting** and **driver assistance systems & energy management** products

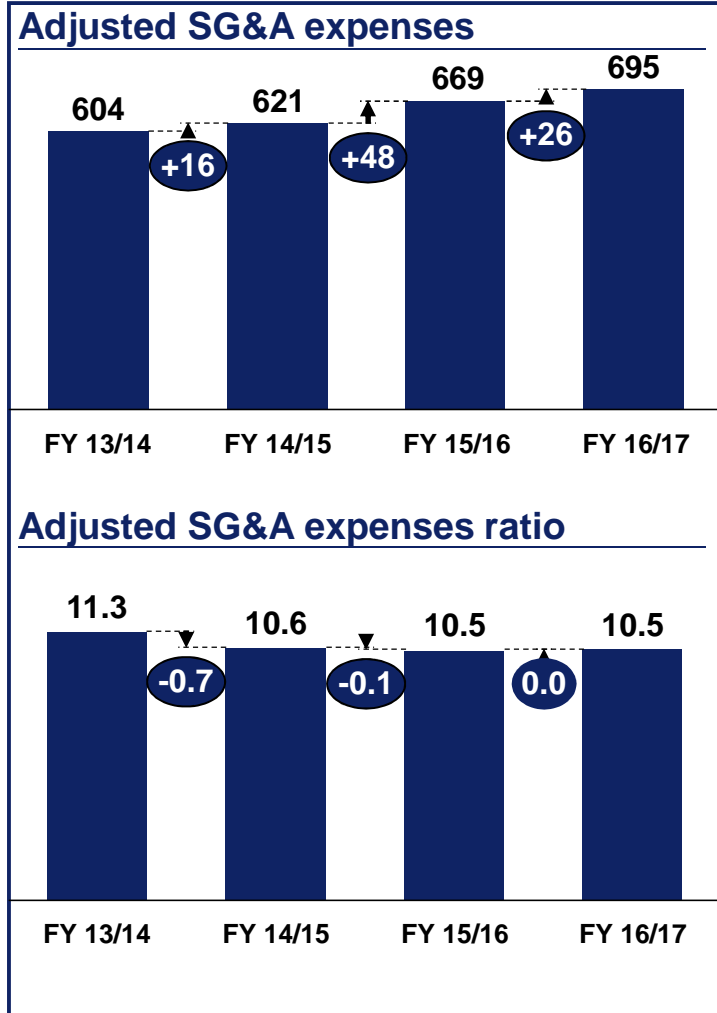
R&D ratio

- **FY16/17** ratio decreased by **0.2%-points** to **9.7%** due to high comparable basis in FY 15/16
- Ratio accounts for increased order intake and conscious investments in opportunities as well as low capitalization level

# Relatively stable development of SG&A costs

## Financial results FY 2016/17

EUR millions and % sales



Adj.  
SG&A

- **Distribution** expenses +12 mill. EUR (+2.5% YoY) to 506 mill. EUR driven by higher Aftermarket sales and business extension in Poland
- **Adj. other income and expenses** -2 mill. EUR (-4.1% YoY) to 41 mill. EUR
- **Admin. expenses** +12 mill. EUR (+5.4%) to 230 mill. EUR due to **investments in corporate functions & systems**

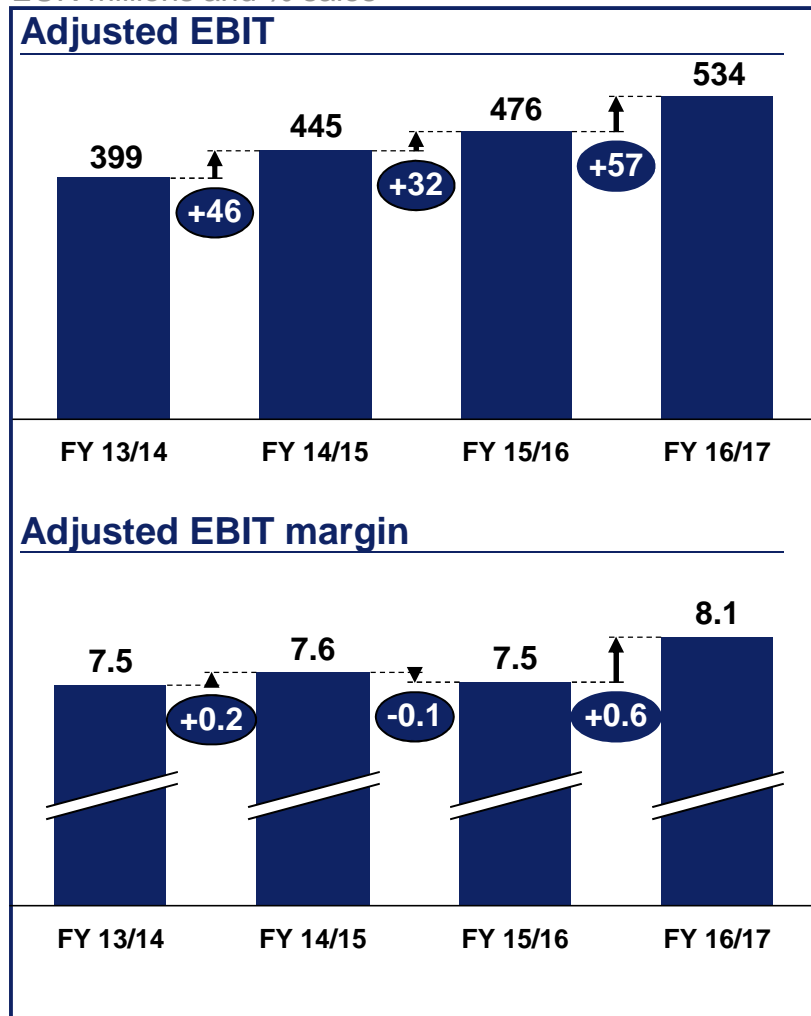
Adj.  
SG&A  
ratio

- **SG&A ratio** at 10.5%, ratio of structural costs shows a **stable development**
  - **Distribution cost** ratio -0.1%-points to 7.7%
  - **Administrative cost** ratio +0.1%-points to 3.5%
  - **Adjusted other income and expenses** -0.1%-points to 0.6%

# Adjusted EBIT and EBIT margin above prior-year's level

## Financial results FY 2016/17

EUR millions and % sales



Adj.  
EBIT

- **Adjusted EBIT** increased by 57 mill. EUR (+12.0%) to **534 mill. EUR**
- Increase of Adj. Gross Profit and under proportional increase of R&D expenses in Automotive main driver

Adj.  
EBIT  
margin

- **Adj. EBIT margin** increased by **0.6%-points** to **8.1%** mainly due to **increased GPM** (+0.5%-points) and lower R&D expenses (-0.2%-points)

