



# Aumann AG

A global leader in modular machines for E-mobility

Roadshow Hauck Aufhäuser | 11 February 2022



#### Aumann at a glance



TARGET

Market leader for intelligent electromobility production solutions



### FOCUS

Innovation and development partner of the automotive industry for the transformation towards electromobility



# **KNOW-HOW**

Decades of experience in the realization of individual production solutions for fully automated and high-quality serial production



#### **BUSINESS MODEL**

Development, project planning and implementation of turnkey production lines for the electric powertrain, energy storage and electrification



### Aumann drives the E-mobility transformation

#### Right strategy

Fully automated E-mobility production lines ...



... based on modular machines ...





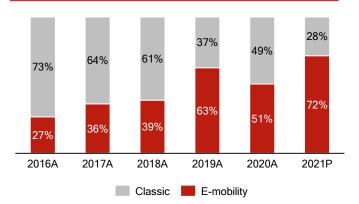
... leveraging know-how from Aumann's Classic segment



#### **Global customers**

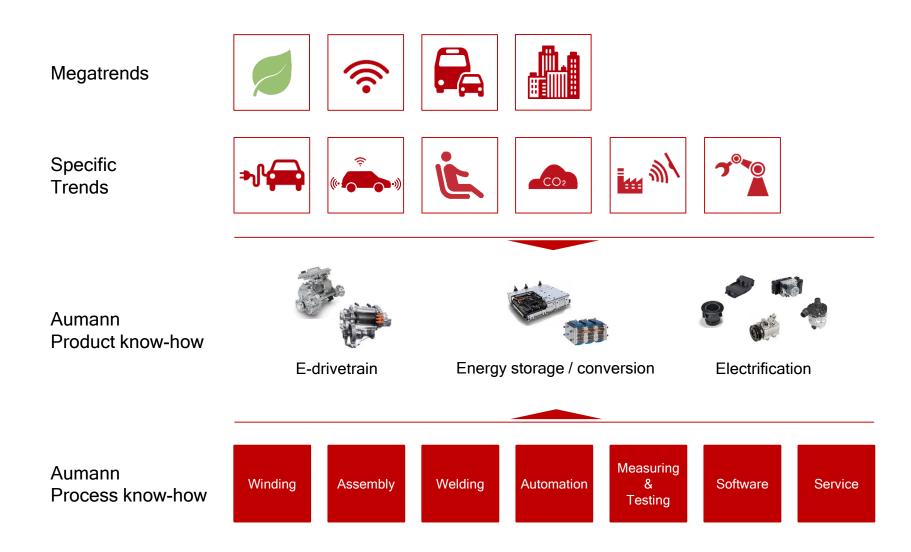


#### **Business transformation\***





# Strategic focus based on megatrends





## Three key areas contribute to E-mobility growth

Regulation The starting point



- Stringent emission targets
- Purchase incentives
- Tax benefits
- Vehicle access restrictions

#### Technology The revolution



- Continuing cost decrease
- Battery electric range increase
- Better charging infrastructure
- Autonomous driving

- Lifestyle factor
- Environmental protection
- Wider choice of EV models
- Mobility on demand

