



Aumann AG

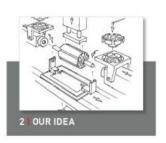
A global leader in modular machines for E-mobility

Deutsches Eigenkapitalforum Frankfurt | November 2018



# Automated manufacturing equipment for various applications















### Aumann at a glance

#### **Right business**

Fully automated E-mobility 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

**c. 1,280**<sup>1)</sup> highly skilled professionals

6 locations in Germany, China and USA

c. 45,000 sqm of shop floor

#### Strong growth

Revenue<sup>2)</sup> in million €



#### Select customers













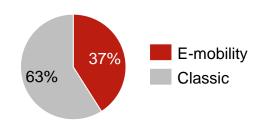


**BorgWarner** 





#### Segments As of 30 September 2018





## Key highlights of Aumann

- Strong growth due to E-mobility revolution in the automotive industry
- 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
- Clear expansion strategy with possibility of add-on acquisitions



## An E-mobility revolution is underway

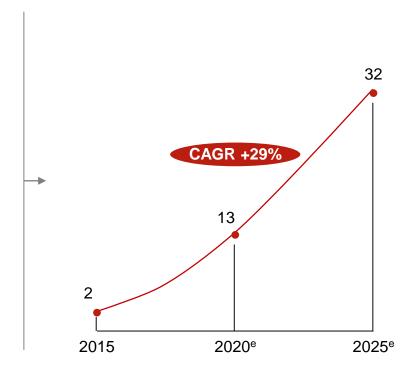
Three factors put electric vehicles on the road

Technology push

Consumer pull

Regulatory push

Electric vehicles\*
Global production in million vehicles per year





## Increasingly strong impulses towards E-mobility

#### Strong momentum from OEMs



25 electrified and 12 all-electric models by 2025



All car models to be electric or hybrid from 2019



14 all-electric models by 2025



12 electric models by 2022



24 electrified and 16 all-electric models by 2020



8 plug-in or all-electric models by 2022



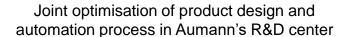
20 electrified and hybrid models by 2020



80 electric models by 2025 and €44 billion Capex\*

#### Typical design and order process for Aumann

OEM develops product design





Customer places order

Start of production (SOP)



## Aumann automates the manufacturing of E-mobility production

#### Electric motor/traction module



Winding of stator and/or rotor

#### Energy storage/conversion



Assembly of modules, packs, fuel cells

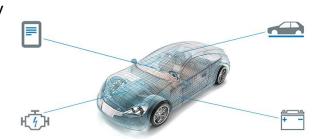
#### Electrification



Winding/assembly of E-auxiliary systems

#### E-mobility







## Aumann – serving the automobile trends of tomorrow

Autonomous driving	E-on-demand	Safety	Comfort
	<b>→</b>		
E-steering system	E-water pump	E-brake assistant	E-seat adjustment
Parking/wheel sensor	E-immobilizer	E-AB system	E-aircondition
Radar sensor	E-turbo	E-seat belt	E-suspension



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

Technological leadership	E-mobility focus	Corporate setup and size
	<b>→</b>	> 300m
Exclusive winding technologies	Decades of automotive focus	> €300 million revenue 2018FC
Highest degree of automation	Relationships to major OEMs/Tier-1s	6 locations in Europe, China, USA
Complete production lines	Technologies for E-drivetrain	Experience with large order volumes

Global leadership in highly automated production lines for E-mobility





## USK as integral part of Aumann right from the start

2017



#### **Engineering & delivering capacities**

€70 million turnover



> 370 employees

#### **Automotive experience**

OEMs/Tier-1s

Automator



#### **Technology**

Build-to-print competence

Sensors and fuel cells



2018



#### Capacity balancing between sites

First orders shifted to USK in 2017

Partial retargeting of sales engineers

#### E-mobility growth at USK

Increase of E-mobility projects

#### **New technologies**

High interest in production of USK fuel cell assembly technology

2019



#### Finalization of integration

Step-wise integration of processes and IT

#### "One Aumann" strategy

Full rebranding to "Aumann"