# P&L including reconciliation

## Financial results FY 2016/17

### HELLA GROUP

### Comment

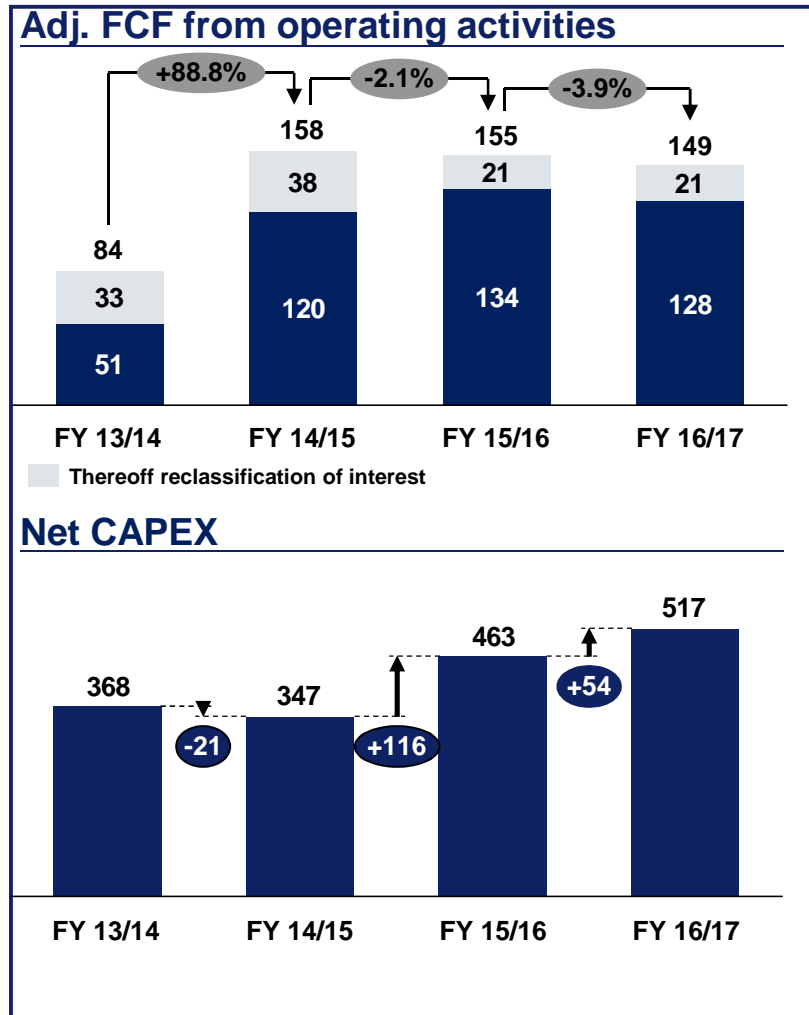
In EUR mill.	FY 15/16				FY 16/17			
	Reported	Restructuring	Supplier	Adjusted	Reported	Restructuring	Legal	Adjusted
<b>Gross profit</b>	1,688.2	-	27.1	1,715.3	1,812.0	-	-	1,812.0
<b>(Admin)</b>	-218.2	-	0.3	-217.9	-229.6	-	-	-229.6
<b>Other income and expenses</b>	13.9	9.4	19.8	43.1	15.0	10.2	16.2	41.4
<b>EBIT</b>	<b>419.8</b>	<b>9.4</b>	<b>47.2</b>	<b>476.4</b>	<b>507.2</b>	<b>10.2</b>	<b>16.2</b>	<b>533.6</b>
<b>Net financial result</b>	-39.5				-44.2			
<b>Taxes</b>	-108.4				-119.8			
<b>Earnings for the period</b>	<b>271.9</b>				<b>343.1</b>			
<b>Earnings per share (EUR)</b>	<b>2.42</b>				<b>3.08</b>			
<b>Dividend per share (EUR)</b>	<b>0.77</b>				<b>0.92</b>			(proposed)

- Reported EBIT margin FY 15/16 negatively impacted by effects of supplier default and restructuring expenses in Germany
- Reported EBIT margin FY 16/17 adversely impacted by expenses in connection with the proceedings initiated by the European cartel authorities and restructuring expenses in Germany
- Net financial result weaker due to hedging costs for newly issued bond and lower interest income in Q4 FY16/17
- Earnings for the period increased with higher EBIT compared to previous year
- EPS increased to 3.08 EUR vs. 2.42 EUR last year
- Proposed dividend of EUR 0.92 (+19% YoY)

# Adj. Free Cash Flow from operating activities relatively flat due to high investments

Financial results FY 2016/17

EUR millions



Adj. Free Cash Flow

- **Adj. Free Cash Flow from operating activities** decreased by 6 mill. EUR to **149 mill. EUR** mainly due to **higher Net CAPEX**

- **Adj. Net Cash Flow from operating activities** increased by 92 mill. EUR to **793 mill. EUR**

Net CAPEX

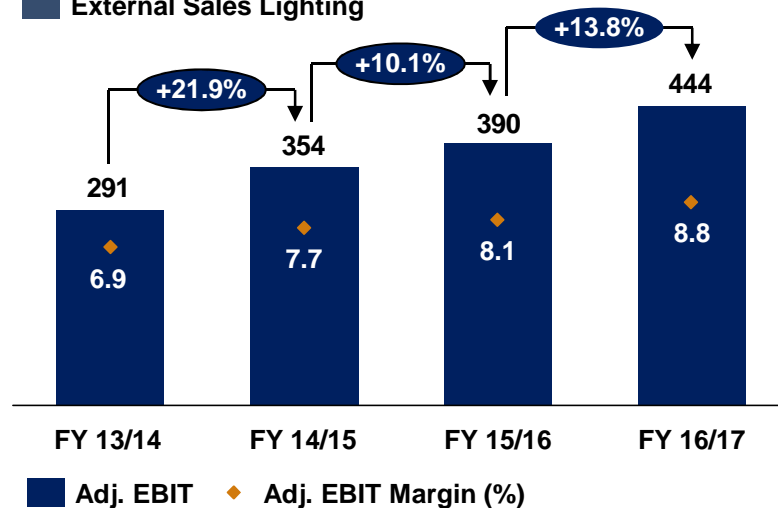
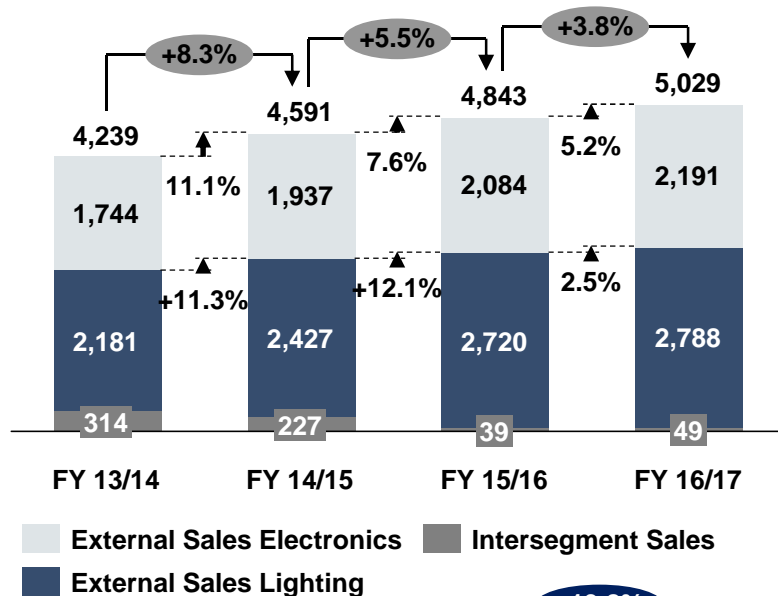
- **Net CAPEX** increased by 54 mill. EUR to **517 mill. EUR**

- Continuous **investments** in customer-specific **equipment**, start of **capacity extension**

- **Reimbursements** increased by 48 mill. EUR to **132 mill. EUR** depending on project launches

# Automotive with increased profitability

## Financial results FY 2016/17



### Automotive Sales

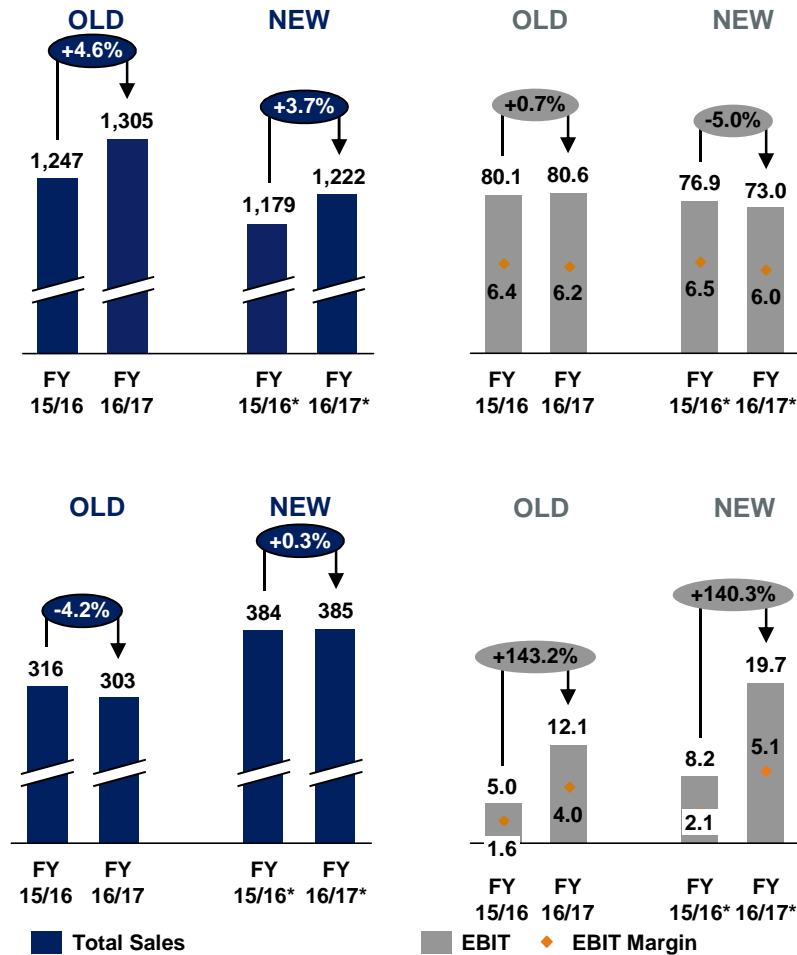
- **Moderate growth of 3.8%** with project ramp-ups starting in Q3 FY 16/17
- **Demand for energy management products** drives electronic business
- **Demand for LED headlamps** in lighting business
- Ongoing **growth dynamics expected**
- **Slightly negative FX effect** in FY 16/17

