



A global leader in modular machines for e-mobility

Company presentation, 27 February 2017

Highly experienced management team with decades of industry experience



Rolf Beckhoff

Chief Executive Officer
Sales and Administration

13 years at Aumann

Engineering and
management degree



Ludger Martinschledde

Chief Executive Officer
Operations and R&D

25 years at Aumann

Engineering degree



Sebastian Roll

Chief Financial Officer
Finance and Controlling

17 years at Aumann

Business administration
degree



Constantin Mang

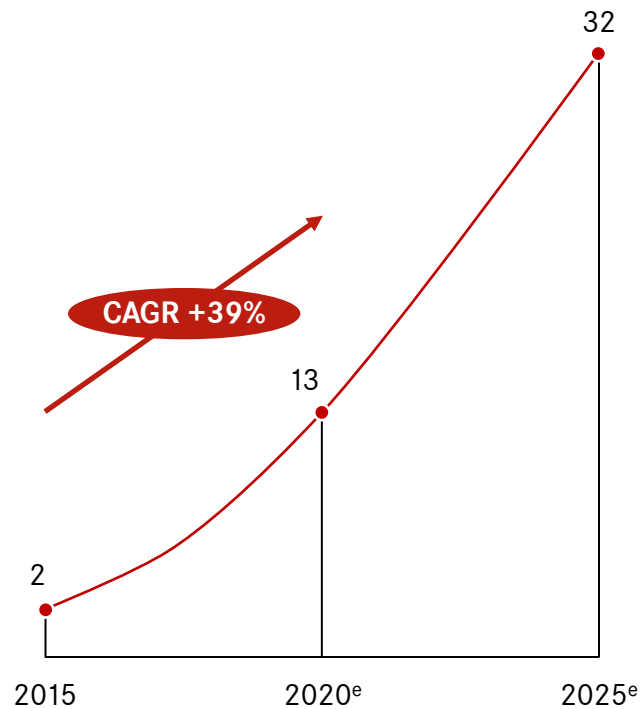
Executive Vice President
Strategy and Business Development

2 years at Aumann

Business and law degree

An e-mobility revolution is underway

Global production of electric vehicles (“EVs”) ¹⁾
in million vehicles



Recent quotes



CARS 2025: CHANGE IN THE FAST LANE

The global automobile industry is entering a disruptive new era



Electro-mobility – a technological revolution in full force



Electric cars will be here sooner than you think



New sources of disruption ahead for the global auto industry



Electric Shock



A watershed moment for the automotive industry



EVolution



Full electrification finally eliminates the business case of diesels



Global Automotive
Executive Survey

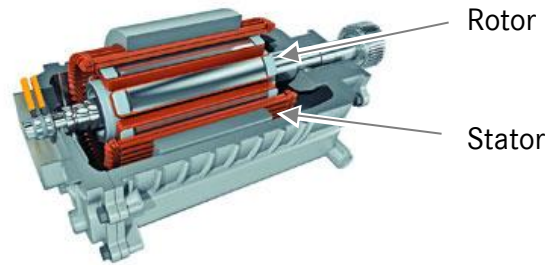
The countdown for disruption has already started

Aumann's focus is at the heart of e-mobility

Energy storage



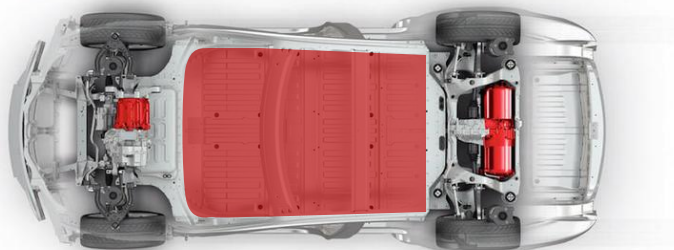
E-motor



Rotor/
Stator
winding

Automation
for mass
production

E-drivetrain



Aumann at a glance

Right business

Fully automated e-drivetrain production lines ...



...based on modular machines and unique motor winding technology...



..leveraging know-how from special machinery of Aumann's Classic segment



Right capabilities

80 years of winding experience

30 years partner of automotive OEMs

675¹⁾ highly skilled professionals

5 locations in Germany, China and USA

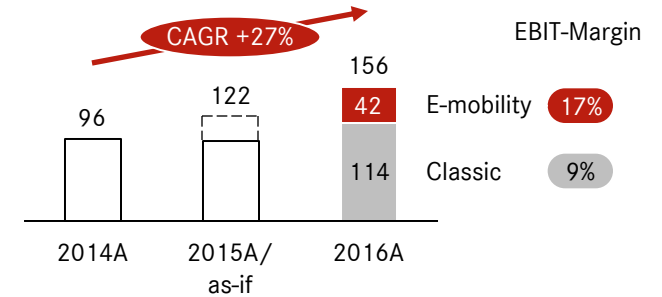
32,000 sqm of shop floor

Select customers

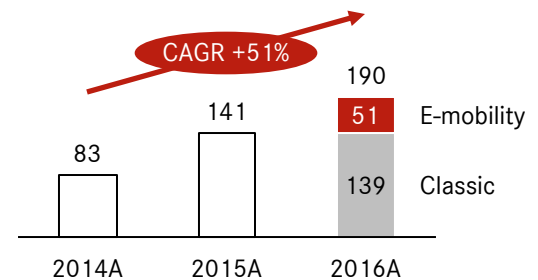


Strong growth

Revenue²⁾
in million €



Order intake
in million €



Key highlights

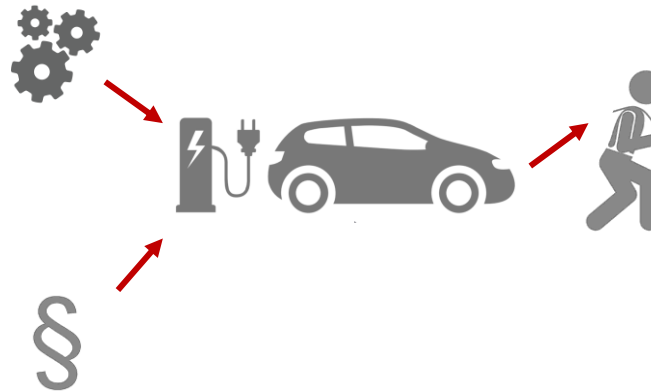
- 1** Strongly growing with e-mobility revolution benefitting very early on
- 2** Unique winding technology leading to highly efficient e-motors enabling OEMs to scale up to automated mass production
- 3** Longstanding relationship with automotive OEMs and track record of jointly developing landmark e-drivetrain platforms
- 4** Growth model with high visibility supported by expanding margins and strong cash flow generation
- 5** Expansion strategy driven by highly experienced and successful management

The e-mobility revolution is driven by strong forces

Technology Push

- ▶ Cost decrease
- ▶ EV range increase
- ▶ Charging infrastructure densification

Daimler will spend € 10bn on EV development



Consumer Pull

- ▶ Coolness factor
- ▶ Smart cars (autonomous driving)
- ▶ Environmental sustainability