Finalization of integration processes

#### **Further expansion**

Expansion plans for assembly hall





## Qualified employees are Aumann's key to success

#### Gaining talents



Attractiveness of e-mobility

Internal headhunters

Regional cooperations and employee exchanges

#### Training successfully



66% premature examinations

Average grade above 83%

100% takeover rate every year

#### Retaining the best



Rewarding performance

Attractive working time models

International career opportunities



## 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





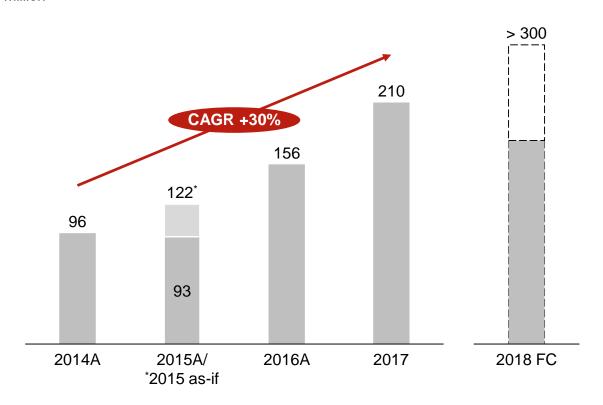
...based on experience in ICE drivetrain, automation and winding for non-automotive customers