### Automotive Profitability

- **Strong increase of adj. EBIT margin to 8.8%**, mainly on the basis of
  - **increased adj. GPM** due to improved operational efficiency and increasing content with high innovative products
  - **lower R&D ratio** after high comparable basis FY 15/16. Absolute expenses on high level for upcoming product generations

# Non Automotive segments with positive contribution

## Financial results FY 2016/17



### Aftermarket

- All Aftermarket divisions with positive sales development
  - Strong wholesale and IAM business
  - Positive demand for workshop products
- Slight decrease in EBIT margin (-0.2pp) to 6.2%.
  - GPM with positive development (+0.6pp to 33.9%) due to product mix
  - Investment in structures e.g. branches, logistics, e-commerce to secure future growth and profitability

### Special Applications

- Special Application in a transition year after sale of Industries and Airport Lighting activities and production relocation
- Agricultural sector leads to weak development of Special OE sales, other product groups e.g. trailer still growing
- Costs for wind-down of Industries & Airport lighting activities and production relocation affect margin negatively (in total 17 mill. EUR)

New structure after change of organizational responsibility for some production companies from Aftermarket to Special Applications



## Q4 FY 16/17 with profitability increase compared to previous year

### Financial results FY 2016/17

#### HELLA GROUP

	Q4 FY 15/16	Q4 FY 16/17
Currency and portfolio adjusted sales growth (YoY)	6.3%	6.5%
FX (YoY)	-1.3%	+0.4%
Portfolio (YoY)	-	-0.3%
Global LVP according to HELLA FY (YoY)	2.3%	2.9%
Adj. EBIT Margin	7.7%	8.9%
Adj. FCF from operating activities	€73.9m	€42.7m

#### Comment

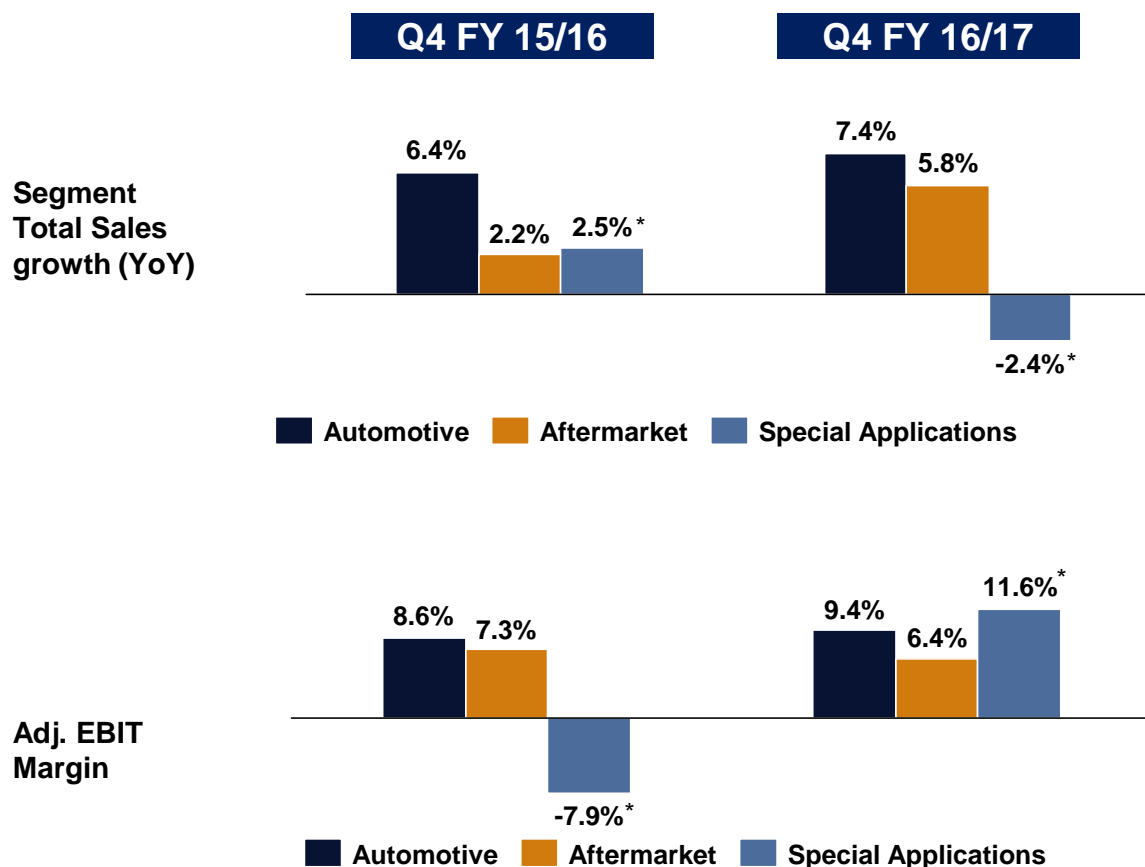
- Q4 FY 16/17 with positive organic growth due to Automotive and Aftermarket, previous year driven by Automotive growth; slow down of IAM catch up effect.
- Higher adj. Gross Profit and GPM driven by top line and operational leverage (positive product mix effects and further operational improvements)
- Adj. EBIT margin Q4 FY 16/17 driven by higher GPM and lower R&D ratio
- Adj. FCF from operating activities declined in Q4 FY 16/17 due to higher CAPEX and Working Capital



# Q4 FY 16/17 with stronger profitability in Automotive

## Financial results FY 2016/17

### HELLA SEGMENTS DEVELOPMENT (OLD STRUCTURE)



### Comment

- Q4 FY 16/17 with continuous acceleration of Automotive sales
- Strong Aftermarket with growing IAM, WD, WP business
- Special Applications with seasonal better agricultural business and positive caravan and trailer sales, Special Applications core business grew by 4.9%
- Adjusted EBIT Automotive increased due to higher GPM and lower R&D ratio
- Aftermarket adjusted EBIT margin declined due to increasing admin driven by growth related investments in corporate structures
- Special Applications with 2.6 mill. EUR negative effects from Industries and Airport Lighting disposal

\*including Industries and Airport Lighting activities



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BACKUP

## Overall market FY 17/18 expected to grow by 1.1% according to IHS Outlook

Region	Expected Light Vehicle Production (in m units)	Comment
Europe	<div style="text-align: center;"> <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">+1.5%</span>  <div style="background-color: #003366; color: white; padding: 5px; width: 40px; margin: 0 auto;">22.2</div> <hr style="width: 80%; margin: 5px auto;"/>           FY 17/18         </div>	<ul style="list-style-type: none"> <li>Continuing moderate growth in 2017/18 expected</li> </ul>
NSA	<div style="text-align: center;"> <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">+0.3%</span>  <div style="background-color: #003366; color: white; padding: 5px; width: 40px; margin: 0 auto;">20.8</div> <hr style="width: 80%; margin: 5px auto;"/>           FY 17/18         </div>	<ul style="list-style-type: none"> <li>After peak of US market in 2015 the LVP is expected to stay nearly flat in 2017/18</li> </ul>
China	<div style="text-align: center;"> <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">+1.1%</span>  <div style="background-color: #003366; color: white; padding: 5px; width: 40px; margin: 0 auto;">27.7</div> <hr style="width: 80%; margin: 5px auto;"/>           FY 17/18         </div>	<ul style="list-style-type: none"> <li>Growth forecasted to slow down in 2017/18</li> </ul>
Global	<div style="text-align: center;"> <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">+1.1%</span>  <div style="background-color: #003366; color: white; padding: 5px; width: 40px; margin: 0 auto;">+95.6</div>           FY 17/18         </div>	<ul style="list-style-type: none"> <li>Overall market expected to grow by 1.1%</li> </ul>

Source: IHS Light Vehicle Production (LVP) (as of July 2017)



# Company specific development for FY 2017/18 confirmed

## Outlook

Presuming no serious economic turmoil, we assume a positive development of the operative HELLA business for FY 2017/18:

### Guidance

**Sales growth**

**Growth excluding FX between 5-10%**

**Adj. EBIT growth**

**Growth between 5-10%**

**Adj. EBIT margin**

**Margin around 8%**

# HELLA – Company Presentation FY 2016/17

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### BACKUP

– HELLA at a Glance



# Market and technology leadership as key strategic principles

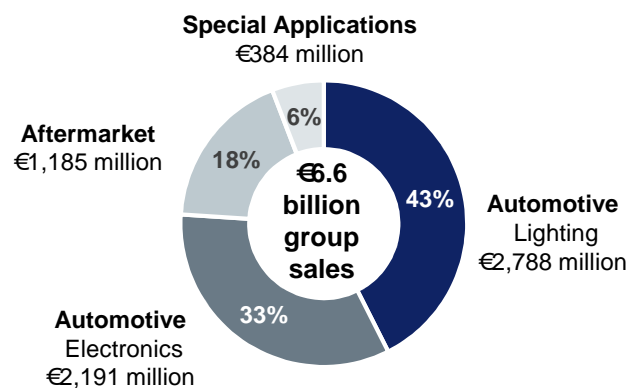
## HELLA at a glance – Overview

### KEY FACTS

- **Founded 1899** in Lippstadt (Germany)
- Global footprint with around **38,000 employees at more than 125 locations in some 35 countries**
  - Thereof: **41 research & 28 production sites**
- Integrated business portfolio in **Automotive, Aftermarket, and Special Applications**
- **Leading market positions in automotive Lighting and Electronics**
- One of the **top 40 automotive suppliers** in the world and **one of the 100 largest German industrial companies**

### SALES BY BUSINESS SEGMENT

external sales, fiscal year 2016/2017



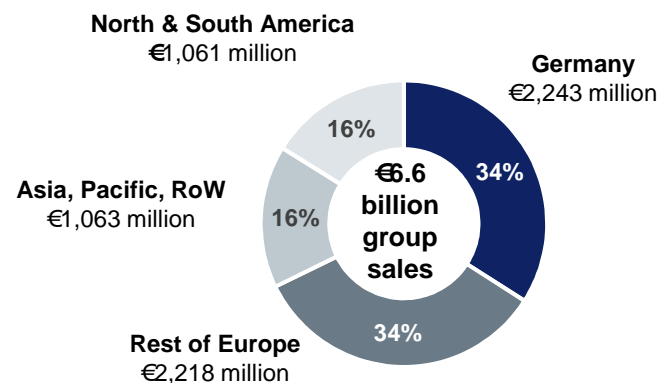
### KEY FINANCIALS

in EUR millions and % of sales

	FY 2015/16	FY 2016/17	Change
<b>Sales</b>	6,352	<b>6,585</b>	+3.7%
<b>Adjusted EBIT</b>	476	<b>534</b>	+12.0%
<b>Adjusted EBIT margin</b>	7.5%	<b>8.1%</b>	+0.6% points
<b>Adjusted Free Cash Flow</b>	155	<b>149</b>	-3.9%

### SALES BY REGION

based on the HQs of HELLA's customers, fiscal year 2016/2017

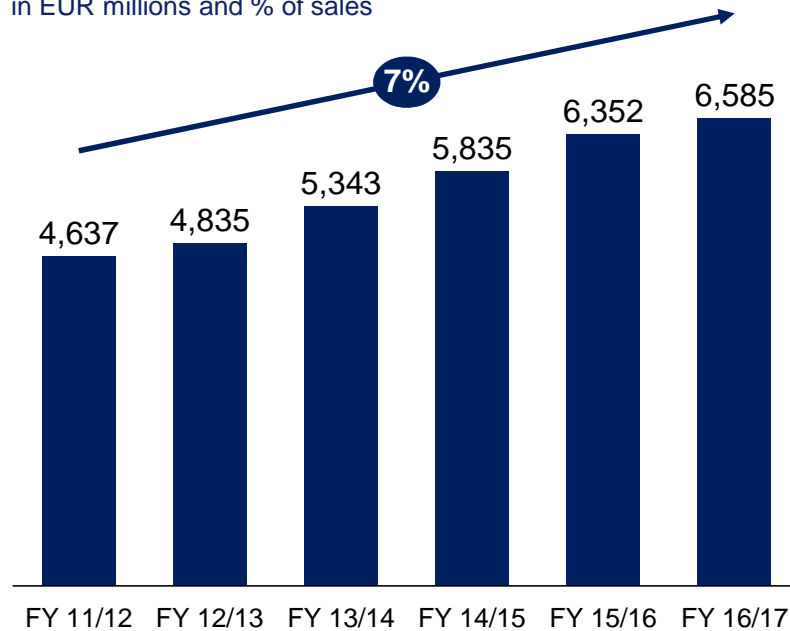


# HELLA has shown sustainable profitable growth since automotive crisis

## HELLA at a glance – Sales and EBIT development

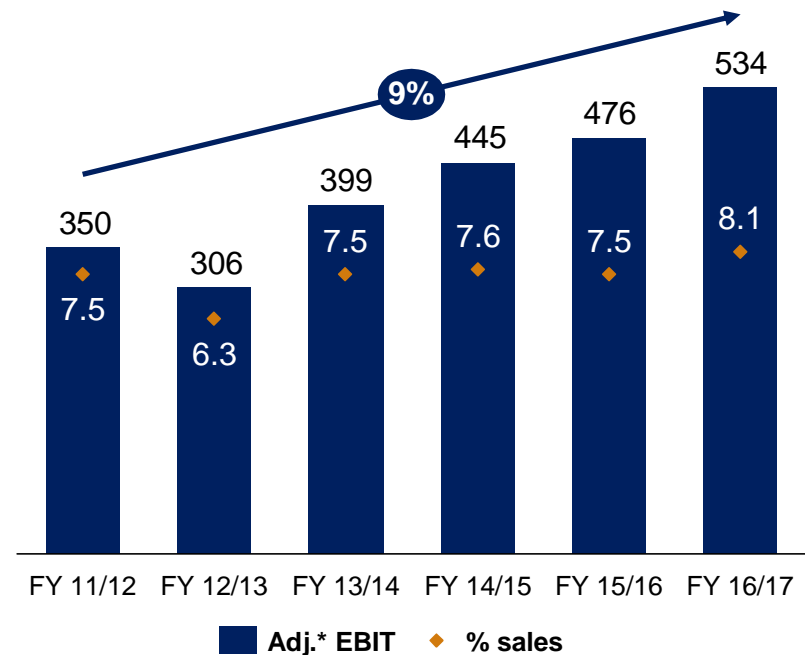
### SALES

in EUR millions and % of sales



### ADJUSTED EBIT

in EUR millions and % of sales



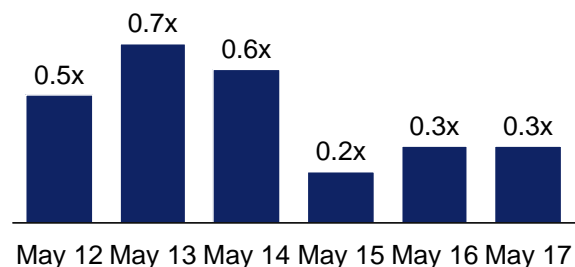
- **Sustainable growth** during the last years mainly driven by **Automotive**
- **Aftermarket** and **Special Applications** also with positive **growth**
- **Continuous EBIT increase** despite large investments in **global structures** and **R&D**
- **Overall stable margin level** through **growth** driven by **technology leadership** and **increased efficiency**

# High financial stability ensuring long-term growth perspective

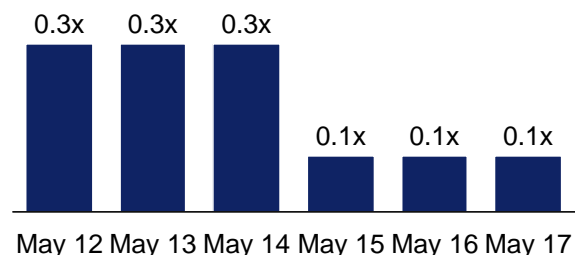
## HELLA at a glance – Financial stability

### Solid capital structure

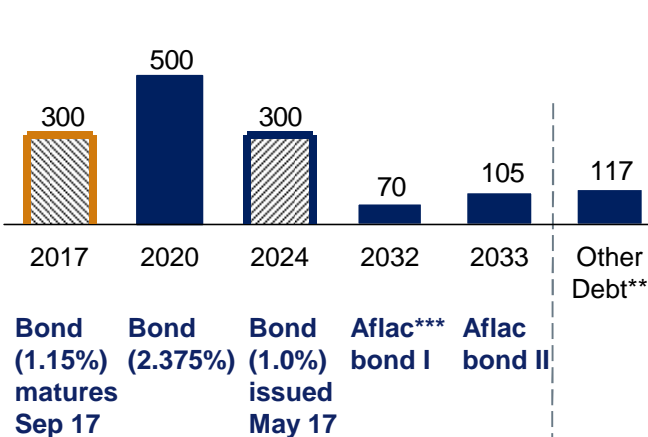
#### Leverage (Net debt / EBITDA)