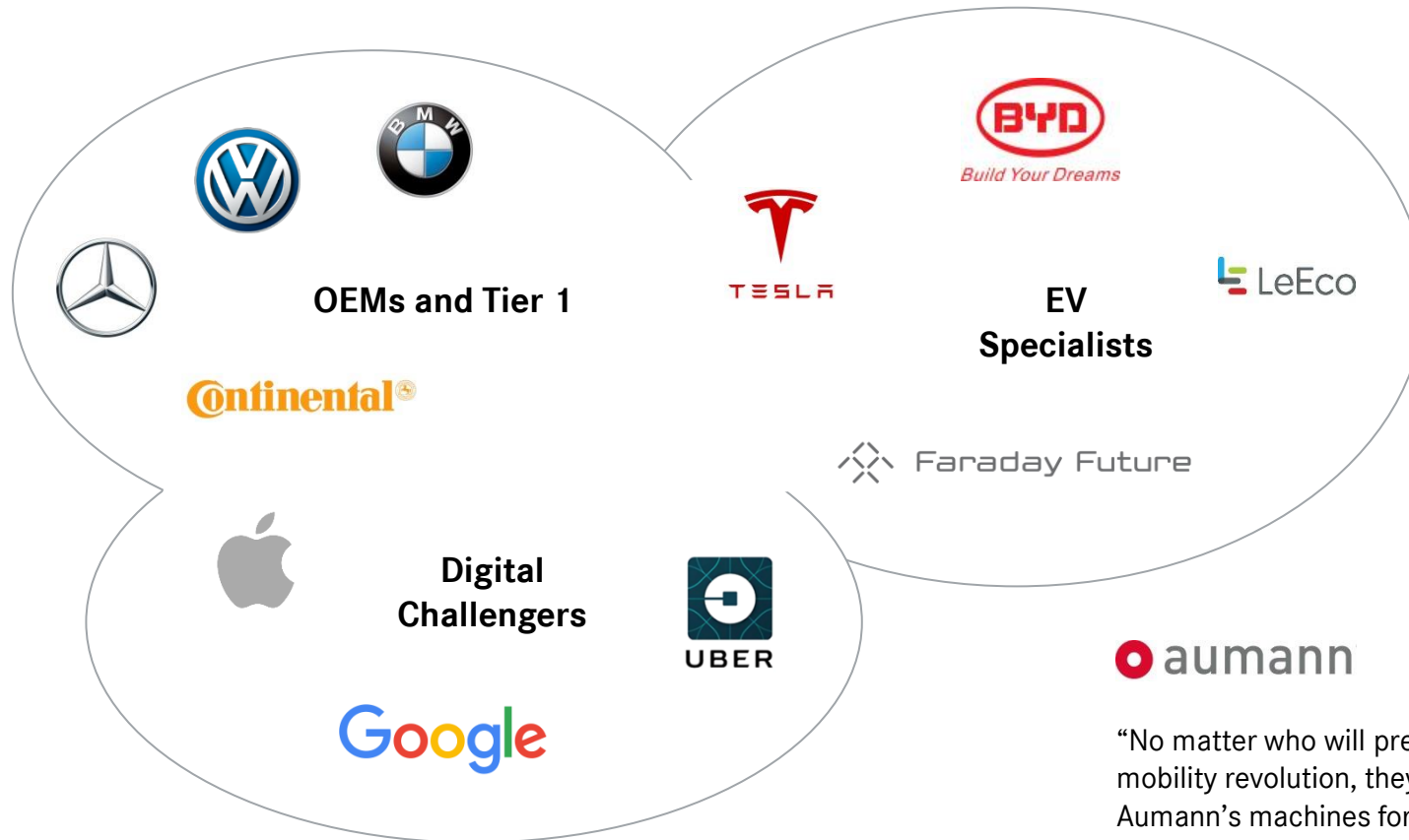
Tesla received around 400k paid reservations for model 3

Regulation Push

- ▶ Emission reduction
- ▶ Tax benefits and incentives

Chinese legislation strengthens e-mobility with required share of EV's starting 2018

Aumann's machines will be needed by all contestants of the e-mobility revolution



The manufacturing process is core to the e-mobility revolution with machinery investments two years ahead of the production of EVs

The importance of machinery

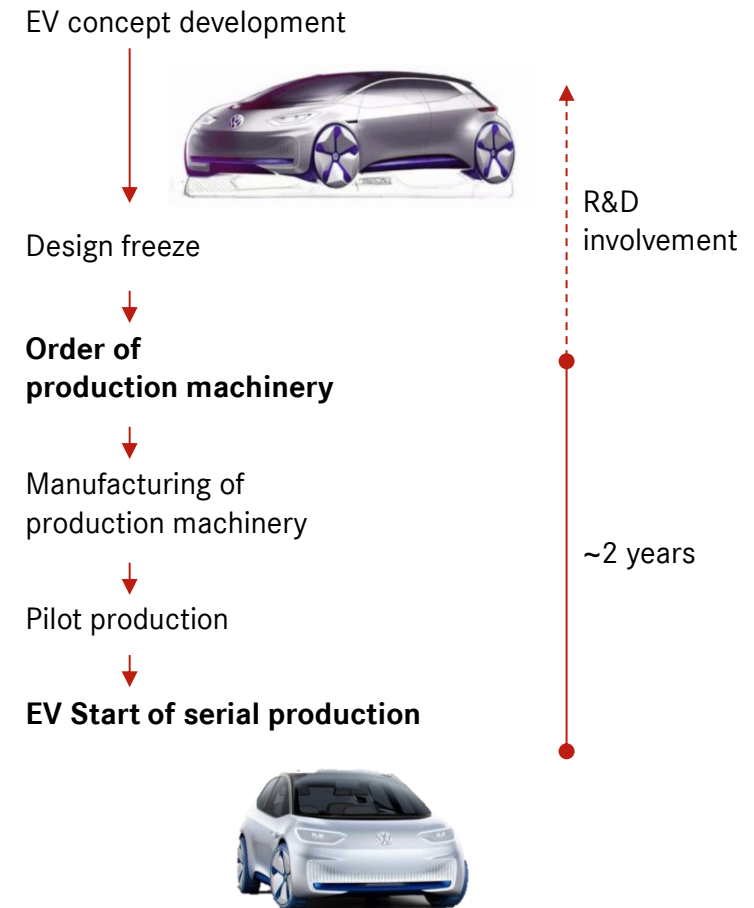


Elon Musk, EV pioneer

“Where the greatest potential is - is **building the machines that make the machine.**“

“[...] they will ultimately deserve **an order of magnitude more attention in engineering than what they produce.**“

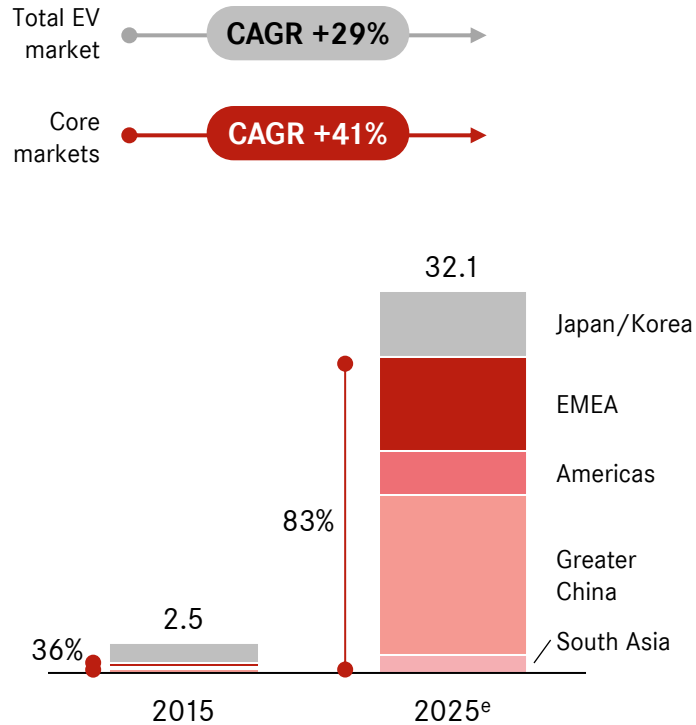
Machinery orders two years ahead



Aumann's core markets and customers expected to grow significantly faster than the overall EV market

