



## Aumann AG

A global leader in modular machines for E-mobility

May 2018

# Aumann at a glance

## Right business

Fully automated E-drivetrain production lines ...



...based on modular machines and exclusive motor winding technologies...



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



## Right capabilities

**80** years of winding experience

**30** years partner of automotive OEMs

~ **1,200**<sup>1)</sup> highly skilled professionals

**6** locations in Germany, China and USA

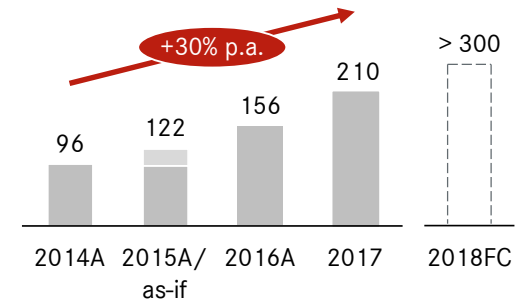
~ **45,000** sqm of shop floor

## Select customers



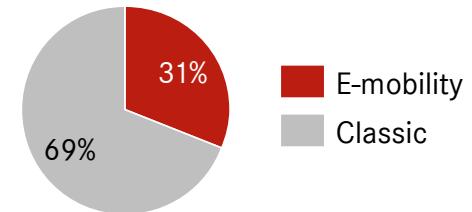
## Strong growth

Revenue<sup>2)</sup>  
in million €



## Segments

As of 31 March 2018



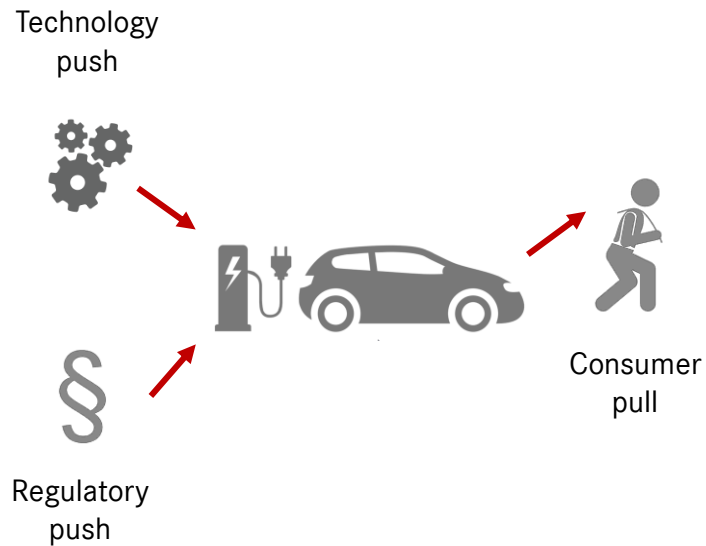
1) Headcount incl. trainees and temporary workers as of March 2018 2) 2015 shown as as-if the acquired entities had been part of the group for the full year

## Key highlights of Aumann

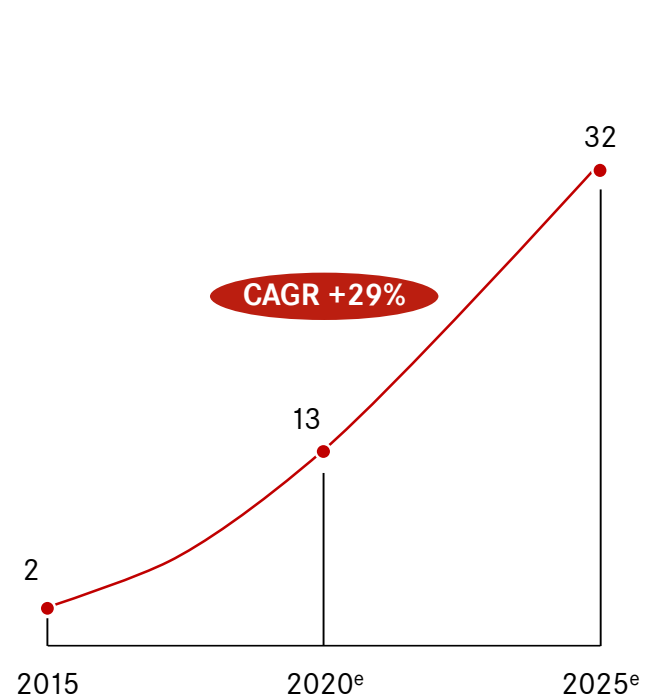
- 1** **Strong growth** due to **E-mobility revolution** in the automotive industry
- 2** Exclusive **winding technologies** in combination with deep **automation know-how**
- 3** Decades of **automotive experience** and trusted **relationships with OEMs**
- 4** **Profitable** and **asset-light growth** with good visibility
- 5** Clear **expansion strategy** with possibility of add-on acquisitions

