



Company Presentation 2012

Sensor+Test, Nuremberg, Germany

May 22 – 24, 2012

Agenda

Overview

Hall-effect sensors

Gas sensors

Embedded controllers for smart actuators

Customers

Summary

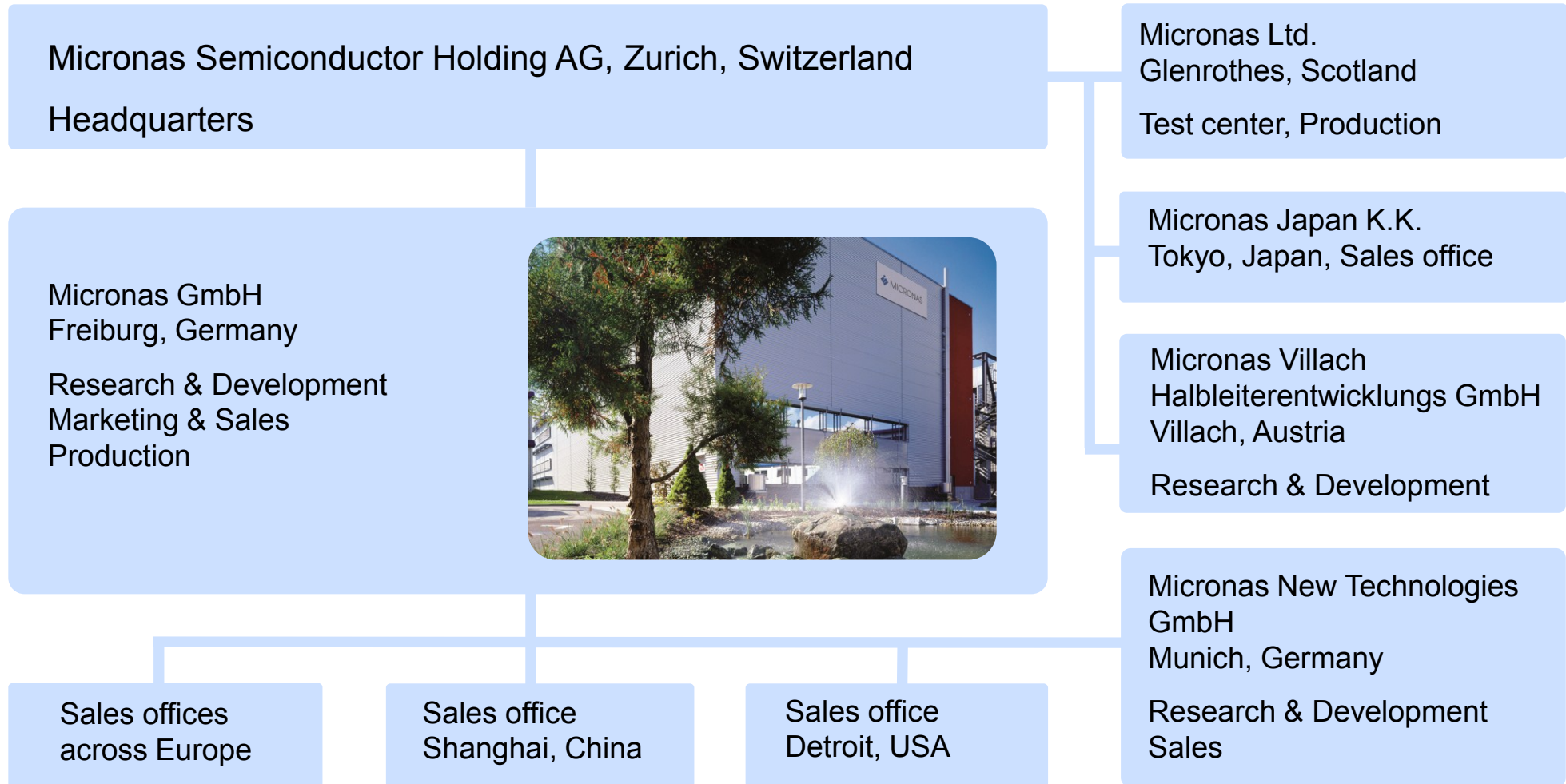
Micronas at a glance

Known and recognized in the automotive and industrial business as a reliable global acting partner for intelligent, sensor-based system solutions

- ◆ About 900 employees worldwide
- ◆ Own wafer fab with 6" and 8" production line
- ◆ Backend operation including testing and packaging
- ◆ Zero ppm quality to ensure customer satisfaction
- ◆ Commitment to environmental protection