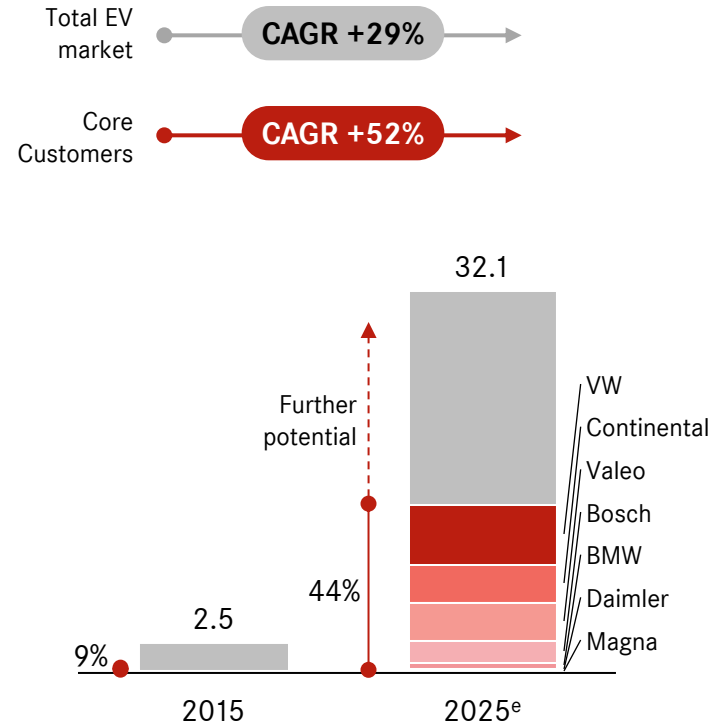
Aumann's core regions growing faster

Production of EVs by regions (in million units)



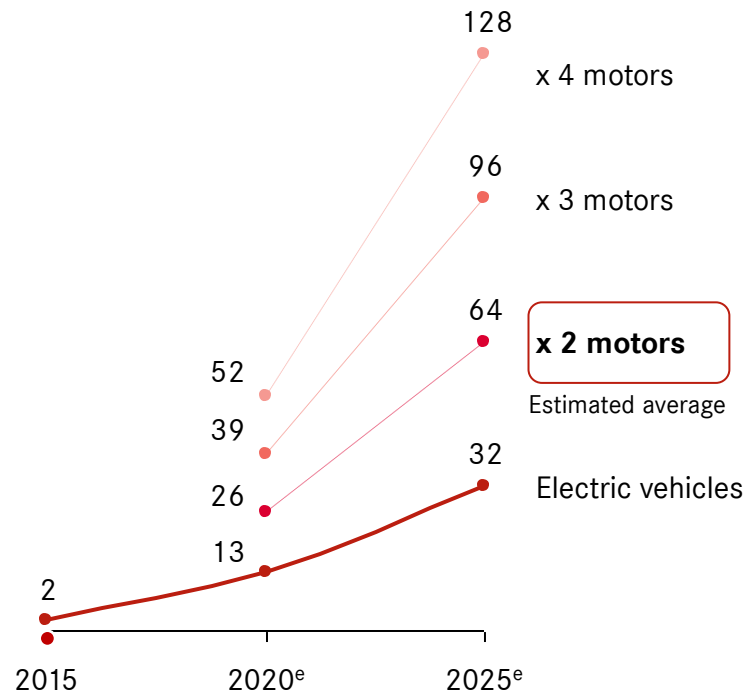
Aumann's core customers gaining EV market share

E-drivetrain production of selected OEMs/Tier-1s (in million units)



The number of traction motors and the number of sensors/actuators per car is expected to increase

Increasing number of traction motors per car in million units



Increasing number of sensors and actuators per car

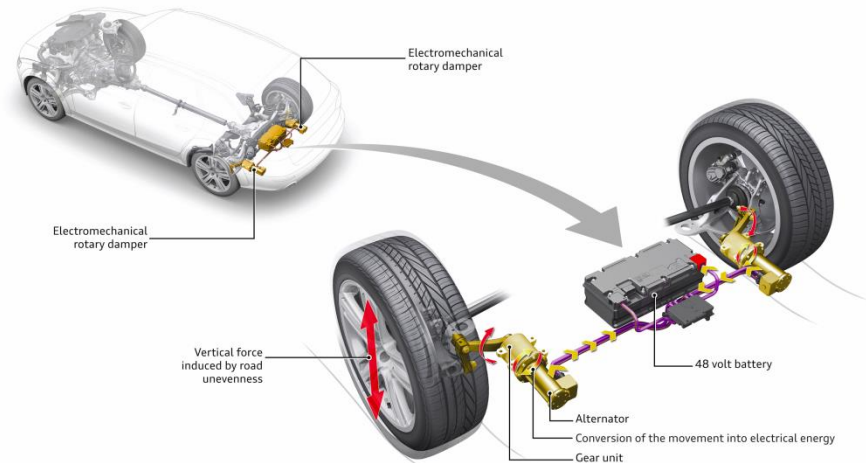
Today's car:

- ▶ ~30 sensors
- ▶ <100 motors/actuators

Tomorrow's car:

- ▶ >100 sensors
- ▶ ~ 200 motors/actuators

Example: Active damper for suspension



Aumann direct winding technology improves e-motor performance, weight and quality

Direct winding technology



Conventional
Indirect winding technology



Less material / lower weight¹⁾

Less copper wire

Less electrical sheet metal

Less space¹⁾

Reduction of winding head

Higher energy conversion

Increased battery reach

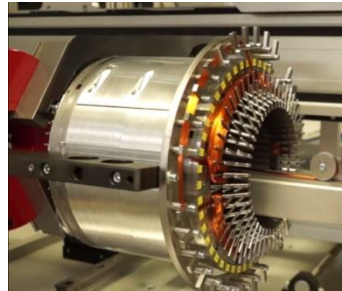
More efficient heat dissipation

“Our technology increases the performance per kilo of motor weight”

1) Material, weight and space savings specific to the pump motor shown on the left
Source: Company information, Fleischer et al. “Quo Vadis Winding Technology?” (2017)