# An E-mobility revolution is underway

Three factors put electric vehicles on the road



Electric vehicles\*  
Global production in million vehicles per year










\* Electric vehicles including hybrids; Source: IHS

E-mobility has gained further traction resulting in strong demand for Aumann solutions

Strong momentum from OEMs

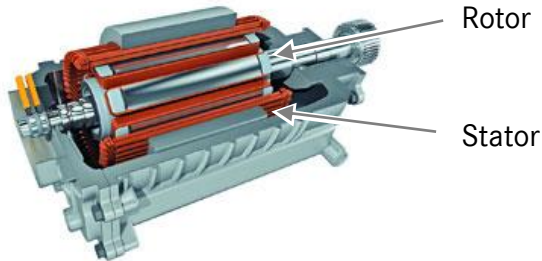
Typical design and order process for Aumann

- 
**25 electrified** and **12 all-electric models** by 2025
- 
**All car models** to be electric or hybrid from 2019
- 
**All car models** electrified by 2022
- 
**80 electric models** by 2025 and **€34 billion** Capex
- 
**24 electrified** and **16 all-electric models** by 2020
- 
**8 plug-in** or **all-electric models** by 2022
- 
 At least **20 all-electric models** by 2023



Aumann automates the production of electric drivetrains with focus on the electric motor

Electric motor



*Winding of stator and/or rotor*

Energy storage /conversion



*Assembly of modules, packs, fuel cells*

Electric drivetrain



Aumann offers highly automated production technologies for traction motors

Thin wire

Thick/flat wire

**Conventional  
Insert-in**



Indirect Winding

Lower automation

High stress on wire

Random wire positions

**Distributed  
Needle Winding**



Direct Winding

High automation

Low stress on wire

Defined wire positions

 aumann  
exclusive

**Conventional  
Hairpin**



Assembly

High automation

Many welding points

Larger copper heads

 aumann

**Continuous  
Hairpin**



Winding / Assembly

High automation

No welding points

Smaller copper heads

 aumann  
exclusive

Aumann has a unique combination of capabilities, industry experience and corporate setup

**Technological leadership**



Exclusive winding technologies

Highest degree of automation

Complete production lines

**E-mobility focus**



Decades of automotive focus

Relationships to major OEMs / Tier-1s

Technologies for E-drivetrain

**Corporate setup and size**

**> 300m**

> €300 million revenue 2018FC

6 locations in Europe, China, USA

Experience with large order volumes

Global leadership in highly automated production lines for E-mobility



# The acquisition of USK in Q4 2017 has further improved Aumann's position

## Why Aumann acquired USK in Q4 2017

**Engineering capacity**



**Automotive experience**



**Technological capabilities**



## Where Aumann and USK stand in Q1 2018

### Capacity balancing between sites

- First orders shifted to USK in 2017
- Partial retargeting of sales engineers



### E-mobility growth at USK

- First traction motor order at USK in Q1
- High interest in USK fuel cell technology