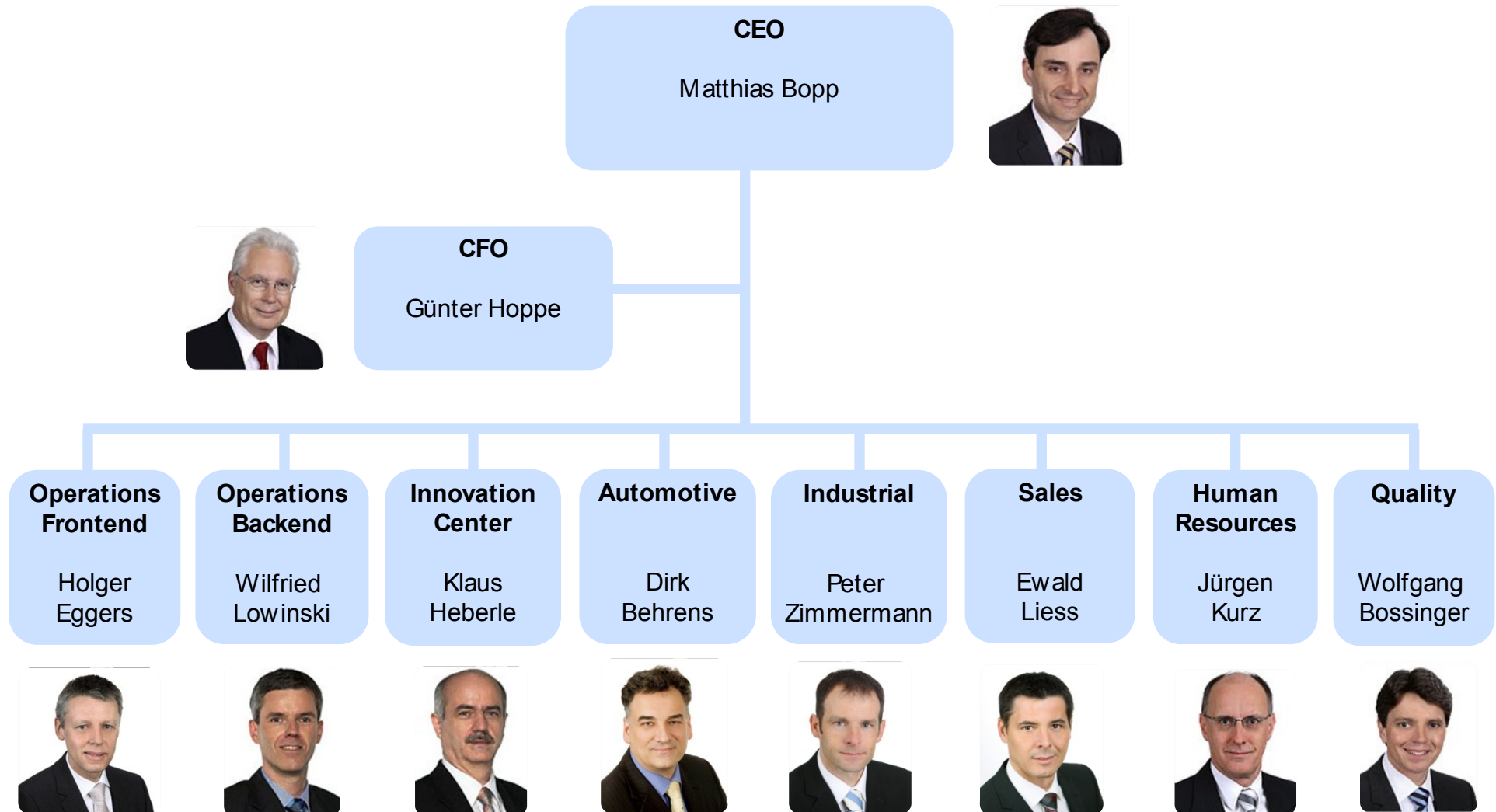


Group structure and locations



Distributor base all around the world

Management team



Micronas – business year 2011

- ◆ Micronas once again achieved a double-digit EBIT margin of 13 percent
- ◆ Automotive business recovered already by the end of the third quarter from the crisis resulting from the earthquake of Japan
- ◆ Sales in our core business, Hall sensors, were up by 7 percent on an euro basis
- ◆ Capacity utilization peaked at around 80 percent during the fourth quarter after being only 70 percent during the Japan crisis
- ◆ Micronas increased its investments in R&D to more than 17 percent of sales
- ◆ Micronas continued the expansion of marketing and sales activities along clear lines of responsibility



Micronas – business year 2011, cont.