Direct winding technology is critical to enable fully automated mass production

aumann
Direct winding technology



Degree of automation



Process flexibility



Wire stress



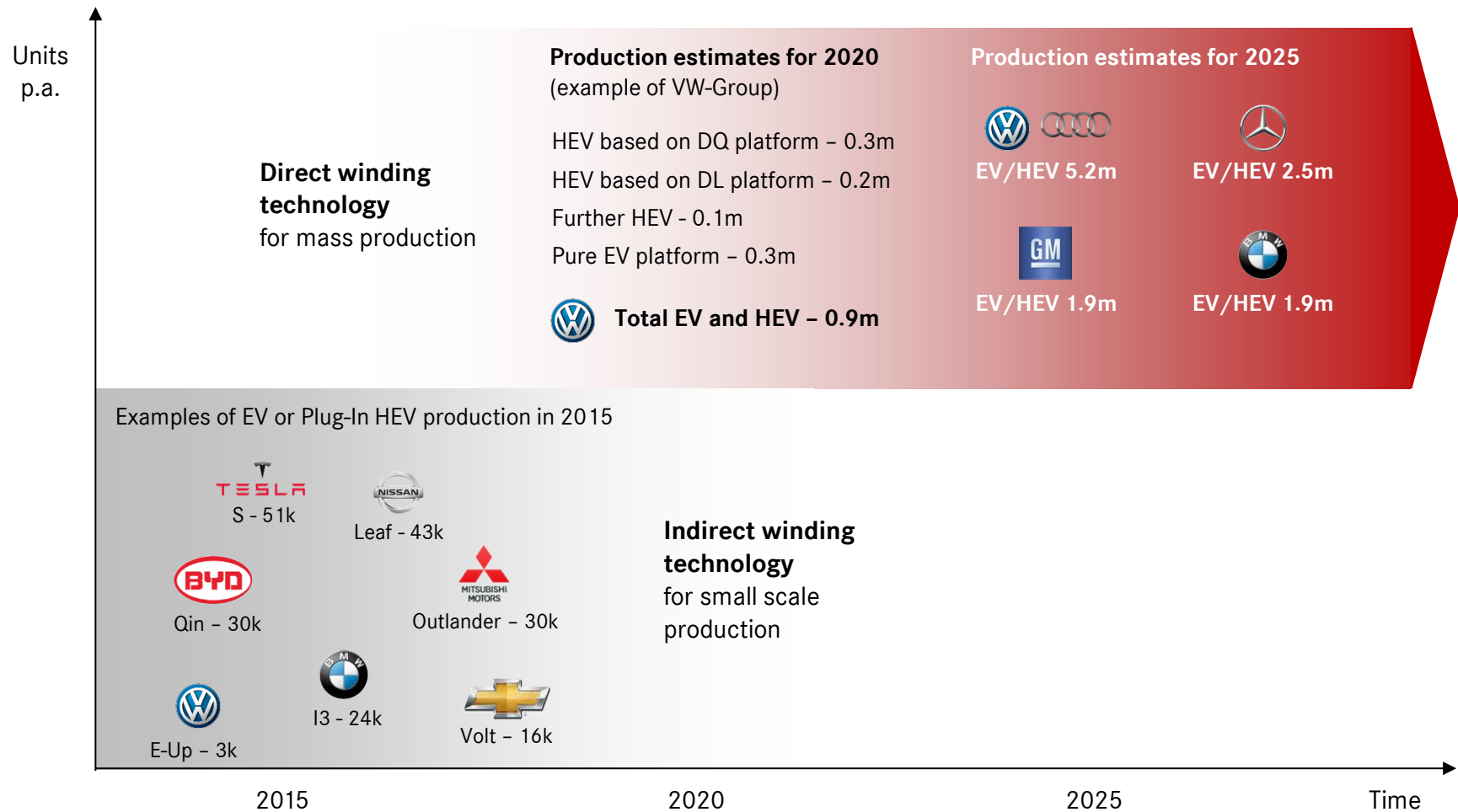
Reject rate



Conventional
Indirect winding technology

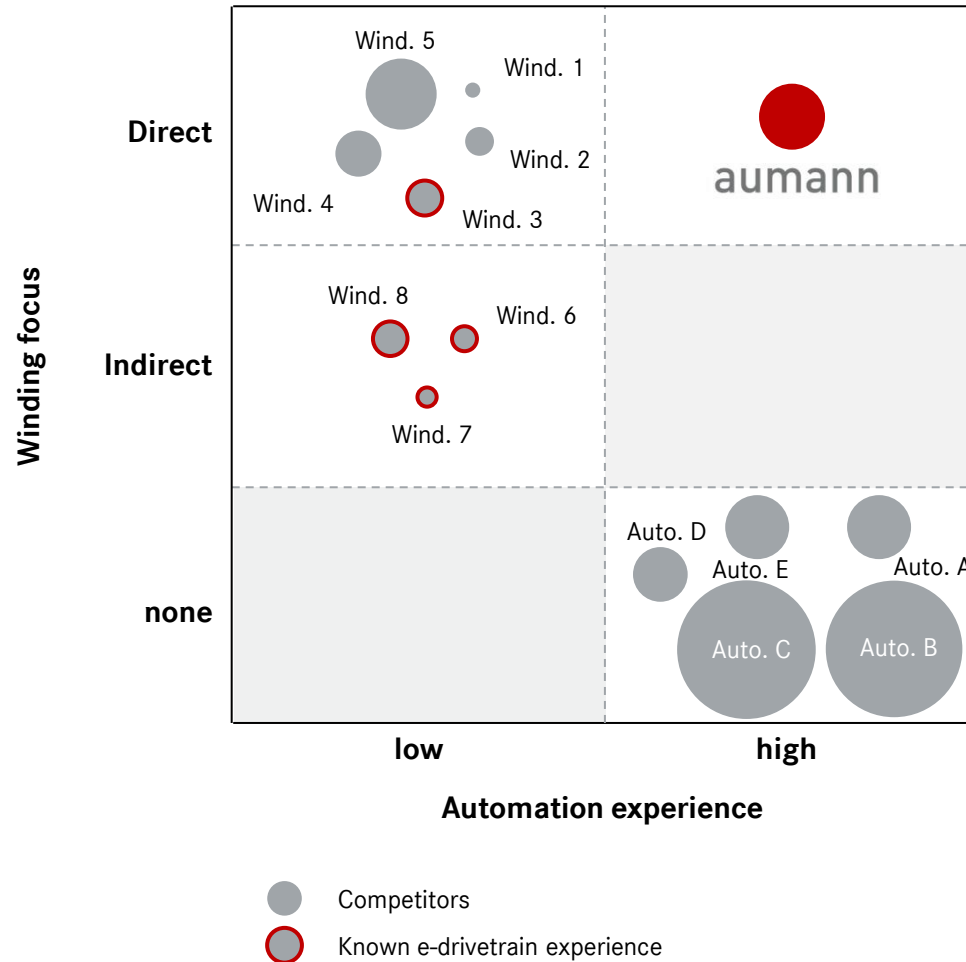


Aumann enabling transformation to industrial scale production



Unique winding technology and longstanding automation experience leading to strong competitive advantage and positioning

Competitive landscape (schematic)



Aumann R&D centre ensures early customer lock-in

Joint optimisation with customers on end-product and automated production set-up



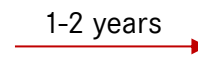
OEM start of development



Joint optimisation



Order intake



OEM start of serial production

Machine modules available in R&D centre

Linear winding



Flyer winding



Concentrated needle winding



Distributed needle winding



Continuous Hairpin



Close partnership with blue chip customers enabling Aumann's e-mobility growth

Longstanding customer relationships...