#### Gearing (Net debt / Equity)



#### Debt and maturity profile\*, in millions EUR



**Additional Revolving Credit (2022) of EUR 450m with 10 core banks as back-up facility**

### Strategic flexibility

HELLA has a stable and solid financial fundament which forms the basis for its future strategic plans

- Prudent financial policy throughout the cycle with leverage < 1.0x
- Financing of long-term growth strategy secured
- Well balanced debt portfolio
- New issuing (senior, unsecured / bearer debt) for attractive conditions
- Mid term target: Leverage < 1.0x

- Capital-market-oriented capital structure with investment grade rating
- **Good liquidity profile** and consistent liquidity management
- **EUR 86m dividends** (0.77EUR/share) paid September 2016
- **Equity ratio at 39.5% and cash & assets at 1,098 mill. EUR**

\* As of August, 2017; Euro Bond I: 1,15%, Euro Bond II: 2,375%, Euro Bond III: 1.00% ; Aflac bonds hedged values \*\* Mostly short term loans and evaluation impact

\*\*\* Abbreviation for "American Family Life Insurance Company"



# Broad automotive portfolio in strong growing areas

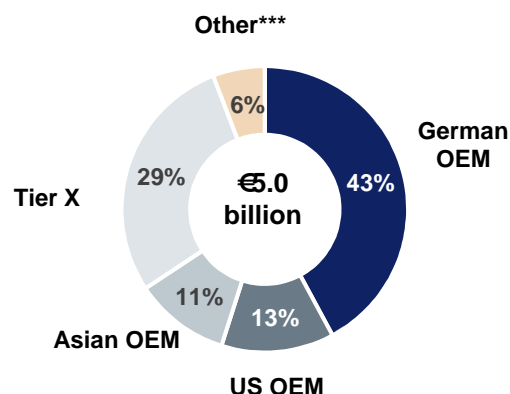
## HELLA at a glance – Business Segment Automotive

### BUSINESS OVERVIEW\*

<b>Lighting</b> <ul style="list-style-type: none"> <li>▪ Headlamps</li> <li>▪ Rear Combination Lamps</li> <li>▪ Small Lamps</li> <li>▪ Interior Lighting</li> <li>▪ Lighting Electronics</li> </ul>	<ul style="list-style-type: none"> <li>▶ <b>#1 market position in LED headlamps Europe</b></li> <li>▶ <b>#3-4 global and #1-2 European market position in OE passenger car lighting</b></li> </ul>
<b>Electronics</b> <ul style="list-style-type: none"> <li>▪ Components</li> <li>▪ Energy Management</li> <li>▪ Driver Assistance Systems</li> <li>▪ Body Electronics</li> <li>▪ Steering</li> </ul>	<ul style="list-style-type: none"> <li>▶ <b>#2-3 global and #1-2 European market position in defined automotive electronic segments</b></li> </ul>

### AUTOMOTIVE SALES BY CUSTOMERS

fiscal year 2016/2017



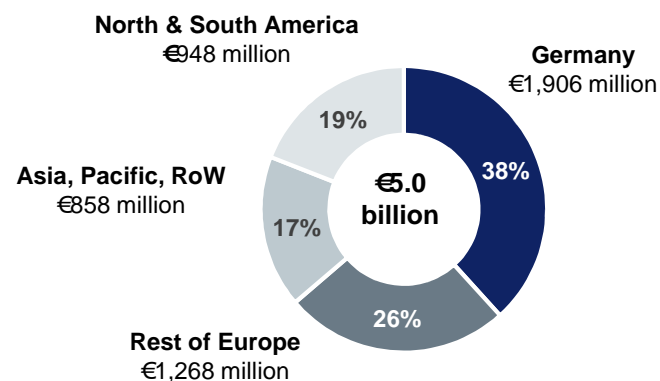
### KEY FINANCIALS

in EUR millions and % of sales

	FY 2015/16	FY 2016/17	Change
External Sales	4,804	<b>4,980</b>	+3.7%
Adjusted EBIT**	390	<b>444</b>	+13.8%
Adjusted EBIT margin**	8.1%	<b>8.8%</b>	+0.7% points
Ext. Sales Lighting	2,720	<b>2,788</b>	2.5%
Ext. Sales Electronics	2,084	<b>2,191</b>	5.2%

### AUTOMOTIVE SALES BY REGIONS

fiscal year 2016/2017



\*) All figures related to the selected markets and product categories based on HELLA's portfolio, as covered in an external market study commissioned by HELLA (2014)

\*\*\*) Adjustments including restructuring expenses and supplier default in FY 15/16

\*\*\*) Including European OEM (ex Germany) and trucks.



# Over the last years HELLA was 1<sup>st</sup> to market with several technologies which support strong market positions

## Innovation Leadership – Automotive

### SELECTED INNOVATION HIGHLIGHTS



Advanced LED Headlamps

#### Global Market Position

**#1-2**

#### Milestones

- 2006** Cadillac Escalade Platinum: Full-LED headlamp (1<sup>st</sup> to segment)
- 2010** Audi A8: Full-LED headlamp with AFS functions (1<sup>st</sup> to market)
- 2013** Audi A8: LED Matrix headlamp with glare-free high beam (1<sup>st</sup> to market)
- 2016** Mercedes E-Class: LED Matrix with glare-free high beam (1<sup>st</sup> to market)



24 Ghz (NB) Radar Sensors

#### Global Market Position

**#1**

#### Milestones

- 2009** Audi Q7: Introduction of Lane Change Assistant (1<sup>st</sup> Generation)
- 2012** Audi A8: Lane Change Assistant + Pre-Crash Rear (2<sup>nd</sup> Generation)
- 2014** VW Golf: Blind-Spot Detect + Rear Cross Traffic Alert (3<sup>rd</sup> Generation)
- 2017** Opel Mokka: Lane Change Assist + Blind Spot Detect (4<sup>th</sup> Generation)



Intelligent Battery Sensors

#### Global Market Position

**#2**

#### Milestones

- 2005** BMW 5-series: Introduction of first IBS product (1<sup>st</sup> Generation)
- 2008** Hyundai Sonata: Rollout of IBS product in Korea (2<sup>nd</sup> Generation)
- 2012** VW Passat: Global VW platform for IBS product (3<sup>rd</sup> Generation)
- 2015** Honda Accord: Global platform for IBS product (4<sup>th</sup> Generation)



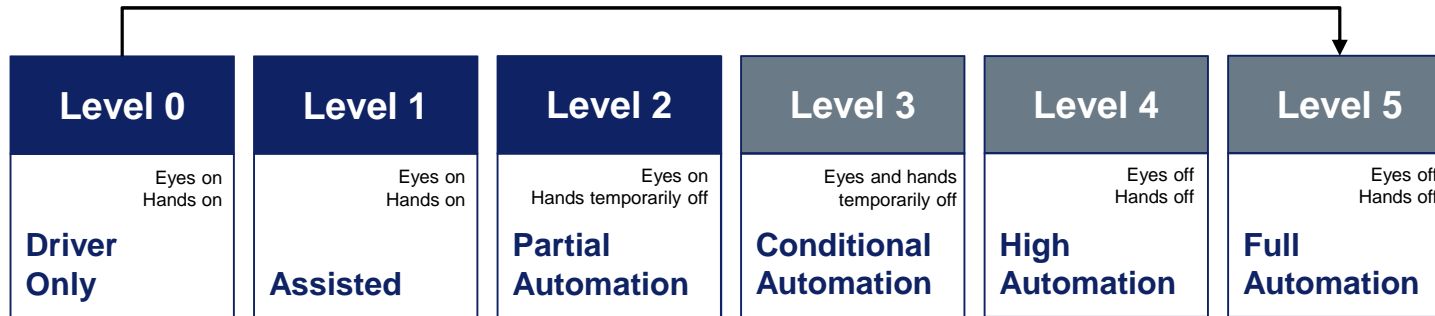
# HELLA will benefit in its core business thanks to favorable positioning along major automotive market trends

## Business devisions – Electronic and Lighting

MAJOR AUTOMOTIVE MARKET TRENDS	AUTONOMOUS DRIVING	EFFICIENCY & ELECTRIFICATION	CONNECTIVITY & DIGITALIZATION	INDIVIDUALIZATION
				
Selected Examples				
Electronic portfolio	<p>Camera Software      77 GHz Radar Sensor</p>	<p>48V DC/DC-Converter      Battery Management System</p>	<p>Particulate Matter Sensor</p>	<p>Passive Entry System</p>
Lighting portfolio	 <p>Driving Status Projections</p>	 <p>LED Technology</p>	 <p>High Definition LCD headlamp</p>	 <p>Ambient &amp; Relaxing Interior lighting</p>