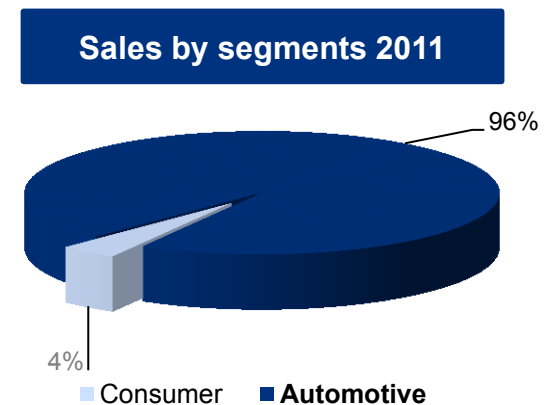
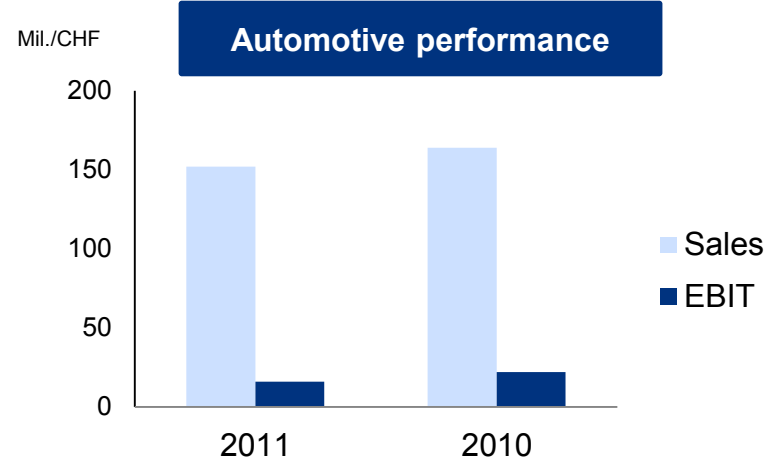
- ◆ A milestone in the Industrial sector was the partnership agreement on gas sensors between Siemens and Micronas
- ◆ Micronas has secured access to next-generation technologies by a cooperation agreement and an investment in X-FAB
- ◆ Micronas acquired all previously leased land and buildings in Freiburg
- ◆ Micronas installed a 2000 m² photovoltaic system in order to further strengthen its contribution to environmental protection
- ◆ Micronas was granted the ISO/TS 16949 certification for another three years for its comprehensive quality-focused systems



Micronas Group – segment information

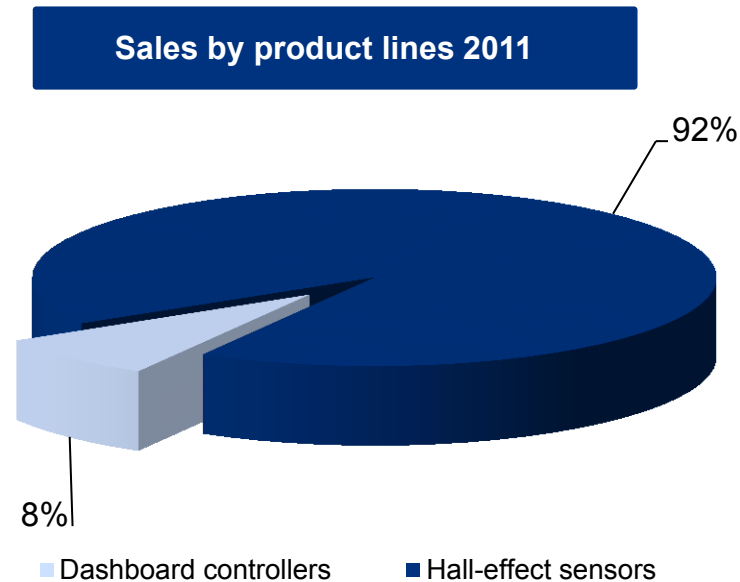
Mil./CHF	31.12.2011	31.12.2010
Automotive		
Net sales	151.8	163.7
Gross margin	58.1	61.0
in % of sales	38.3%	37.3%
Operating profit (EBIT)	16.3	21.9
in % of sales	10.7%	13.4%

Mil./CHF	31.12.2011	31.12.2010
Consumer		
Net sales	7.0	26.6
Gross margin	1.1	3.2
in % of sales	15.2%	12.1%
Operating profit (EBIT)	4.3	4.2
in % of sales	61.9%	15.8%