Indicative cumulative orders last 25 years



> € 250m

Relationship since 1990



> € 250m

Relationship since 1999



€ 200-250m

Relationship since 1986

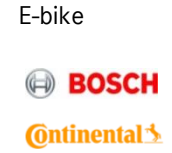


€ 75-100m

Relationship since 1985

...leading to an accelerated e-mobility business

E-mobility segment customers



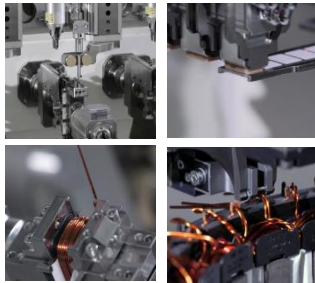
...based on experience in ICE drivetrain, automation and winding for non-automotive customers

Classic segment customers



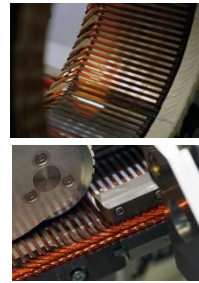
Case study major German OEM: automated e-drivetrain production

E-drivetrain platform (current)



- ▶ Stator production lines
- ▶ Hybrid module production lines
- ▶ Fully automated process

E-drivetrain platform (new)



- ▶ Joint R&D with OEM
- ▶ Patented new winding technology
- ▶ Stator production lines

E-drivetrain platforms (future)

Pure EV
drivetrain platform

Next generation of
plug-in hybrid
drivetrain platform

Mild hybrid
drivetrain platform

● ————— Total volume of orders: approx. € 40m over 3 years ————— ●



Aumann as valued R&D partner providing winding and automation for mass production of e-drivetrains

Broad coverage of relevant landmark e-mobility projects

Rotor production lines



▶ Early large scale EV platform in Europe
Aumann patent increased efficiency

Segmented stator production lines



▶ Aumann R&D/pilot production for premium OEM
Order for production line from Tier-1

E-bike motor production machines



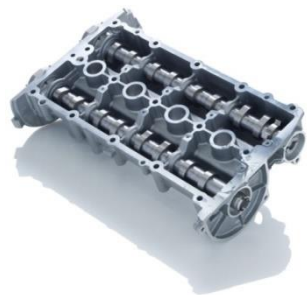
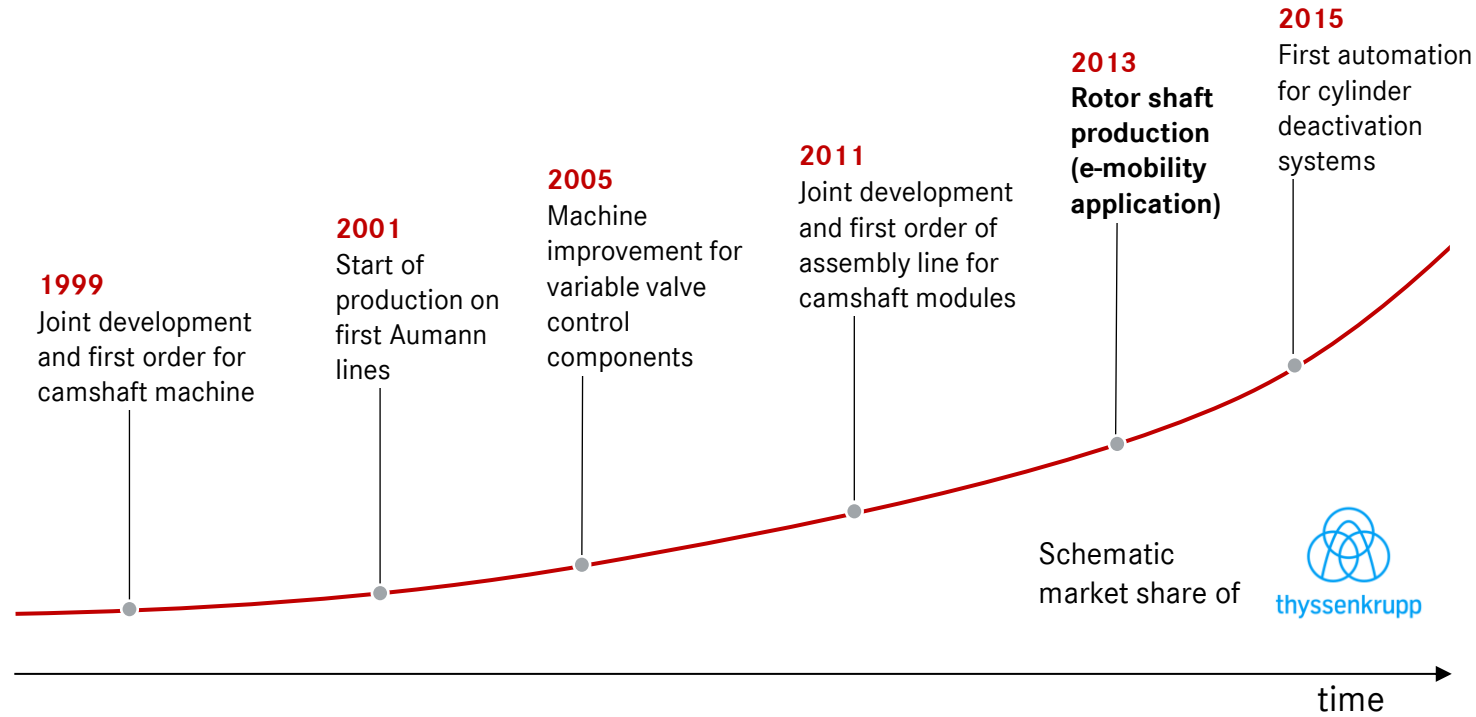
▶ Early large scale e-mobility application
Enabled customer's market leadership

Battery module assembly lines



▶ Aumann with proven battery module experience
High interest after Tesla's Grohmann acquisition

Case Study: Aumann enabled the growth of the market leader in built camshafts



Aumann as provider of innovative technology
...with joint development towards new applications
...leveraging ICE technology for e-mobility application

Acceleration in order intake and order backlog...