# Focus on advanced vision IP and development approaches to enable roadmap towards autonomous driving

## Autonomous Driving – Technology Highlights



### Current Assistance Functions (NCAP 2018):

**Traffic Sign Detection**

**Lane Detection**

**Light Source Detection**

**Pedestrian Detection**

Conventional computer vision approach

Based on Deep Learning

**Semantic Freespace**

**Semantic Path Planning**

**Visual Localization**

# New business model for camera software: Flexible, scalable approach for realization of autonomous driving functionality

## Autonomous Driving – Technology Highlights



TECHNOLOGY

Camera Software: „Software as Product“

### Current Market Model

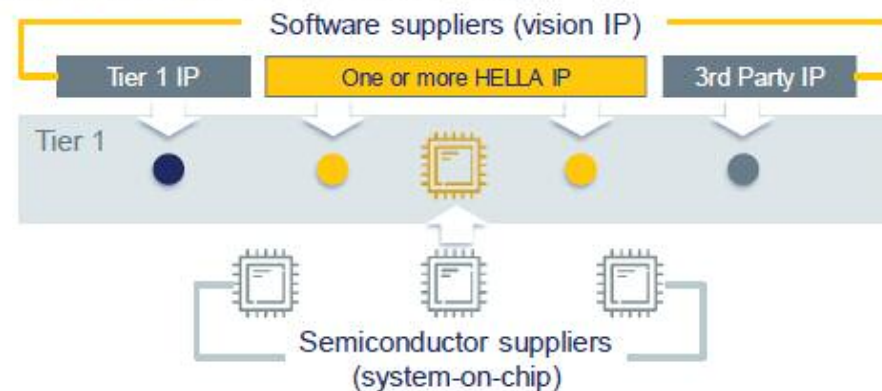
#### CLOSED SYSTEM

- Proprietary microprocessor with fixed software package
- System-on-chip and vision IP fixed („blackbox“ approach)
- Limited options for integration and extension of system for customers
- No support for USP creation at customer side



### HELLA Approach

OPEN SYSTEM as flexible, scalable package



### KEY BENEFITS

- Open systems supports **various scalable hardware platforms** and **vision IP from different sources** (own IP, 3rd-party IP)
- **Freedom of choice at customer side** which vision IP and system-in-chip to integrate  
→ creation of USPs possible
- Flexible, scalable approach enables **cost-efficient solutions for volume markets**



# HELLA's 77 GHz radar sensor solution enables efficient 360° environment recognition for the entire vehicle

## Autonomous Driving – Technology Highlights



### TECHNOLOGY 77 GHz Radar Sensor



#### KEY FACTS

- Highly integrated RF-CMOS Radar System Chip
- Higher functional object detection performance
- Dimensions: 65 x 61 x 15 mm

#### KEY BENEFITS

- **Reduced size & weight** (significant package reduction compared to previous sensors)
- **Identifies & reacts to approaching vehicles from front-side** when entering a junction or pulling out forward from parking space
- **Identifies & warns of objects in blind spot**

#### MAIN FUNCTIONALITIES



Intersection Assistant



Automated Parking



Automated Driving





# Consequent roll-out of 48V DC/DC converter in order to participate in growing 48V market, especially in China

## Efficiency & Electrification – Technology Highlights



### TECHNOLOGY 48V DC/DC-Converter



#### KEY FACTS

- Conversion efficiency > 95%
- Power rating according to alternator up to 3kW
- Scalability thanks to multi-phase approach

#### KEY BENEFITS

- Enables **new applications such as stop/start and idle cruising**, whilst ensuring the supply of fuel-efficient power loads such as electrical power-steering actuators
- **Innovative vehicle applications**, which support fuel efficient drive concepts such as high power regenerative braking or engine-off coasting applications

Awarded by  
3 Customers

#### MAIN FUNCTIONALITIES



Enhanced Start-Stop



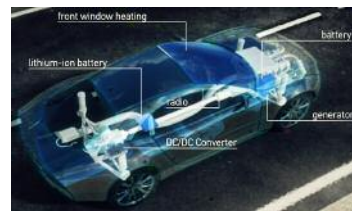
Engine-Off-Coasting



Boosting



High Power Braking



Backup Energy



Fuel Economy



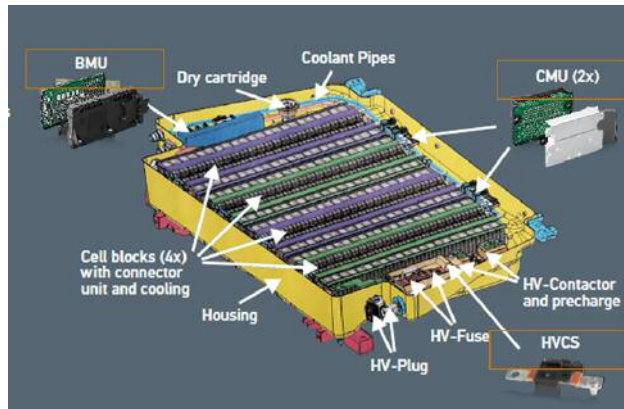
# HELLA offers the full electronics solution for lithium-ion battery management system

## Efficiency & Electrification – Technology Highlights



### TECHNOLOGY BATTERY MANAGEMENT SYSTEM

#### KEY FACTS



**BMS ECU:** Battery state calculation and control of safety functions

**Cell Controller:** Voltage and temperature measurements as well as cell balancing

**High Voltage Current Sensor:** Measurement of battery current

**Insulation Monitoring Device:** Measurement of insulation resistance between HV and LV

**(Integrated) Relay Box:** Charge, pre-charge and main relays packaged including control electronics

#### KEY BENEFITS

- **Modular and scalable platform** for 12V, 48V and high voltage lithium-ion batteries
- **Best-in-class insulation monitoring device** in exclusive cooperation with BENDER

#### MAIN FUNCTIONALITIES

##### CALCULATE BATTERY STATE

- State of Charge
- State of Health
- Power capability
- Resistance

##### PROTECT BATTERY AND VEHICLE DRIVER

against

- Battery overheating
- Over voltage and current
- Contactor State of Health (SoH)



- ##### MEASURE
- Current
  - Cell voltages
  - Cell temperatures
  - Battery voltages

- ##### CONTROL
- Contactor
  - Communication
  - Limp home
  - Pre-charge





# The electrification of the drivetrain leads to a variety of vehicle architectures with different costs and CO2 savings

## Segment Electronics – Trend overview Efficiency & Electrification

### EFFICIENCY & ELECTRIFICATION



	Internal Combustion Engine (ICE)	48V Mild Hybrid (MHV)	Full-hybrid (FHEV) & Plug-in Hybrid (PHEV)	Battery Electric Vehicle (BEV)
	Conventional combustion engine (gasoline or diesel)	Combustion engine + electric motor which helps share the load	Electric motor charged by combustion engine or via plug-in from grid	Only one battery charged from grid or by fuel cell
<b>CO<sub>2</sub> Reduction*</b>		-10% to -20%	-30%	-100%
<b>Additional Costs**</b>		5% to 10%	50% to 60%	30% to 50%
<b>Voltage</b>		12V & 48V	12V &> 120V	
<b>MARKET PENETRATION***</b> share of light vehicle production worldwide				
today	69%	28%	0%	2%
2020	34%	53%	5%	2%
2025	24%	47%	18%	3%

\* CO<sub>2</sub> reduction related to local emissions only

\*\* Assumptions on technical concept for high volume car

\*\*\* Source: IHS Engine Forecast, December 2016



# Innovative approach to optimize air quality in the vehicle based on particulate sensor and cloud-based solutions

## Connectivity & Digitalization – Technology Highlight



### TECHNOLOGY Cloud-Based Air Quality Management



#### KEY FACTS

- Particulate Matter Sensor (PM2.5)
- For vehicles with automatic climate control
- Measurement of air properties, in the range of  $25 \mu\text{g} / \text{m}^3$  -  $500 \mu\text{g} / \text{m}^3$
- Particle size distribution detection by scattered light detection // amplitude of diffractive light depends on PM concentration

#### KEY BENEFITS

- **Detection of particulate matter**  $< 2.5 \mu\text{m}$  (fine dust) in the inner cabin & ambient air
- **Greater driving comfort** due to continual optimization of the air quality in the vehicle
- High particle concentration leads e.g. to: sensor function for ventilation flap controlling (lowers in-cabin pollution level) or fine dust pollution level display as warning feature