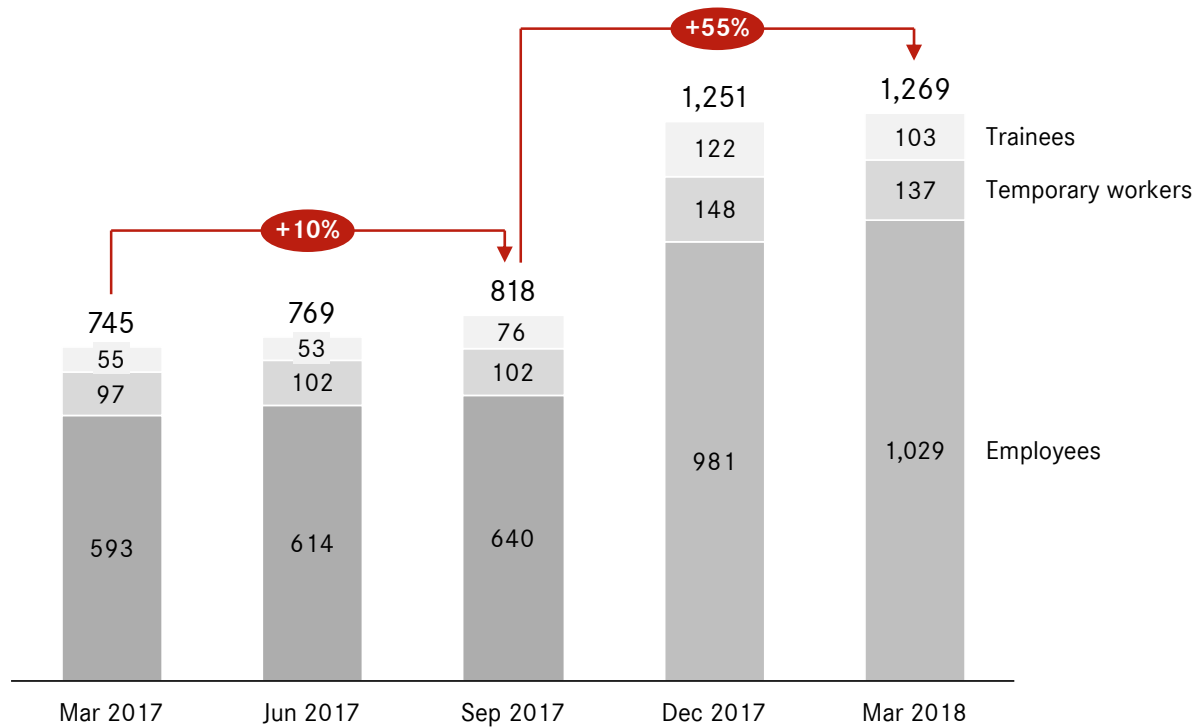
### Ongoing integration and expansion

- Step-wise integration of processes and IT
- New plans for expansion at USK site



# USK drastically increased Aumann's engineering and delivery capacity

Organic and anorganic capacity ramp  
Headcount



# Close partnerships with blue chip customers enable Aumann's E-mobility growth

Longstanding customer relationships...