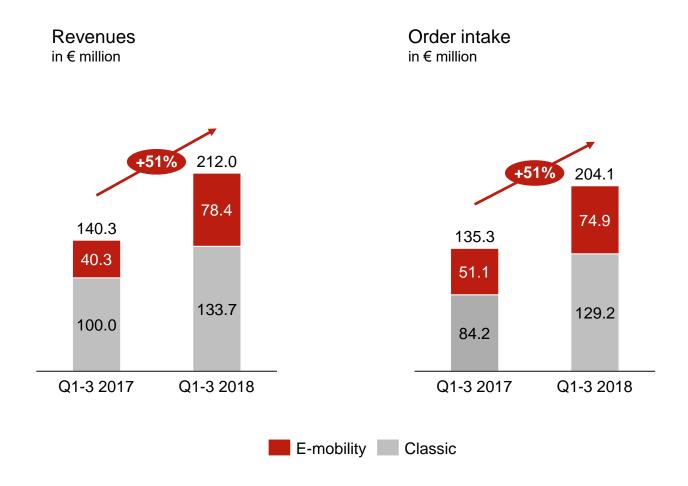
## On track for growth in 2018

Total revenues in € million



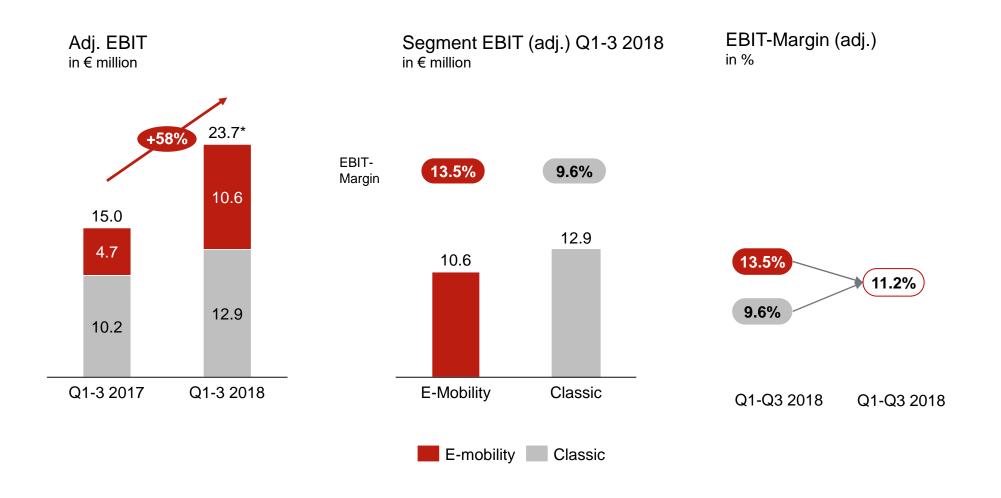


## In the first nine months 2018, Aumann grew at all levels





## In the first nine months 2018, profitability has further increased

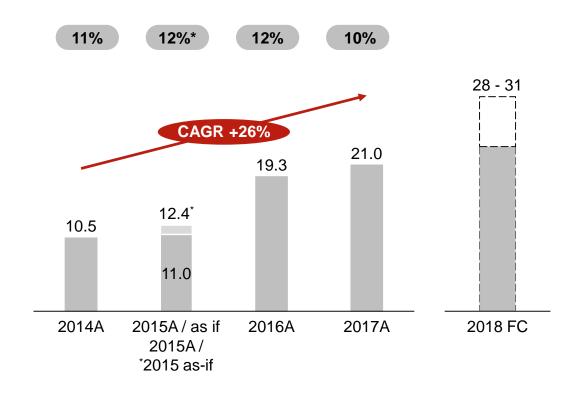


<sup>\*</sup> Not shown: €0.2m from adjusted reconciliation



## We are currently on track

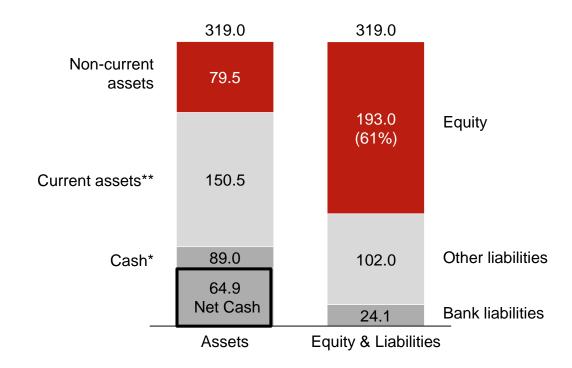
Adjusted EBIT in € million and in % of revenues





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

Balance sheet 30 September 2018 in € million



<sup>\*</sup> Liquidity & securities

\*\* without cash



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



Ramp-up capacity

Grow skilled work force

1,280

Expand shop floor

+13,000 m² ✓

IT hardware, licenses and projects

Build up of USA/NAFTA activities

2019



**Expand** globally

Expand facility in China

Ongoing

Ongoing

Further regional growth

New customers ✓



Increase service share Build up new R&D centres

Expand scope of R&D centres

Ongoing

New modules ✓

Ongoing



M&A

Strategic Ongoing



Maintain technological leadership Increase R&D activity

Build up service hubs

- Develop new winding technologies
- Additional E-mobility technologies

Yes ✓

Ongoing

Fuel cell ✓



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

www.aumann-ag.com



## Financial Calendar

Quarterly Report Q3/2018	16 November 2018
Berenberg European Conference (Pennyhill, UK)	4 December 2018
End of fiscal year	31 December 2018





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## Appendix



### Aumann offers highly automated production technologies for traction motors

#### Thin wire

#### Thick/flat wire

## Conventional Insertion



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



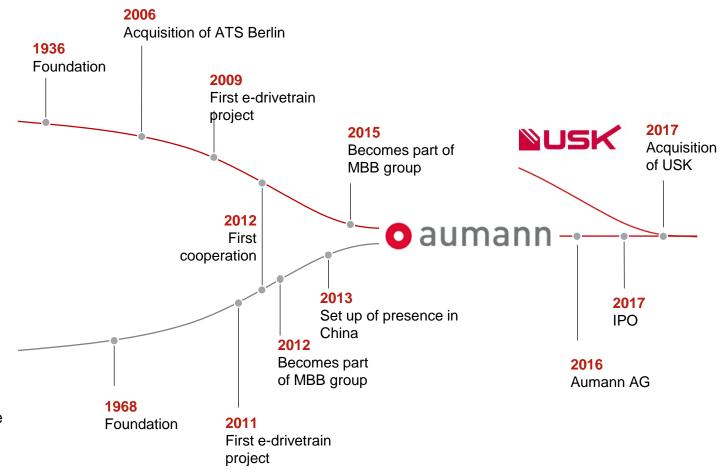
#### The historical roots of Aumann



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

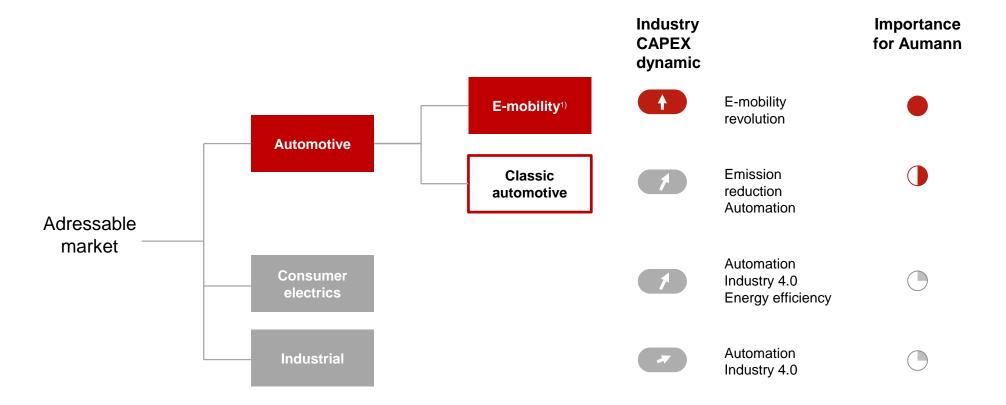


- Automation know-how and production scalability
- E-mobility experience and process excellence
- OEM relationships





## Key markets and growth dynamics





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