First to market

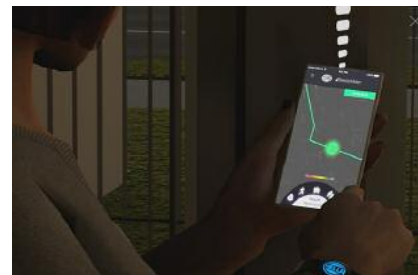
#### MAIN FUNCTIONALITIES



Pollution Notifications



Cloud-Based Clean Routing Option



Cloud-Based Health Recommendations



# HELLA's multi lens array improves comfort and safety by supportive road projects for different driving situations

## Autonomous Driving – Technology Highlights



### TECHNOLOGY Multi Lens Array



#### KEY FACTS

- Generation of sharp, contrasting and homogeneous images
- No loss of the graphic even by partially dirty lens, 170 micro projection lenses per Multi-Lens-Array generating 1 image
- Integration of projections with car sensors

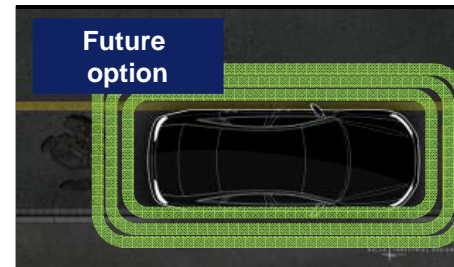
#### KEY BENEFITS

- **Enhances safety** through communication with pedestrians and other vehicles
- **Evokes emotions** by dynamic / changing lighting
- **Enables information** about autonomous driving status

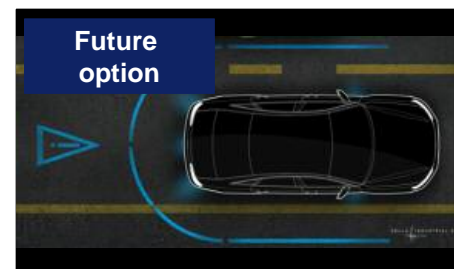
### MAIN FUNCTIONALITIES



**Welcome Light**



**Driving Status Projections**



**Safety Projections**



# High definition LCD headlamp accelerates functionalities and customer benefits

## Connectivity & Digitalization – Technology Highlights



### TECHNOLOGY High definition LCD headlamp



#### KEY FACTS

- High definition lighting system
- Liquid Crystal with >50.000 Pixel

#### KEY BENEFITS

- **State of the art functions**, e.g. bend light, glare-free high beam, etc. with optimized end-user impact
- **New functionalities**, e.g. C2P (Car To Pedestrian) and C2D (Car To Driver)
- **High end resolution**

### NEW FUNCTIONALITIES



**Pedestrian marking**



**Projection of cross-walk**



**Highlight the walk way**

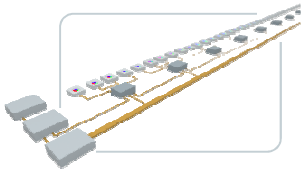


# Enhancing user experience and safety with HELLA's dynamic ambient lighting system

## Individualization – Technology Highlights



### TECHNOLOGY Dynamic Ambient Lighting System



#### KEY FACTS

- Competence in light & electronics
- Light as a complementary information source for driving tasks
- Infinite number of high speed light scenarios

#### KEY BENEFITS

- **Integration** in customer E/E architecture
- **Supports** partially and high **automated driving**
- **Enhances safety** in complex traffic situations through warning function
- **Improves driving comfort** by personalization of light

### MAIN FUNCTIONALITIES



Future option

Advanced Welcome Scenario



Future option

Collision Warning



Future option

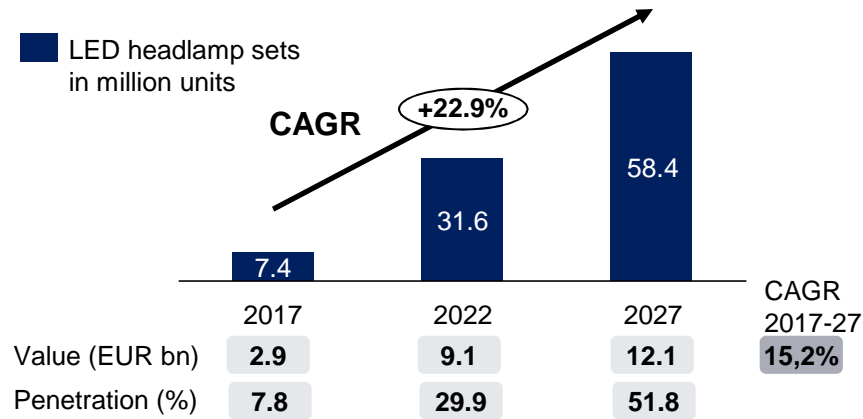
Ambient & Relaxing



# LED competence as driver for HELLA Lighting

## HELLA at a glance – Business Segment Automotive

### LED to change the automotive market...

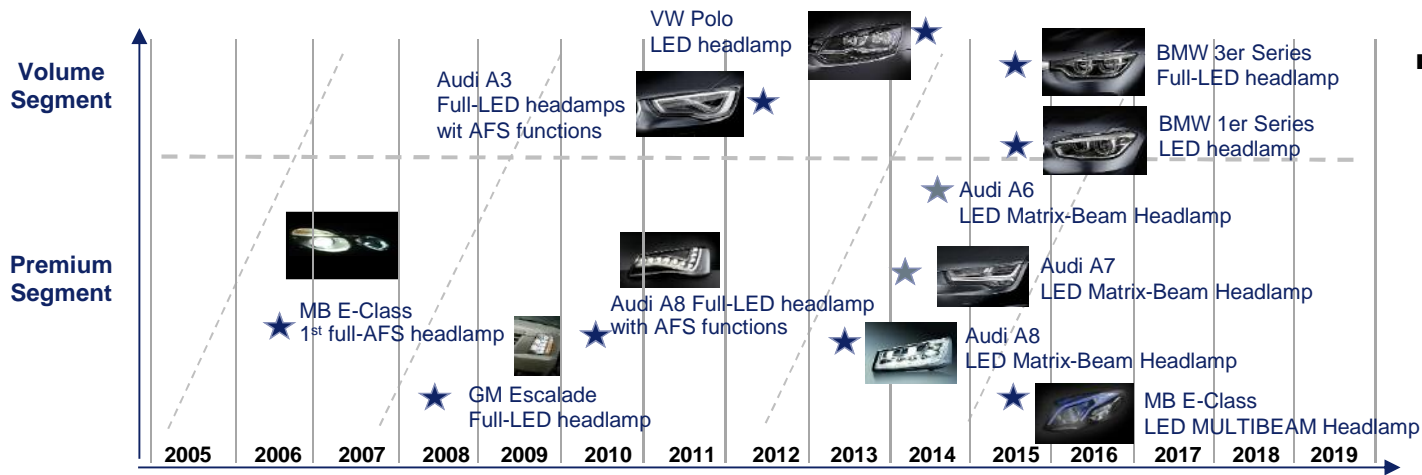


Source: Strategy Analytics Aug. 2017

### ...with penetration rates of LED to explode

- **Half of produced light vehicles equipped with LED headlamps in 2027**
- **Driver:**
  - Need for advanced lighting based assistance systems
  - Need for energy efficient lighting system
  - Need for designed parts and distinguishable lighting elements

### HELLA first-to-market applications & penetration into mass models



- **HELLA offers scalable solutions for premium and volume segments**



# Competitive advantage through complete aftermarket solutions

## HELLA at a glance – Business Segment Aftermarket

### BUSINESS OVERVIEW



#### Independent Aftermarket (IAM)

- Sale of **own and third-party spare parts** to IAM wholesalers
- **Own sales presence** in >25 countries
- **Strong position** of sales network and brand presence in **European market (#1-3)**



#### Wholesale Distribution

- Building **holistic product portfolio** from part suppliers and **offering to IAM garages**
- **Market position: #1** **#2** **#3**
- **Synergies through** HELLA wholesale organization “**Nordic Forum**”



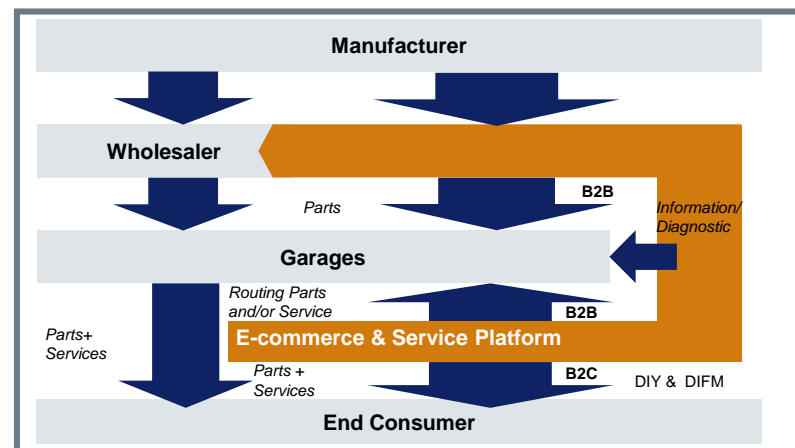
#### Workshop Equipment

- Premium provider of **workshop solutions, diagnostic tools** and advanced **equipment** to garages
- Offering of **professional services**, e.g. technical data/hotline, trainings & financial services
- **market position: #1** **#3**