Consumer Emotions drive demand

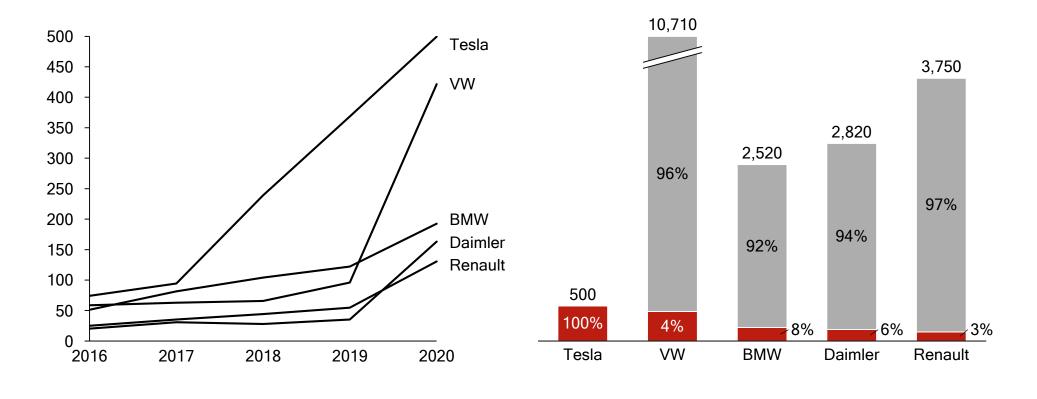


oaumann

Traditional OEMs' installed EV capacity with massive headroom to grow

Annual global EV\* registrations in thousand units

Annual global vehicle sales of selected OEM's in thousand units and share in %



ICE 📕 BEV & PHEV



Manufacturers push electrification of their fleets



50 % of all new sales electrified by 2030



More than 80 % of all models electrified by 2030



New models purely electric from 2026, combustion engine phase-out until 2033



50 % of all new sales electrified by 2030



All newly launched vehicle architectures electric-only from 2025 onwards



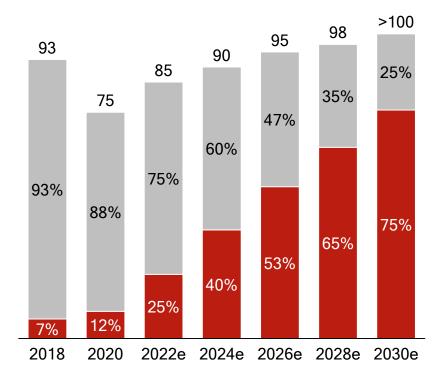
65 % of all new sales electrified by 2025

**SCANIA** 50 % of total vehicle sales electrified by 2030, one new electrified product annually

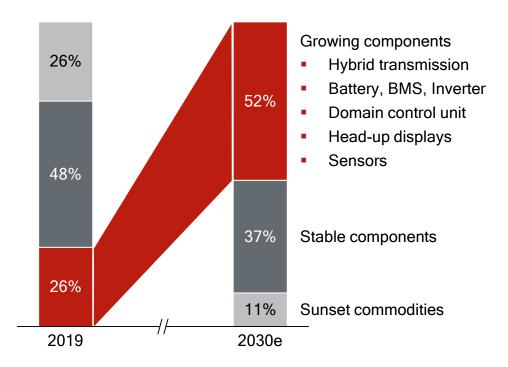


EV sales will accelerate further with EV components gaining importance

Expected vehicle sales worldwide in million units and share in %



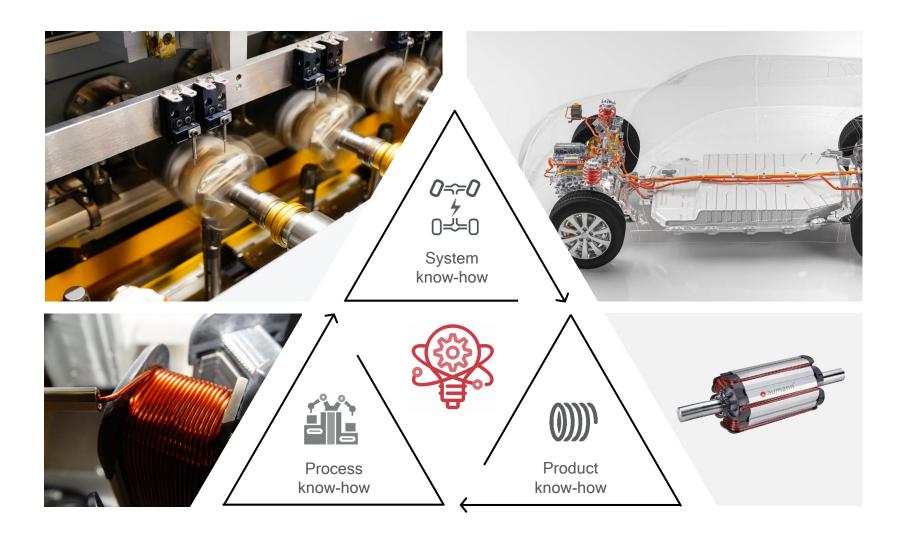
# Market share of automotive components in %