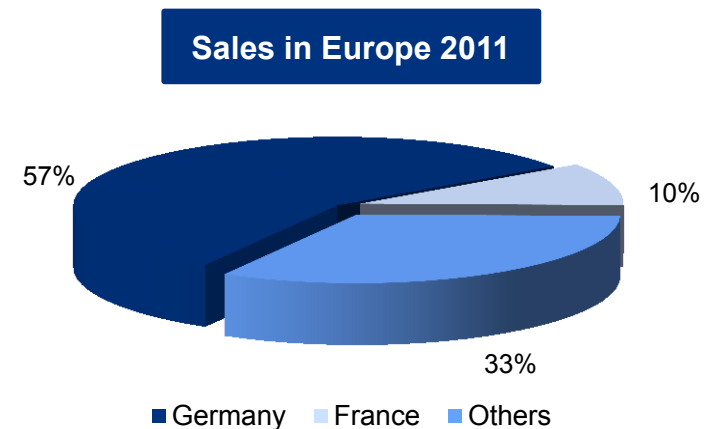
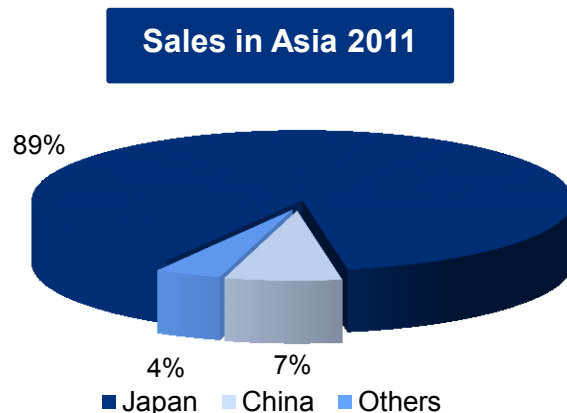
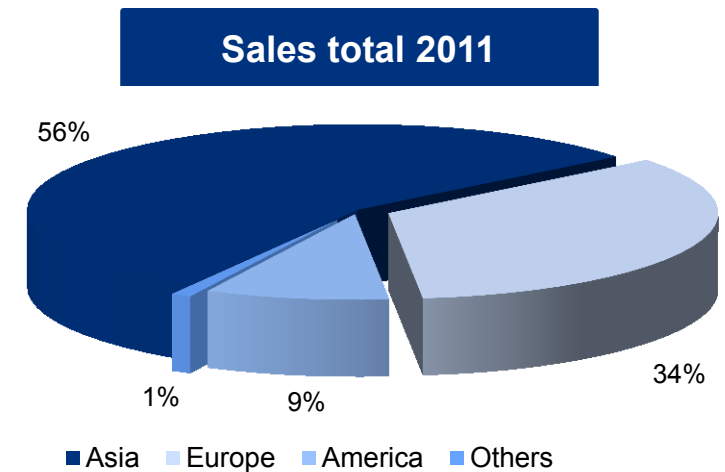
Segment Automotive – product lines

Mil./CHF	31.12.2011	31.12.2010	Change in % based in CHF	Change in % based in EUR
Hall-effect sensors	140.0	146.1	-4%	7%
Dashboard controllers	11.8	17.6	-33%	-25%
Total	151.8	163.7	-7%	3%



Segment Automotive – regional information

Mil./CHF	31.12.2011	31.12.2010	Change in % based in CHF	Change in % based in EUR
Europe	51.7	57.1	-9%	1%
Asia	85.3	88.5	-4%	7%
America	14.7	17.8	-17%	-8%
Others	0.1	0.3	-67%	-63%
Total	151.8	163.7	-7%	3%



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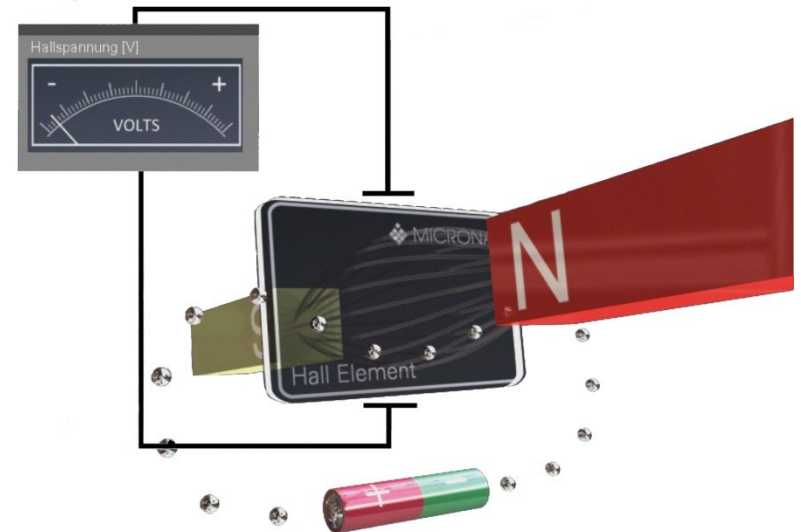
Summary