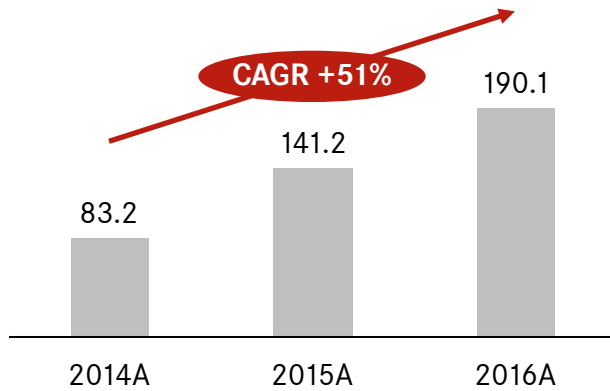
Group order intake¹⁾
in € million

Book-to-bill ratio²⁾

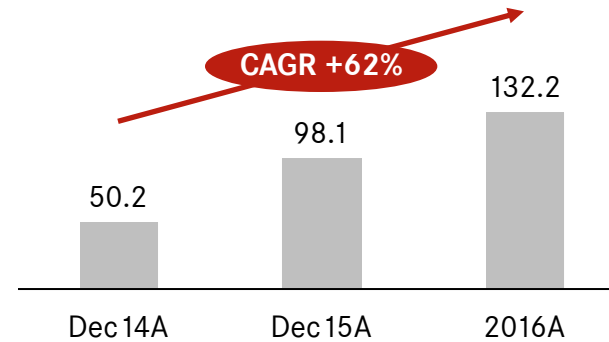
0.86x

1.16x

1.22x

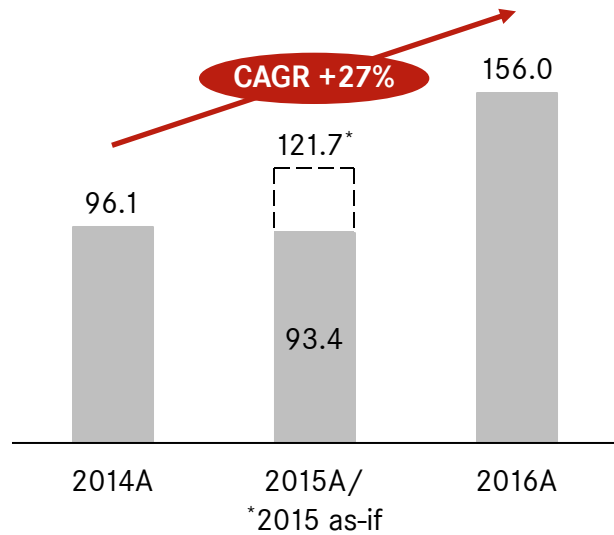


Group order backlog
in € million

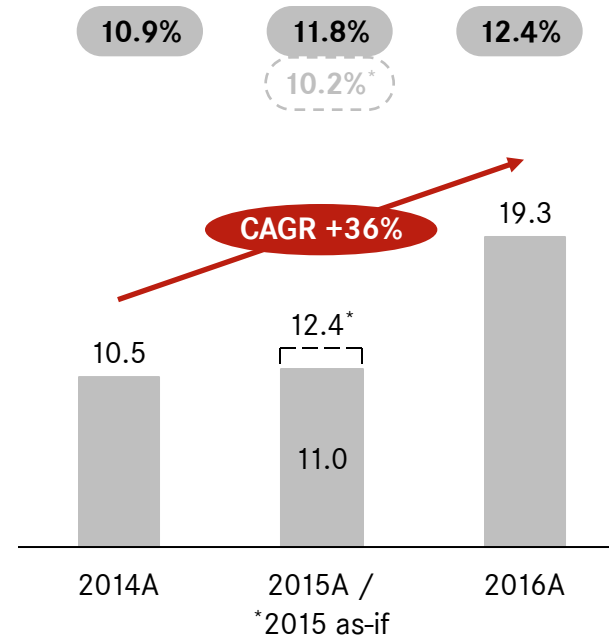


...drives strong revenue growth and increasing profitability

Total revenues
in € million

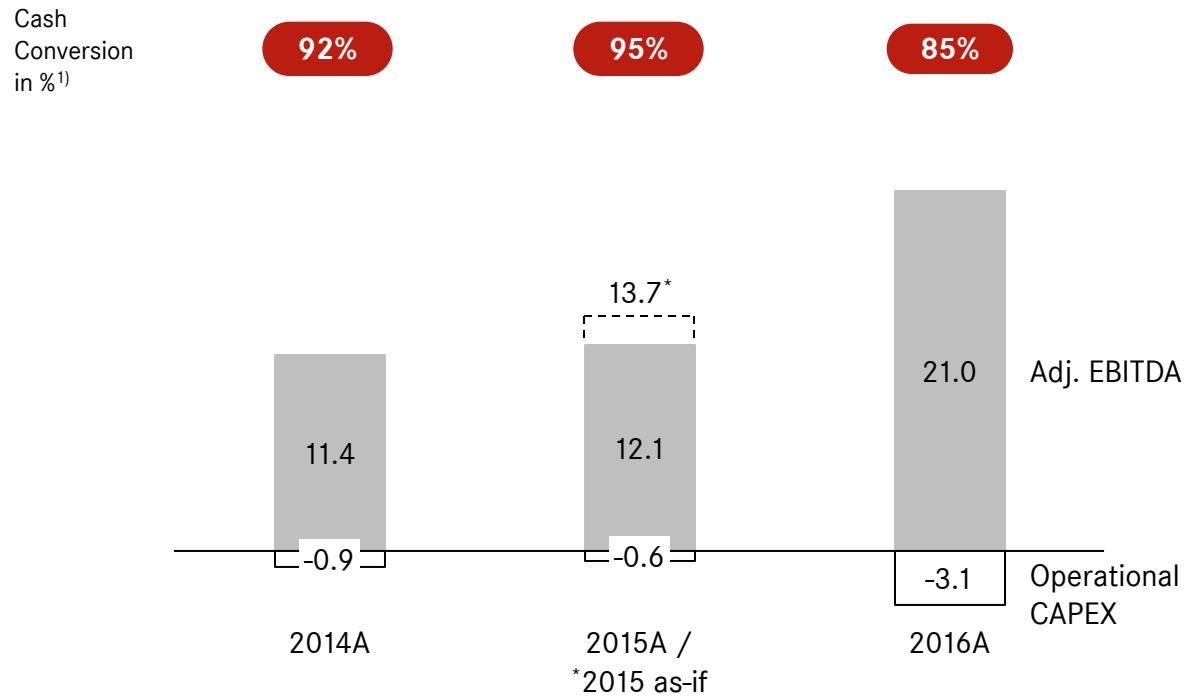


Adjusted EBIT
in € million and in % of revenue



Asset light business model with strong cash conversion

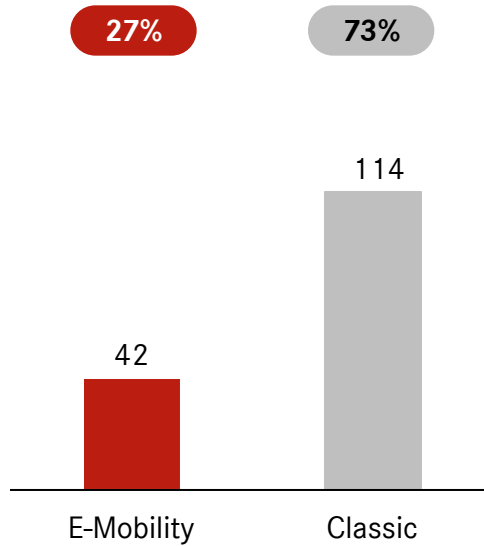
Adjusted EBITDA and operational CAPEX
in € million