Indicative cumulative orders last 25 years



...leading to an accelerated E-mobility business

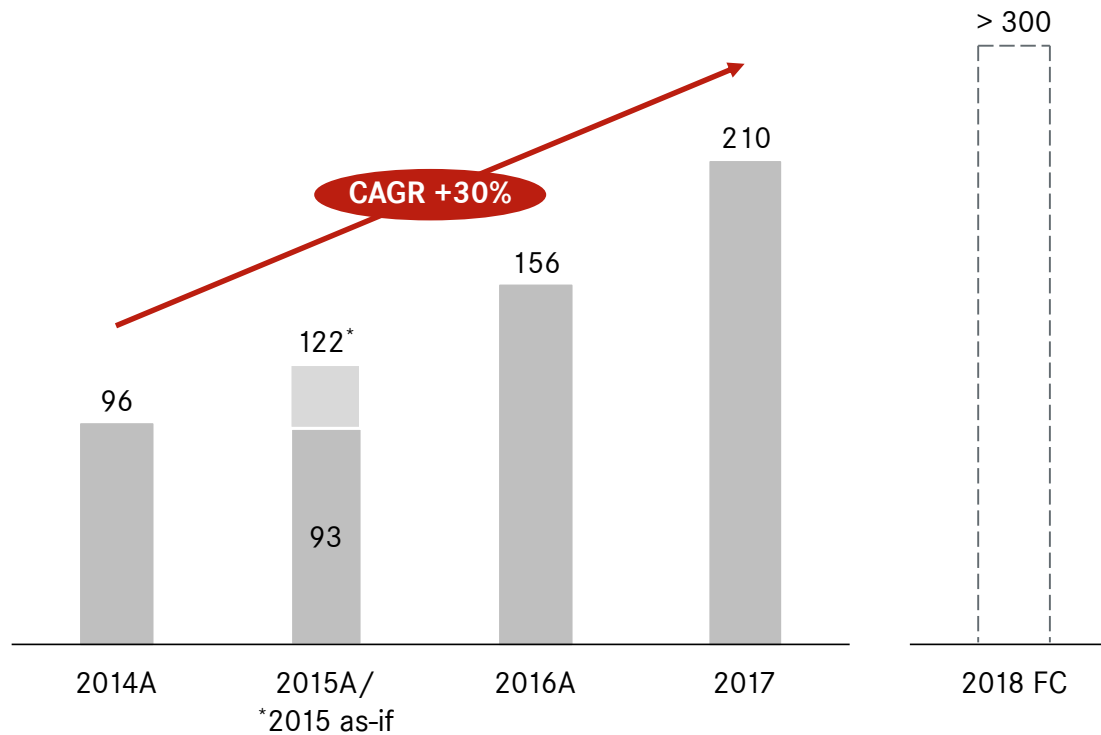


...based on experience in ICE drivetrain, automation and winding for non-automotive customers