Classic drivetrain 📕 Alternative drivetrain



# Aumann's innovation competence is the foundation for success





Preliminaries 2021





## Aumann has seen a dynamic progress in 2021



E-mobility order intake more than doubled year-over-year to €169 million



Several large scale orders prove excellent positioning in battery technology



Group revenue at roughly €161 million in line with guidance



Order backlog of €176 million at the highest level since March 2019

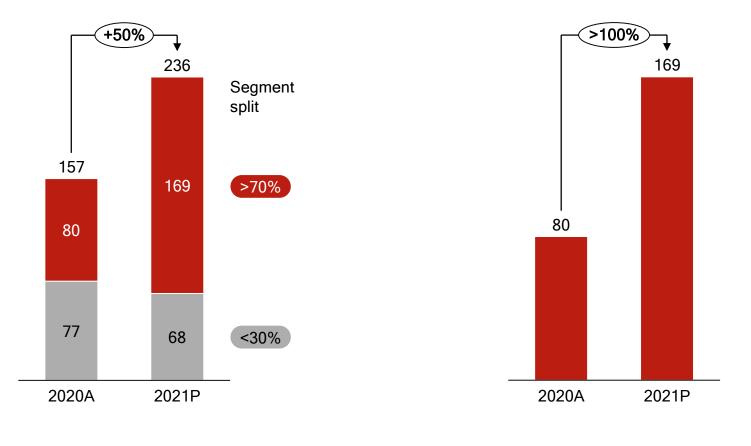


Strong corporate setup and solid financial basis with liquidity of more than €100 million



Dynamic order intake growth continued during the course of 2021

Order intake in € million



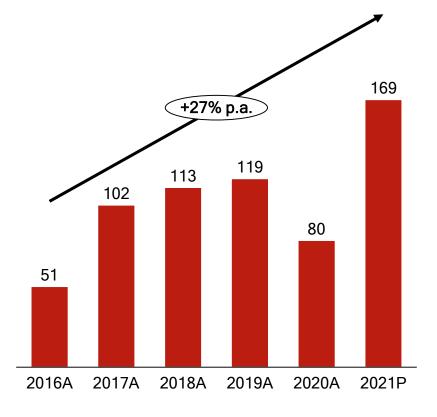
E-mobility order intake in € million



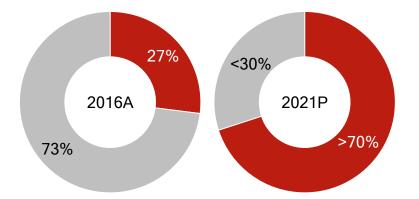


# Aumann delivers on its E-mobility strategy

E-mobility order intake in € million



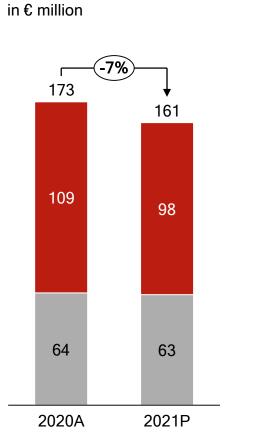
# Order intake share



E-mobility Classic

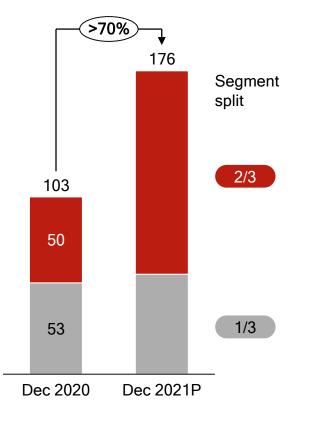


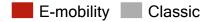
Revenue slightly below 2020 but order backlog will push going forward



Revenue

Order backlog in € million

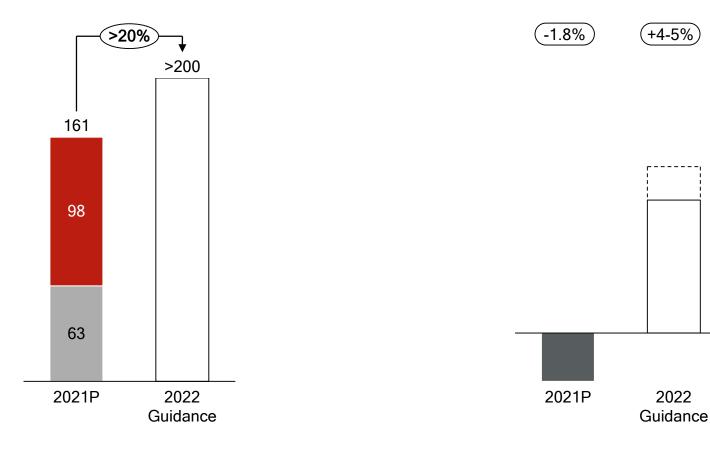






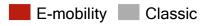
# Revenue and EBITDA will significantly improve 2022