E-Mobility with superior margins already accounting for 27% of revenues

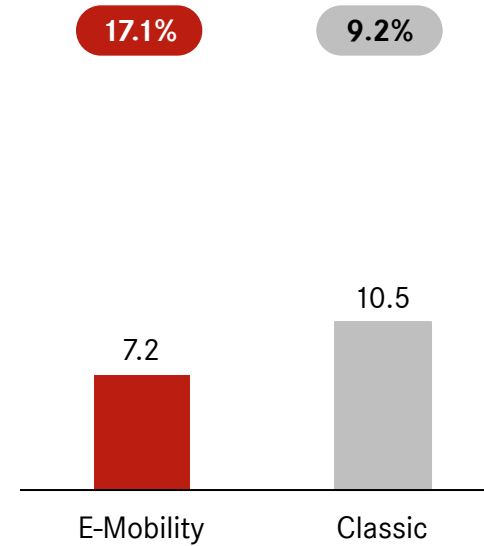
Segment revenue 2016A
in € million

% of
total
revenue



Segment EBIT 2016A
in € million

EBIT-
Margin
in % of
revenue



Accelerating order intake supports future sales growth

Sales Pipeline (selection)



E-Mobility

Hybrid e-motor stator	Automotive OEM A
Mild hybrid motor for hybridisation of fleet	Automotive OEM A
Battery module and cluster production	Automotive OEM B
Pure EV e-motor rotor / stator	Automotive OEM B
Pure EV e-motor stator	Automotive OEM C
Hybrid gearbox manufacturing	Automotive Tier-1 A
Battery bay for electric car	Automotive Tier-1 B
Assembly for hybrid stator	Automotive Tier-1 C
Hybrid e-motor stator	Automotive Tier-1 D

Classic

Automated winding production modules	Silicon Valley company
Fully automated manufacturing of component	German household appliance manufacturer

Roadmap to market leadership in modular machines for e-mobility



Ramp-up capacity

- ▶ Expansion of production sites
- ▶ IT hardware, licenses and projects



Expand globally

- ▶ Build up of USA/NAFTA activities
- ▶ Expand facility in China
- ▶ Further regional growth



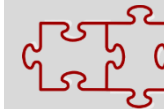
Increase service share

- ▶ Build up R&D centre
- ▶ Build up service hubs
- ▶ Build up service sales teams



Maintain technological leadership

- ▶ Increase R&D activity
- ▶ Develop new winding technologies
- ▶ Build up know-how in peripheral processes



Strategic M&A



No matter who will prevail in the e-mobility revolution, they will need Aumann's machines for **electric drivetrain manufacturing**

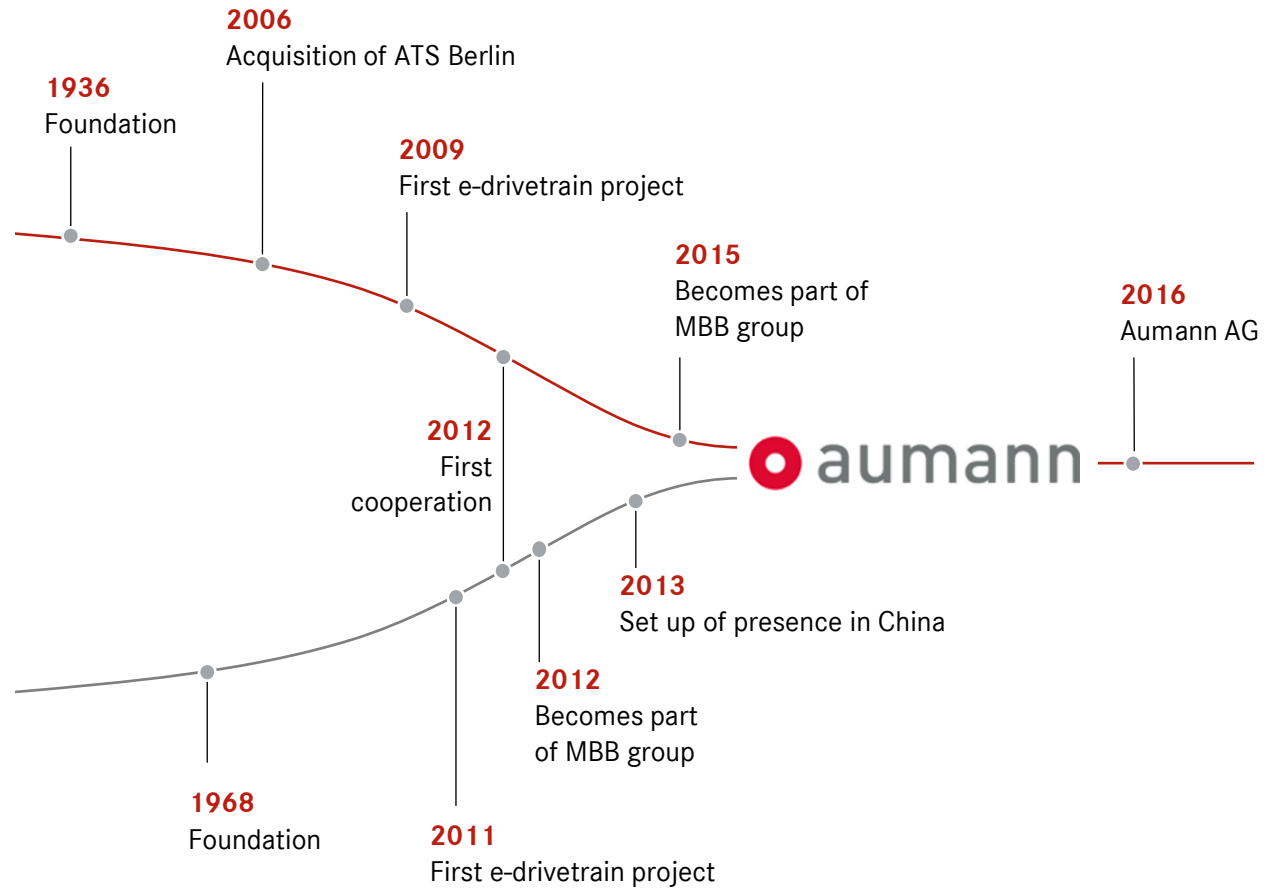
www.aumann-ag.com

Appendix

Aumann is well positioned to become e-mobility champion



- ▶ E-mobility focus
- ▶ E-mobility references
- ▶ Winding technology



- ▶ Automation know-how and production scalability
- ▶ E-mobility experience and process excellence
- ▶ OEM relationships

Supervisory board



Gert-Maria Freimuth

Chairman of the Board

Gert-Maria Freimuth is the chairman of the board of Aumann AG. He is a **founding shareholder of MBB SE**, Aumann's majority shareholder. He studied economics and Christian social ethics at the University of Münster.



Christoph Weigler

Vice Chairman of the Board

Christoph Weigler is the Vice Chairman of the Board of Aumann AG. He is **General Manager at UBER Germany**. After his studies in Germany, China and the USA, Mr. Weigler worked for various consulting firms on projects in the automotive industry.