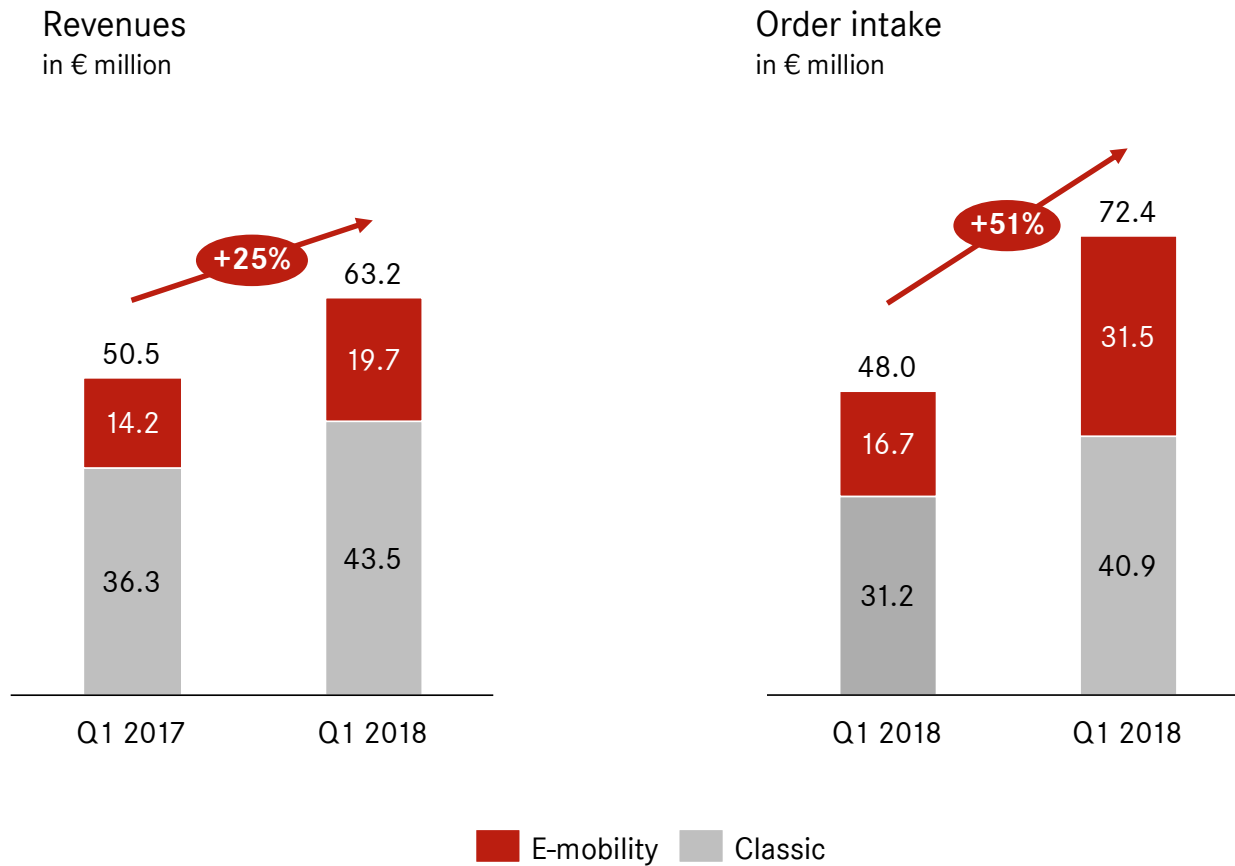


Growth is our priority for 2018 and we aim at revenues of more than €300 million

Total revenues  
in € million

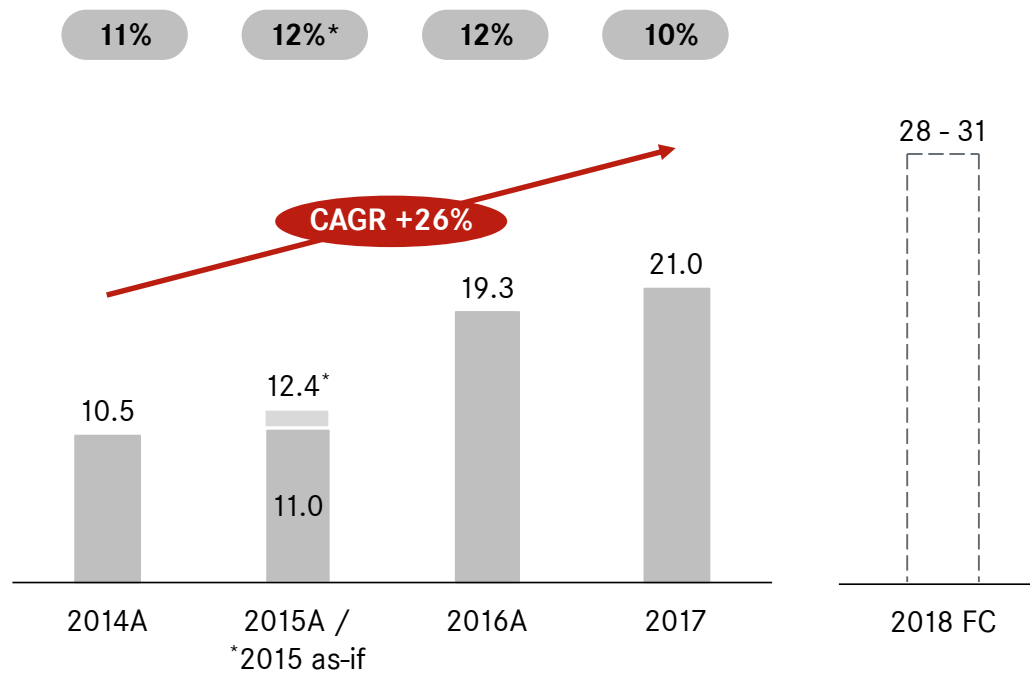


In the first quarter 2018, Aumann grew both revenues and order intake significantly



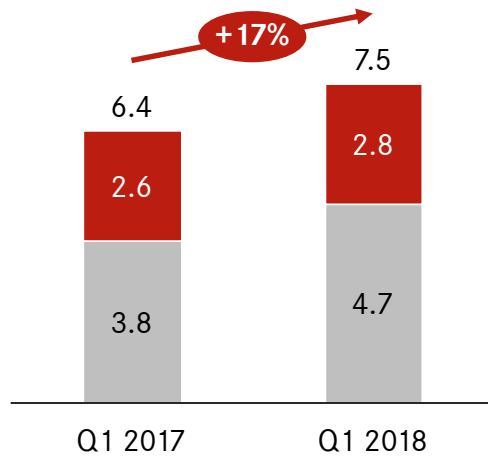
Due to capacity bottlenecks, EBIT margin was lower in the second half of 2017

Adjusted EBIT  
in € million and in % of revenues

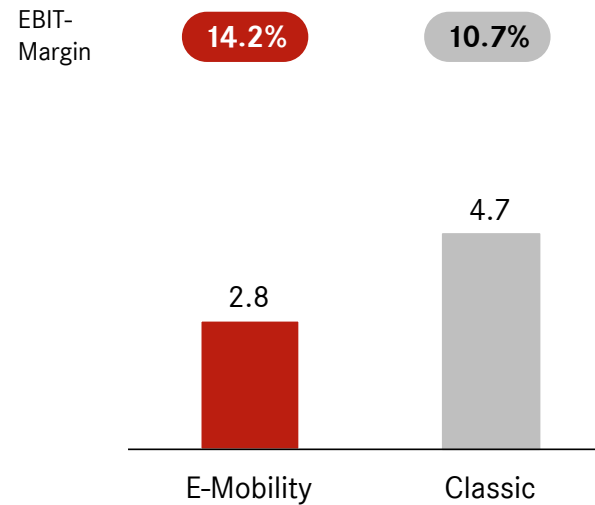


In the first quarter 2018, profitability has clearly recovered as de-bottlenecking progresses

