



Aumann AG

A global leader in modular machines for E-mobility

Bankhaus Lampe Deutschlandkonferenz

20 April 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

~ **1,100¹⁾** highly skilled professionals

6 locations in Germany, China and USA

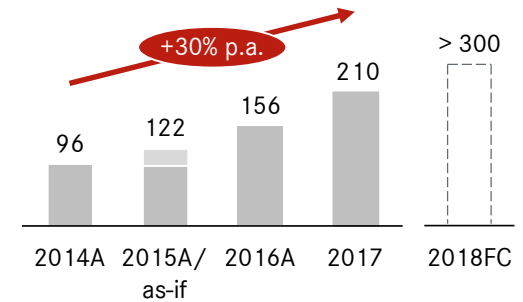
~ **45,000** sqm of shop floor

Select customers



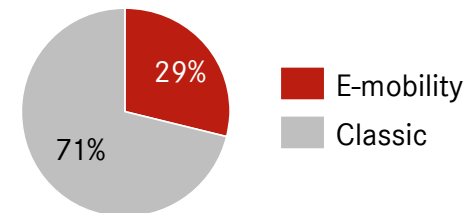
Strong growth

Revenue²⁾
in million €



Segments

As of 31 December 2017

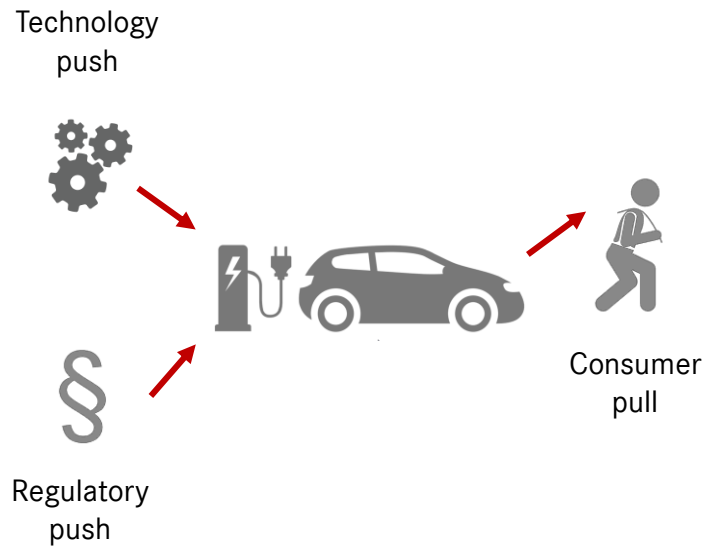


Key highlights of Aumann

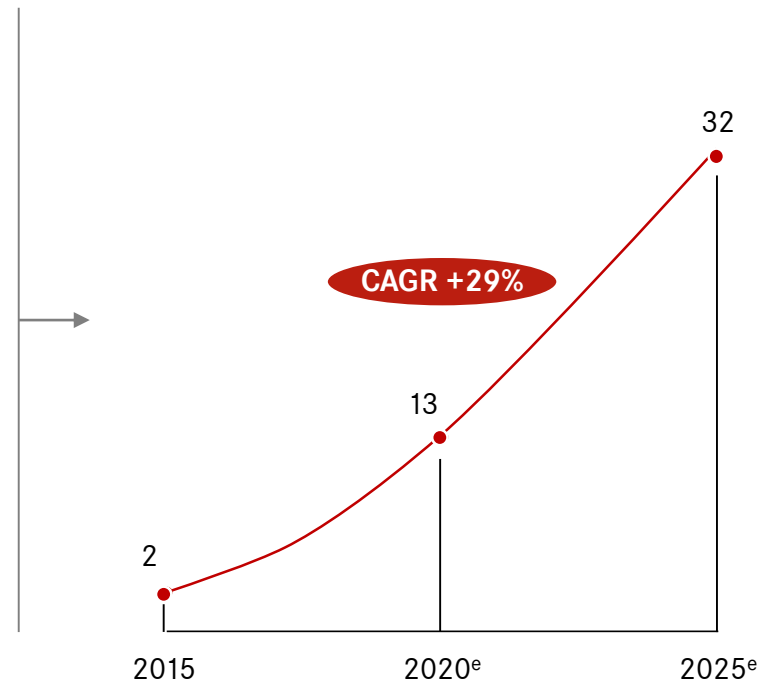
- 1** **Strong growth** due to **E-mobility revolution** in the automotive industry
- 2** Exclusive **winding technologies** in combination with deep **automation know-how**
- 3** Decades of **automotive experience** and trusted **relationships with OEMs**
- 4** **Profitable** and **asset-light growth** 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

Additional momentum from OEMs



All car models to be electric or hybrid from 2019
July 2017



80 electric models by 2025 and **€34 billion** Capex
September 2017 / November 2017