Hall-effect sensors – technology

Hall-effect sensors are the technology of choice for contact-less sensing. Micronas, the pioneer of CMOS Hall sensors, continues to innovate in this field.

Introduction

- ◆ Contact-less sensing improves system reliability, especially in harsh environments
- ◆ CMOS technology is the most cost-effective method to realize Hall sensors
- ◆ High levels of integration enable sensors to configure to a wide range of applications
- ◆ Micronas has a strong track record of supplying sensors that meet the most demanding quality standards



Hall-effect sensors – technology and market drivers

Hall technology is suitable to serve expanding market requirements and thus provides sustaining growth.

Environmental protection

Hybrid and electrical vehicles as well as CO₂ reduction in combustion engines increase sensor demand

Economy

Highly integrated sensors reduce overall system cost

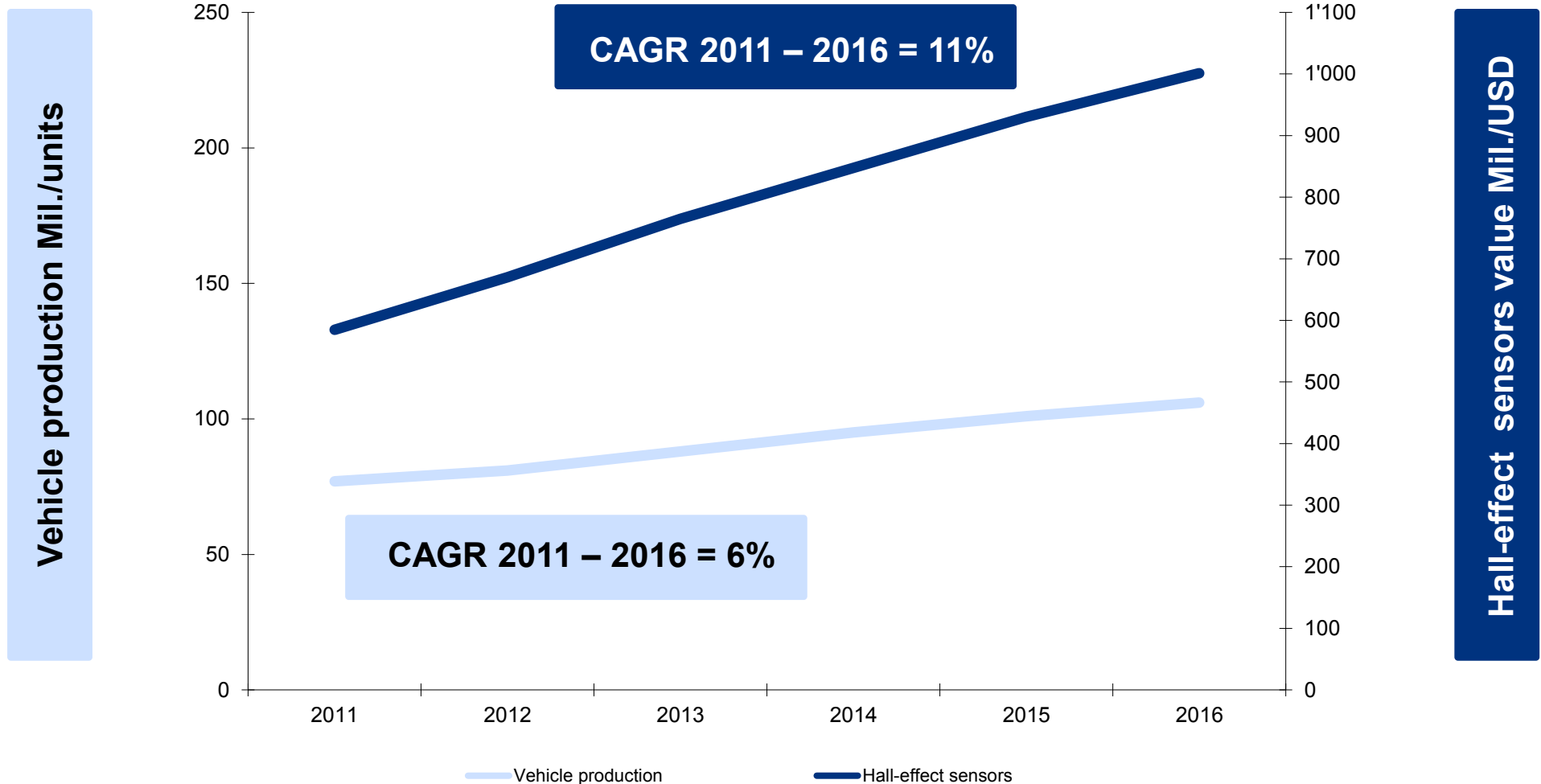
Safety

Increased safety demands drive growth for intelligent and redundant solutions

Comfort and lifestyle

Low power and small form factor enable contact-less sensing in new applications

Automotive and Hall-effect sensor markets



Source: Strategy Analytics / isuppli / Micronas, January 2012

Hall-effect sensors – functions and applications

Micronas offers the broadest portfolio of Hall sensors for automotive and industrial systems.

Switches



buckle switch



roller shutter

- ◆ Easy to implement contact-less switch
- ◆ Replacement of micro switches

Linear

throttle flap



gas pedal sensor

- ◆ Highly accurate position detection
- ◆ Replacement of conventional potentiometers

Angular