Adj. EBIT  
in € million



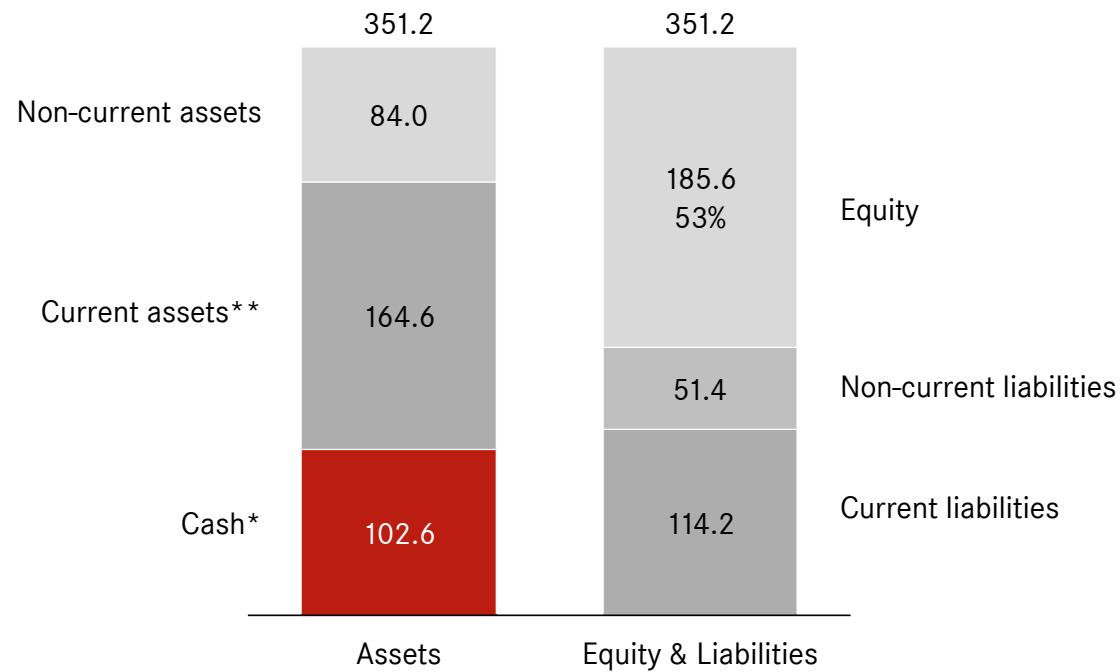
Segment EBIT Q1 2018  
in € million



 E-mobility  Classic

# A strong balance sheet allows further investments into Aumann's growth

Balance sheet 31 March 2018  
in € million



\* Liquidity & securities

\*\* without cash



# We have made significant progress on strategic roadmap to market leadership



## Ramp-up capacity

- ▶ Grow skilled work force
- ▶ Expand shop floor
- ▶ IT hardware, licenses and projects

+ 78% ✓  
 +13,000 m<sup>2</sup> ✓  
 Ongoing



## Expand globally

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

Ongoing  
 Ongoing  
 New customers ✓



## Increase service share

- ▶ Build up new R&D centres
- ▶ Expand scope of R&D centres
- ▶ Build up service hubs

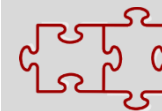
Ongoing  
 New modules ✓  
 Ongoing



## Maintain technological leadership

- ▶ Increase R&D activity
- ▶ Develop new winding technologies
- ▶ Additional E-mobility technologies

Yes ✓  
 Ongoing  
 Fuel cell ✓



## Strategic M&A

Acquisition of  
**USK** ✓  
 Ongoing



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

[www.aumann-ag.com](http://www.aumann-ag.com)