All car models electrified by 2022
September 2017



25 electrified and **12 all-electric models** by 2025
September 2017



All car models electrified from 2020
September 2017



At least **20 all-electric models** by 2023
October 2017

Additional regulatory pressure



Quotas for electric cars from 2019/2020

All automakers producing or importing more than 30,000 cars in China affected

New Electric Vehicles (NEVs) comprising all-electric, plug-in hybrid, hydrogen-powered

10% minimum from 2019

12% minimum from 2020



Ban on non-electric car sales by 2040



Ban on non-electric car sales by 2040



Proposal to further **cut** maximum **CO2 emissions by 30%** from 2021 to 2030

To speed up growth in the E-mobility segment, Aumann acquired automation specialist USK

Acquisition of USK on 18 October 2017



USK is a perfect strategic fit for Aumann

Engineering and delivery capacity

€70m revenues
> 370 skilled employees*



Automotive experience

Long-term relationships with OEMs/Tier-1s
Focus on automated production lines



Technological capabilities

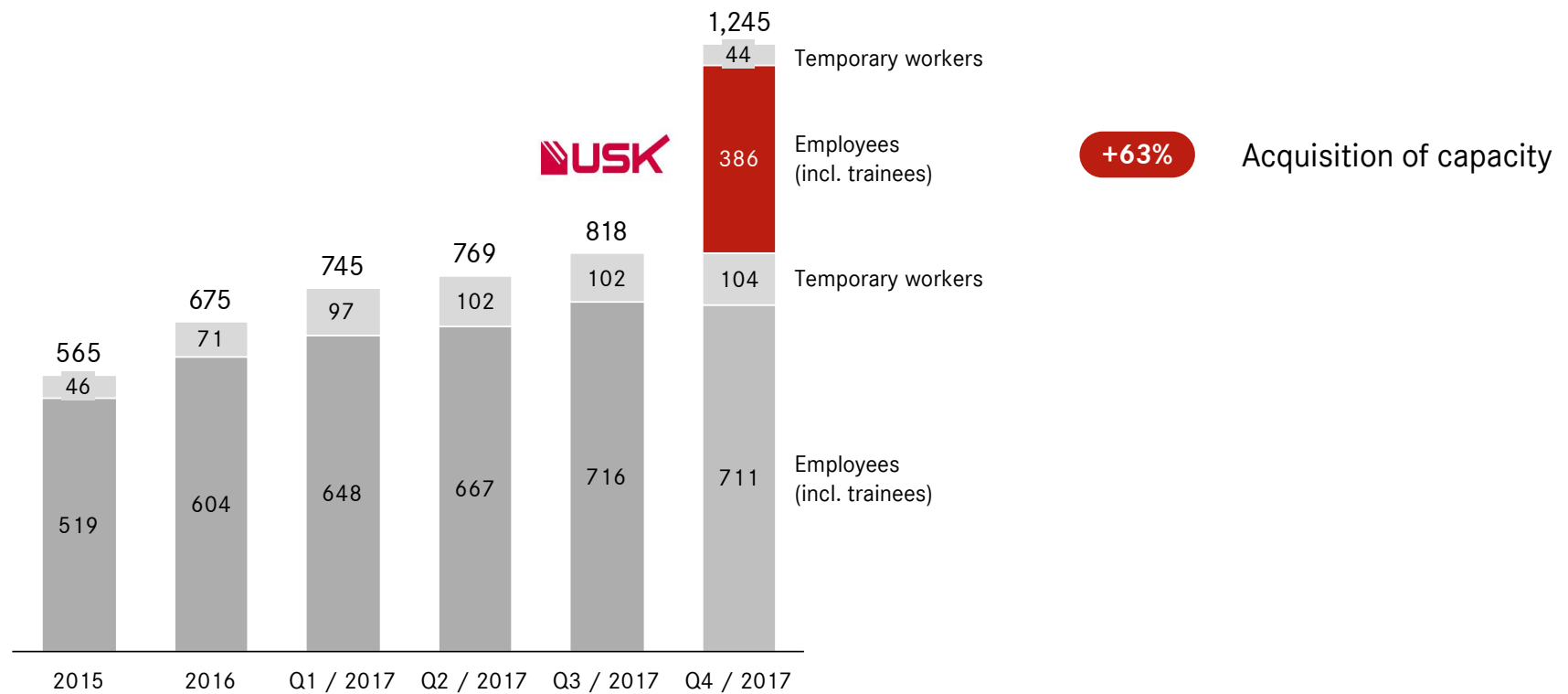
Build-to-print expertise for scaling
Experience with sensors, batteries, fuel cells



* Employees including trainees as of November 2017.