steering angle

3D|HAL®
by Micronas

License Note:
3D HAL uses licenses of
Fraunhofer Institute for
Integrated Circuits IIS.

selection switch



- ◆ Precise angle detection with a single sensor
- ◆ Replacement of inductive or optical angle encoders

Current



power management

Continental

current sensor module



- ◆ Small form factor contact-less current transducer
- ◆ Replacement of shunt based solutions

Hall-effect sensors – application fields for Automotive

Powertrain

High accuracy sensors designed to withstand harsh environments: Insensitive to vibrations, temperature drift and dirt



Chassis and body

Programmable sensors with integrated communication links provide flexibility



Safety

Proven history of meeting Automotive's highest quality standards. Expanding portfolio addresses increasing safety requirements



Hall-effect sensors – application fields for Industrial

Heavy machines / factory automation

Micronas products have been developed to meet the demands for long lifetime and high reliability in harsh environments



Building and home automation

Micronas products offer intelligent sensor solutions for smart automation networks for an increased comfort and lifestyle



White goods / home appliances

Micronas offers a wide range of cost-effective sensor solutions for eco-friendly home appliances at minimal size



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Financials

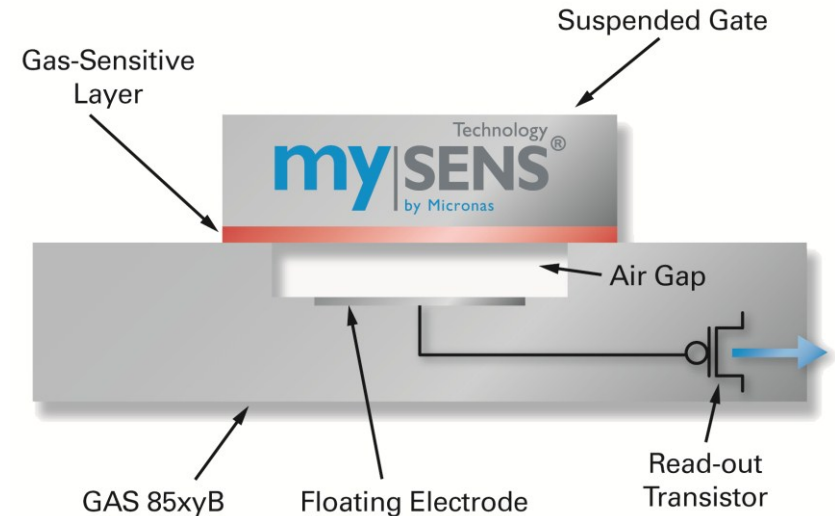
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– Gas sensing technology

Gas sensors become digital: Micronas mySENS[®] gas sensing technology to overcome the limitations of existing technologies.