## Financial Calendar

Commerzbank Conference (NYC and Boston, USA)	16 May 2018
Hauck & Aufhäuser Stock Picker Summit (St. Tropez, France)	17 May 2018
Berenberg USA Conference (Tarrytown, NY, USA)	23 May 2018
<b>Half-Year Financial Report 2018</b>	<b>16 August 2018</b>
Berenberg/GS Corporate Conference (Munich, Germany)	25 September 2018
<b>Quarterly Report Q3/2018</b>	<b>16 November 2018</b>
Deutsches Eigenkapitalforum (Frankfurt, Germany)	26 November 2018
Berenberg European Conference (Pennyhill, UK)	4 December 2018
<b>End of fiscal year</b>	<b>31 December 2018</b>

## Contact

Aumann AG  
Dieselstr. 6  
48361 Beelen  
Germany  
Tel.: +49 2586 888 7800  
Fax: +49 2586 888 7805  
[www.aumann-ag.com](http://www.aumann-ag.com)  
[info@aummann-ag.com](mailto:info@aummann-ag.com)

## Appendix

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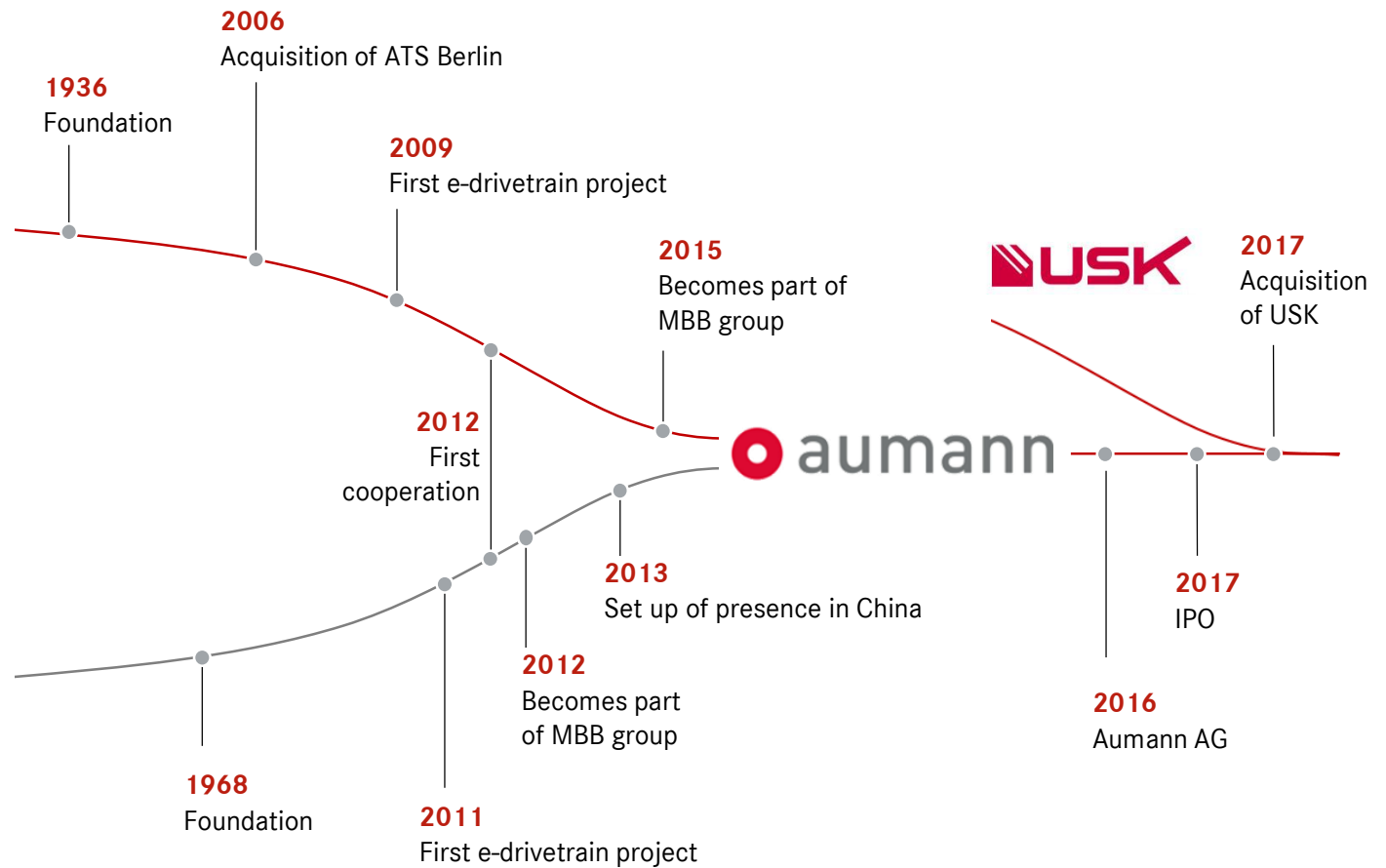
# The historical roots of Aumann