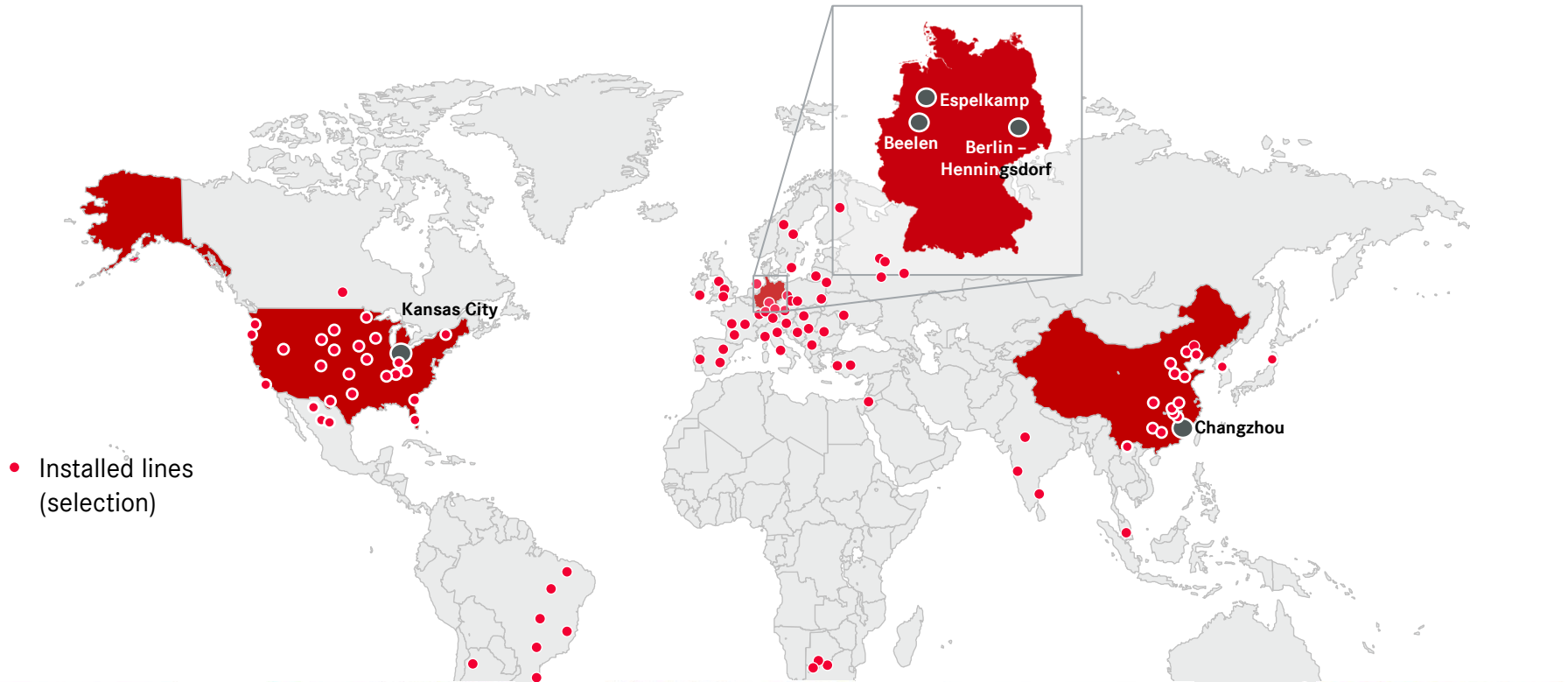


Klaus Seidel

Member of the Board

Klaus Seidel is Member of the Board of Aumann AG. He is **Chief Technical Officer of MBB SE** and is responsible for several MBB subsidiaries as well as the Processes and IT division. After studying business administration, he worked for Microsoft Germany until 1999.

Global capabilities and client locations



Espelkamp (Germany)

- ▶ 5k sqm shop floor
- ▶ 2k sqm office space



Beelen (Germany)

- ▶ 22k sqm shop floor
- ▶ 3k sqm office space



Berlin-Henningsdorf (Germany)

- ▶ 2k sqm shop floor
- ▶ 1k sqm office space



Changzhou (China)

- ▶ 3k sqm shop floor
- ▶ 0.8k sqm office



Kansas City (USA)

- ▶ Sales and Service

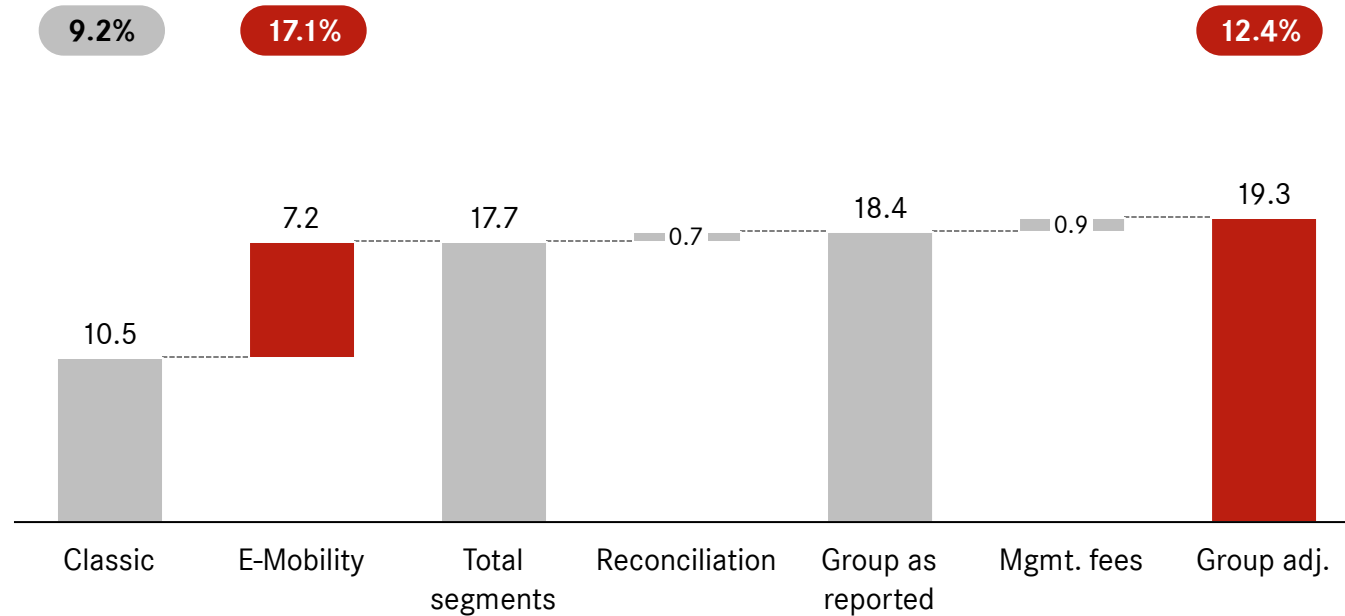
Financial overview

In € 000	2014A	2015A	2015A as-if	2016A
Total revenues	96,144	93,415	121,696	156,016
EBITDA (as reported)	10,660	11,242	12,820	20,146
EBIT (as reported)	9,743	10,190	11,461	18,448
Adjustments	780	824	901	875
EBIT (adjusted)	10,523	11,014	12,362	19,323
EBT (as reported)	9,149	9,876	10,986	17,858
Net income before minorities (as reported)¹⁾	6,145	7,167	7,889	12,791
Order intake	83,157	141,156		190,110
Order backlog	50,238	98,098		132,192
Equity	27,655	34,182		41,437
<i>Equity ratio</i>	<i>31.6%</i>	<i>32.3%</i>		<i>31.4%</i>
Net cash	30,574	18,951		26,462

Only management fees adjusted

EBIT reconciliation 2016A
in € million

EBIT-margin
in % of
revenue



- ▶ Reconciliation: Not all items of other operating income and expenses can be allocated to the segments
- ▶ Management fees to shareholder mainly for preparation of IPO

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