Introduction

- ◆ Digital ambient sensor platform with:
 - ◆ two independent gas sensors
 - ◆ integrated relative humidity sensor
 - ◆ integrated temperature sensor
- ◆ Target gases: detection of NO₂, NH₃, H₂, VOC, CO, CO₂
- ◆ CCFET sensor (Capacitive Coupled Field Effect Transistor)
- ◆ Manufactured in-house on Micronas latest CMOS technology



– technology and market drivers

Micronas mySENS® gas sensors represent a new versatile sensor technology serving major industrial and automotive trends.

Environmental protection

High energy efficiency and low CO₂ emissions of HVAC systems due to air quality measurement

Economy

Highly integrated multi parameter sensors reduce overall system cost

Safety

Increased legislation requirements and public safety awareness need new sensors

Comfort and lifestyle

Personalized comfort requirements
Literally invisible modules and controls

– Gas sensing markets and applications

First digital gas sensor to diversify Micronas' product portfolio and target markets.

Fire detection



- ◆ Reduction of system size to almost invisible
- ◆ Improved false alarm security
- ◆ Long lifetime and low power consumption

HVAC

(Heating, Ventilation and Air Conditioning)



- ◆ Comfort and energy efficiency in building automation
- ◆ Integration of climate control and air quality in a single device

Leakage



- ◆ High sensitivity to ambient trace gases
- ◆ Broad dynamic range of gas concentration
- ◆ Robust against overdose exposure

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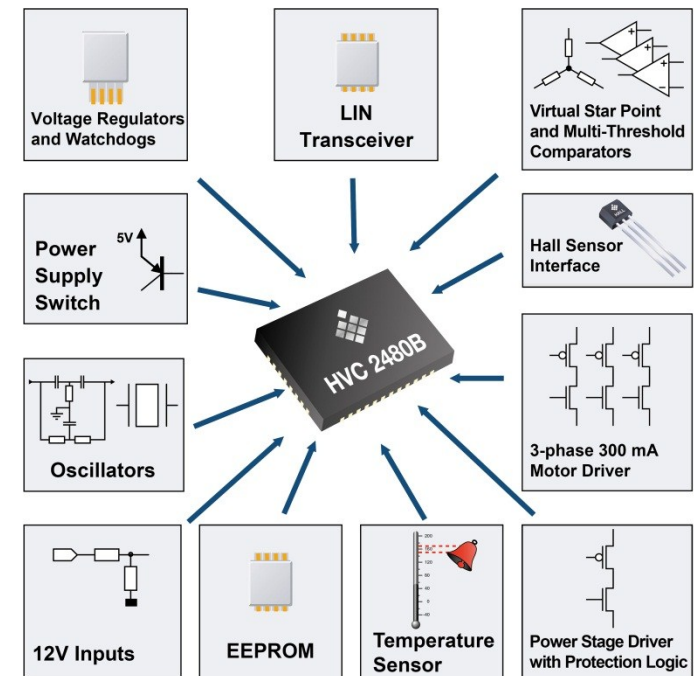
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Embedded controllers – technology

The actuator market is transitioning to BLDC motors. Micronas' highly integrated solutions enable cost-effective system implementation.

Introduction

- ◆ Specialized high voltage, analog and embedded flash CMOS processes uniquely serve the demanding requirements of a BLDC system
- ◆ Single package enables solutions to be realized in space constrained applications
- ◆ Micronas is uniquely positioned to combine two critical aspects of motor commutation – embedded control and Hall sensors – creating solutions that are unmatched in terms of power consumption and physical dimensions



Embedded controllers – technology and market drivers

The actuator market is transitioning to more efficient Brushless DC (BLDC) motors. Specialized embedded controllers are key enablers for fully realizing the benefits of BLDC.

Environmental protection

BLDC motors deliver significant efficiency gains relative to brushed and stepper motors

Economy

BLDC motors can achieve a given performance with less magnetic material and lower weight