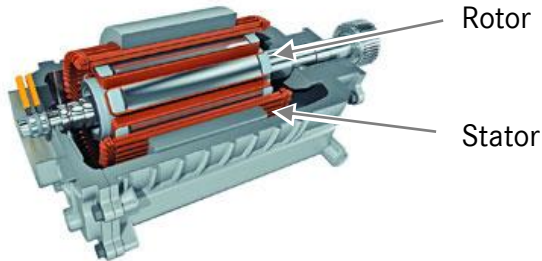
USK drastically increases engineering and delivery capacity of Aumann

Organic and anorganic capacity ramp up 2017
Headcount



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

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



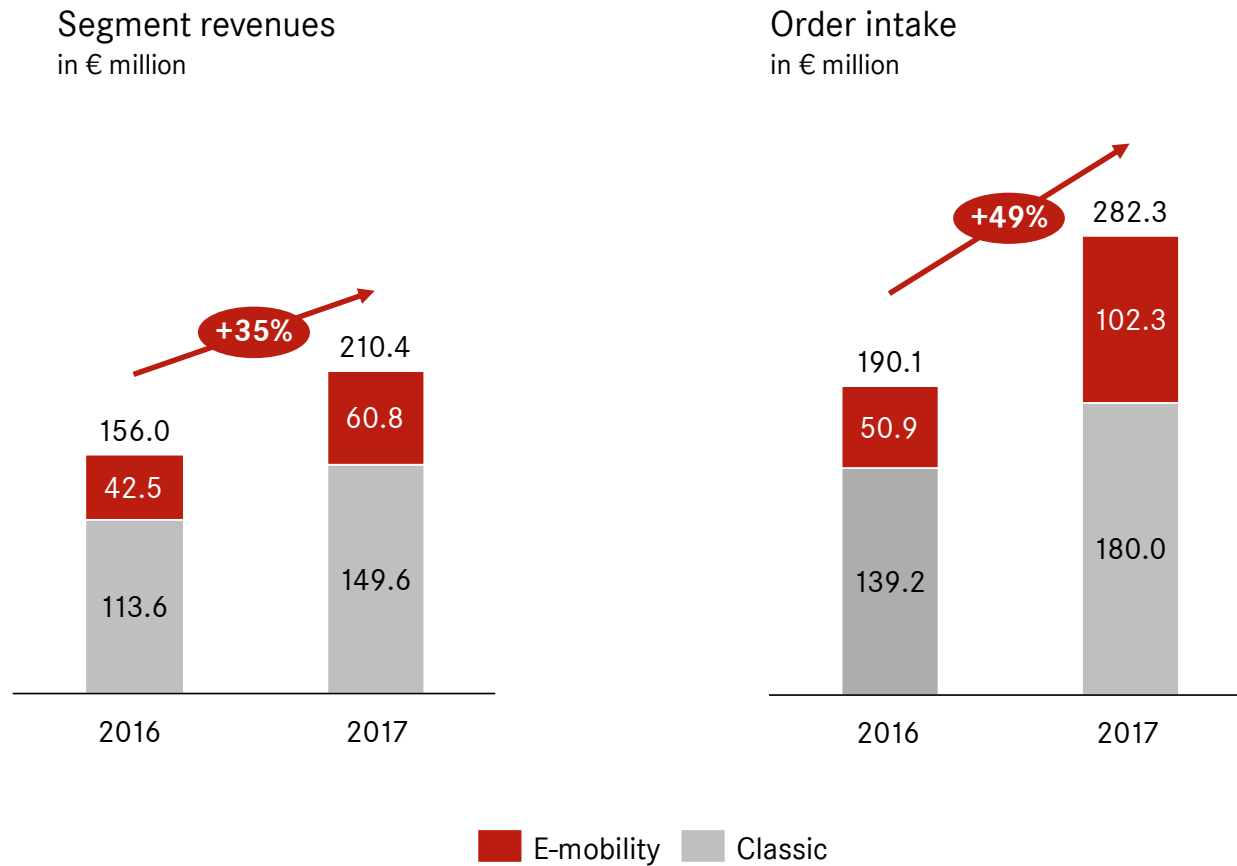
E-mobility segment customers

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



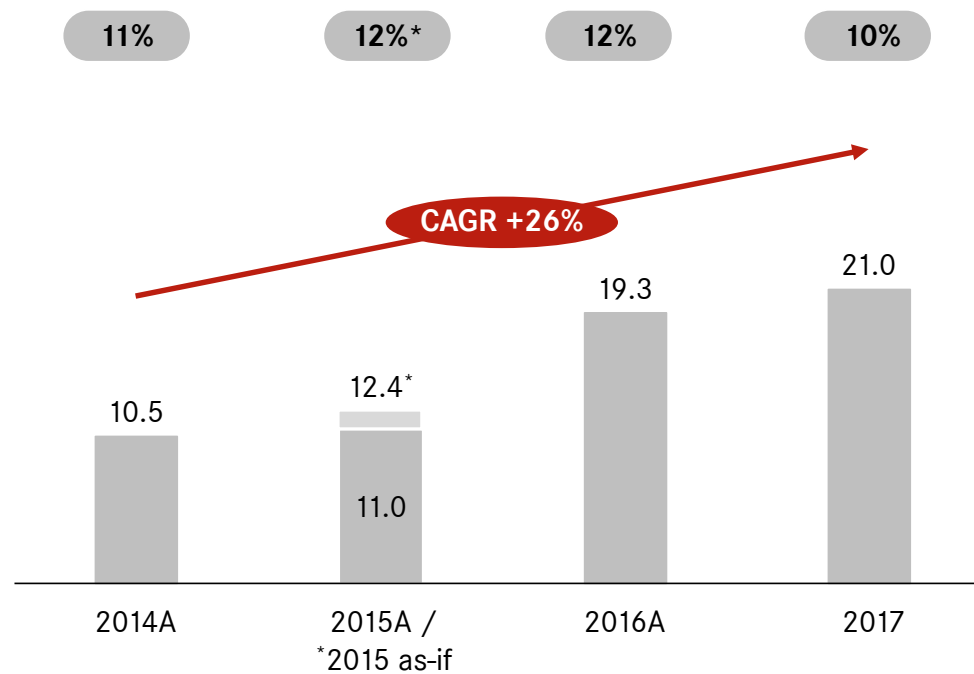
Classic segment customers

In 2017, both revenues and order intake grew significantly



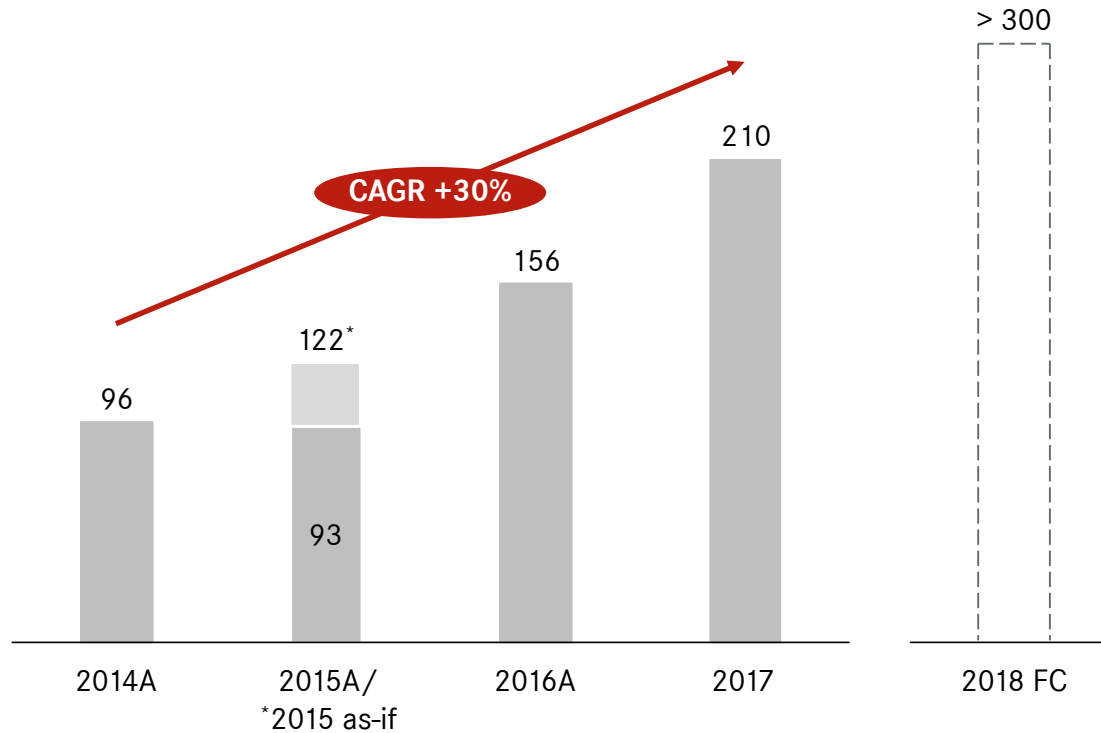
Due to capacity bottlenecks, profitability slightly declined in the second half of 2017

Adjusted EBIT
in € million and in % of revenues



Growth is our priority for 2018 with an expected growth rate of more than 40%

Total revenues
in € million



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 m² ✓
 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

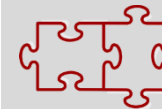
Ongoing
 New modules ✓
 Ongoing



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**

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