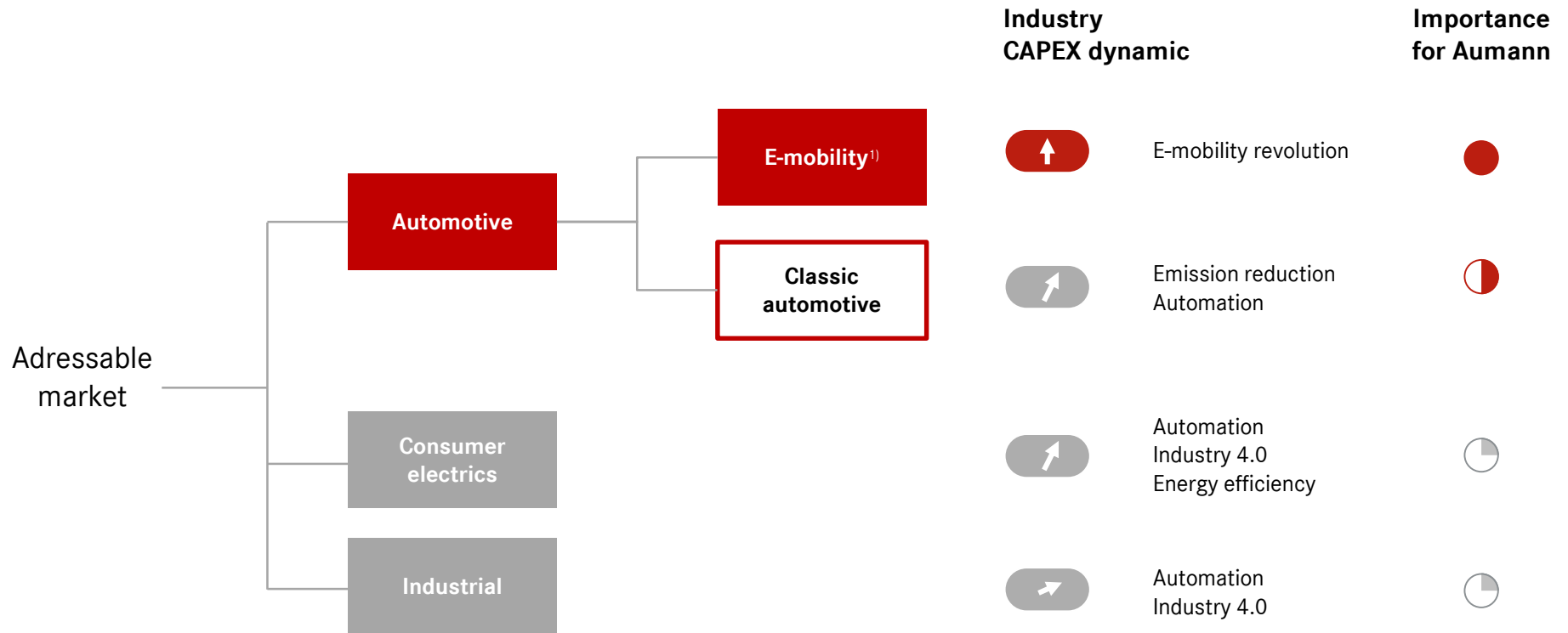
- ▶ E-mobility focus
- ▶ E-mobility references
- ▶ Winding technology



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



# Key markets and growth dynamics



Source: Company information, 1) we also include non-automotive e-mobility applications (like e-bikes) in this area

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