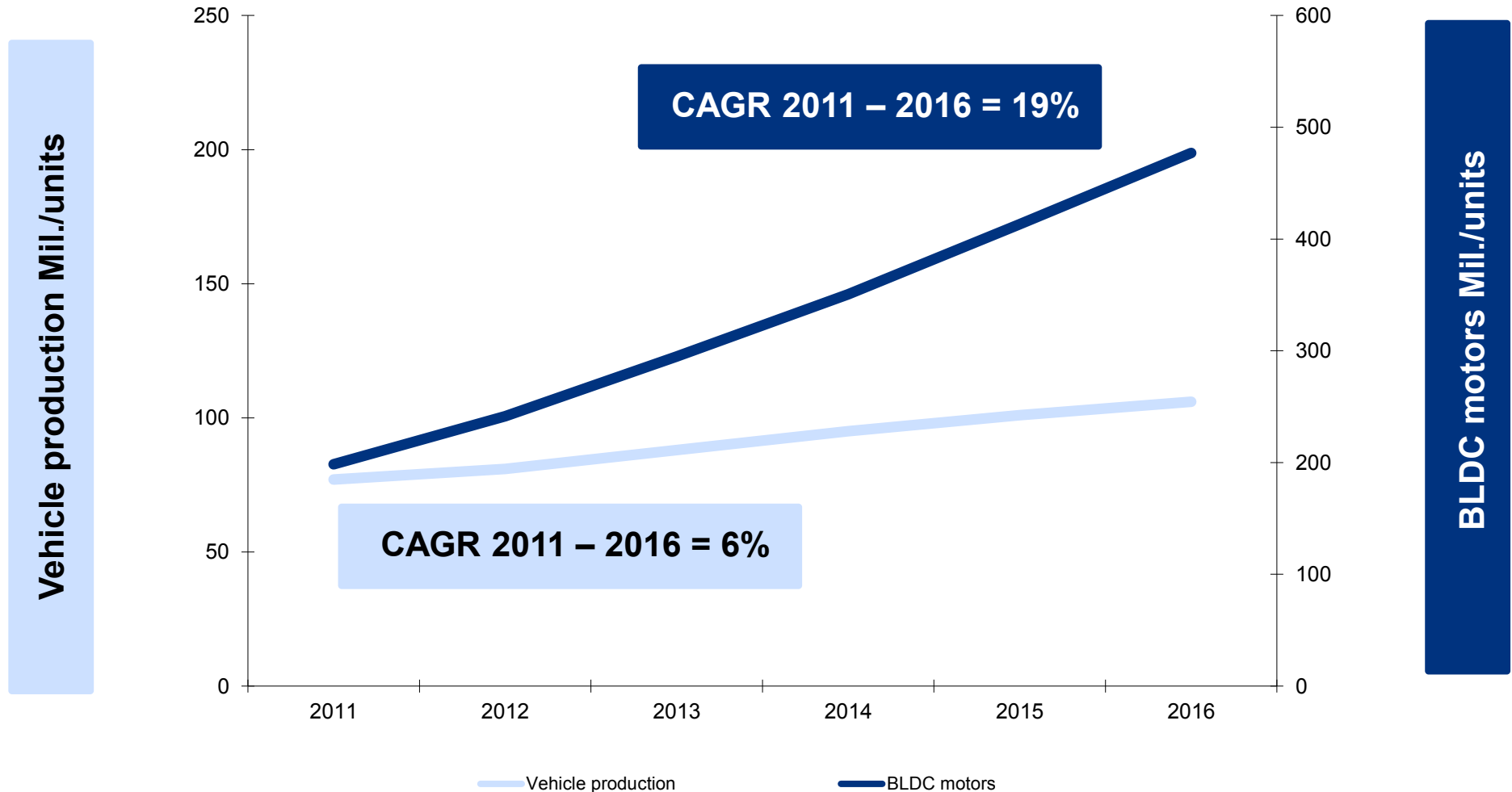
Safety

Increased intelligence in a single SOC enables improved safety feature integration

Comfort and lifestyle

High levels of functionality and computing power permit cost and power effective implementation of comfort features

Automotive and BLDC motor markets



Source: Strategy Analytics, January 2012 / IMS Research, July 2011

Embedded controllers – applications

Adaptive intelligent control of electrical current or speed in Automotive and Industrial applications.

Fans



- ◆ Engine cooling system
- ◆ HVAC
- ◆ Cooling (battery, LED)

Pumps



- ◆ Fuel
- ◆ Oil
- ◆ Water (HVAC, coffee)

Specialized actuators



- ◆ Seat and mirror adjustment
- ◆ Window lifter
- ◆ Head light adjustment
- ◆ Active grill modules
- ◆ Flaps (HVAC, exhaust)

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Customer and distributor base



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- ◆ Micronas can look back on a successful year 2011
- ◆ Increasing investments in R&D, marketing and sales
- ◆ Investing in the development of new hall sensors in the field of multi-dimensional magnetic field detection
- ◆ Adding gas sensors and embedded controllers for smart actuators to the product portfolio
- ◆ Micronas now has excellent access to future technologies
- ◆ Thanks to the gross margin improvement the EBIT-margin was 13 percent despite the strategic investments
- ◆ This confirms that Micronas is well positioned for the upcoming years