### KEY FINANCIALS

in EUR millions and % of sales

	FY 2015/16	FY 2016/17	Change
<b>Sales</b>	1,179	<b>1,222</b>	+3.7%
<b>EBIT</b>	76.9	<b>73.0</b>	-5.0%
<b>EBIT margin</b>	6.5%	<b>6.0%</b>	-0.5% points
Sales <b>IAM</b>	530	<b>553</b>	+4.4%
Sales <b>Wholesale</b>	523	<b>550</b>	+5.2%
Sales <b>Garage Equipment</b>	58	<b>66</b>	+12.7%



# IAM keeps strengthening its core product portfolio and seeks further cooperation for third party OE competence

## HELLA at a glance – Segment Aftermarket: Independent Aftermarket

Focus on

**1** Strengthening of HELLA's OE core products

**2** Partnership with strong 3<sup>rd</sup> party OE suppliers for IAM

Products



Vehicle-specific lighting



Electronics



Strategic directions

- **Expand portfolio** and **leverage own OE know-how** with special focus on E/E and more complex products, e.g. radar sensors
- **Shift from crash to wear parts**
- **Roll-out of global portfolio** into regions and **leverage of local portfolio** additions

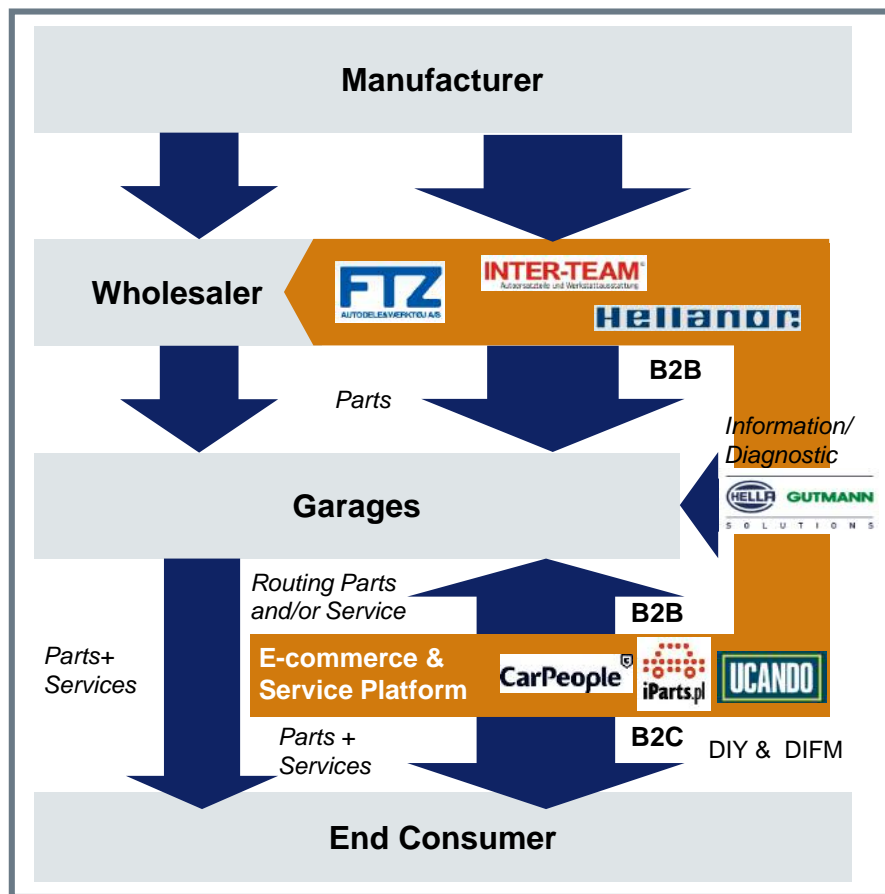
- **Enhancement of HELLA portfolio by 3<sup>rd</sup> party OE products** and leverage of distribution network and proximity to customers



# HELLA's integrated wholesale concept ensures broad and deep customer reach in order to generate further growth

## HELLA at a glance – Segment Aftermarket: Wholesale

### POSITIONING ALONG VALUE CHAIN



### STRATEGIC DIRECTION

#### Capture chances from digitalization

- Intensification of **E-commerce business** in Denmark and Poland
- Further development of **service platform** in first market Denmark and roll-out to further wholesale markets
- Increase in customer loyalty with **digital solutions**, e.g. connected cars and telematics
- Strengthen **B2C business** and further **end-user services**

# HELLA enables workshops to conduct complex repair and maintenance activities with innovative and cost efficient solutions

## HELLA at a glance – Segment Aftermarket: Workshop Products

### State of the art workshop equipment to address more complex car

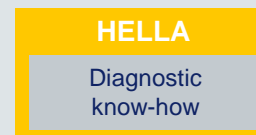
Provide **professional workshop equipment** e.g. multi-brand diagnostics, air-conditioning service as well as testing and adjusting tools e.g. for **camera and sensor calibration**

Example: Camera and sensor calibration



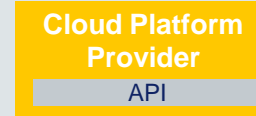
- Growing importance of cameras and sensors due to **automotive megatrends** (e.g. autonomous driving)
- **Easy application** for all brands, smart and cost-efficient solution
- Tool offers **independent workshops** possibility to **extend business activities** beyond traditional scope

### New cloud-based workshop solutions to solve diagnostic problems



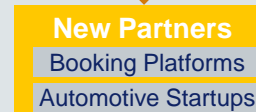
#### Existing diagnostics business model

- Localized **offline data base**, not accessible for external parties
- Technical support offered by **hotline**, e.g. for interpretation of complex failure codes into easy-to-understand failure analysis



#### Cloud platform

- HELLA know-how is transferred to a **cloud platform**
- Third parties can **access data base through web services** like API
- **Predictive services** become possible



#### New applications

- **New partners** access the data base to offer **innovative** services and applications for car diagnostics (“micro services”)
- Examples: driver logbooks, pay-per-diagnosis

# Diversification of business portfolio based on existing strengths

## HELLA at a glance – Business Segment Special Applications

### BUSINESS OVERVIEW

- Development, production and sale of **lighting and electronics products for special vehicle manufacturers**
- **“Fast follower” of technological innovations in automotive segment** along megatrends LED, energy efficiency and safety
- Application of know-how through **own research and development resources** and **dedicated production footprint**
- **Strong market position in lighting product** areas based on long-standing experience, in particular in Europe
- Focusing on a **variety of attractive target groups**

### TARGET GROUPS



### KEY FINANCIALS

in EUR millions and % of sales

	FY 2015/16	FY 2016/17	Change
<b>Sales</b>	384	<b>385</b>	+0.3%
<b>EBIT</b>	8.2	<b>19.7</b>	+140.3%
<b>EBIT margin</b>	2.1%	<b>5.1%</b>	+3.0% points

### STRATEGIC FOCUS

- 1. Drive LEDfication in all customer segments**
  - ▶ Further **focus on offering of LED solutions** and participate in LEDfication trend e.g. in recreational vehicles and trailers
  - ▶ Invest into **innovative product roadmap**, e.g. Shapeline and multi-function lamp platform
  - ▶ **Revitalize products** e.g. modular work lamps and rear lamps
  - ▶ **Drive advanced engineering** e.g. light tunnel and matrix beam
- 2. Push further application of Electrics / Electronics**
  - ▶ Transfer and **adaptation of electronic automotive know-how** to further participate in Electrification trend for special vehicles
  - ▶ Focus on **application of existing Automotive products** e.g. pedal sensors
  - ▶ **Extension of Electronics scope** e.g. radar solutions for smart farming to avoid collision and to measure seeds and speed



Technology with Vision

# Thanks for your attention

**Dr. Kerstin Dodel, CFA**  
Head of Investor Relations

Office phone	+49 2941 38 - 1349
Facsimile	+49 2941 38 - 471349
Mobile phone	+49 174 3343454
E-Mail	<a href="mailto:kerstin.dodel@hella.com">kerstin.dodel@hella.com</a>
Internet	<a href="http://www.hella.com">www.hella.com</a>