Revenue in € million



**EBITDA** 

in % of revenue





# Technology

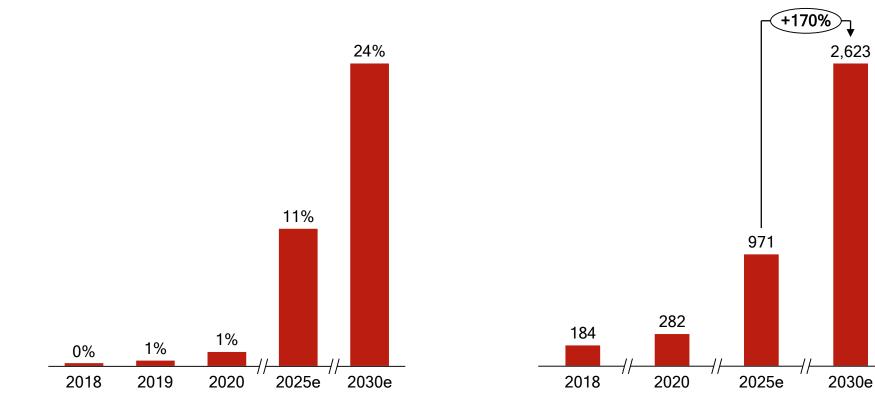




### Increasing demand for battery system production solutions

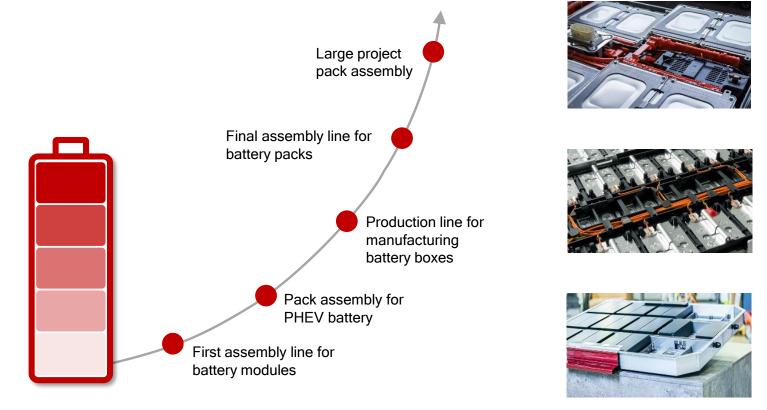
Share of electric vehicles in use in Germany in %

Demand for battery systems in GWh per year





# Aumann expands portfolio for battery systems production solutions



#### Battery pack assembly

Full-scale assembly and end-ofline functional testing of battery systems

#### Battery module assembly

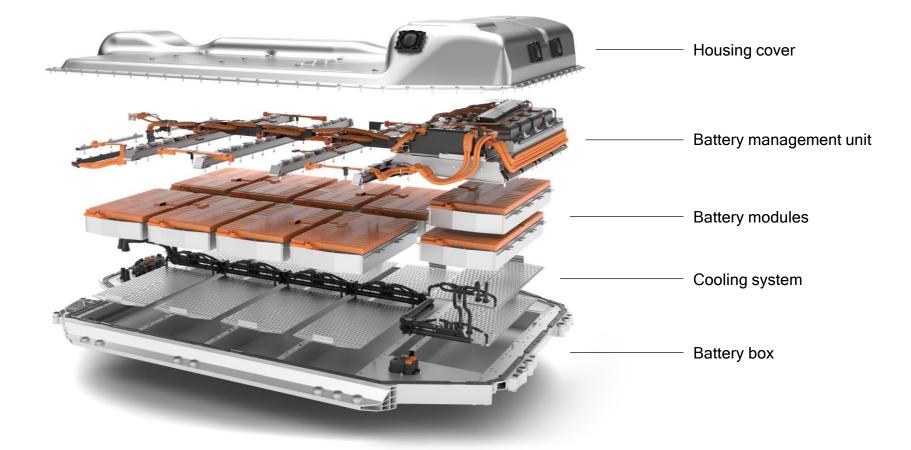
High precision handling, electrical contacting and testing of battery cells

#### Battery box assembly

Novel joining processes for the bonding of material pairings



# Battery pack assembly requires deep system, product and process know-how





#### Aumann moves forward in the market for battery system production

Deep technological system, process and High doubleproduct knowledge digit € million for large-scale order intake production solutions Reference turn-key generated in production lines for State-of-the-art: the field of premium passenger Innovative, energy storage car and commercial complex and in 2021 vehicle OEMs flexible Proven track automated record as first production lines Strong sales mover in the potential for market for further battery system production production solutions due to rapid growth in **EV** volumes



# Case study "Battery pack assembly" - from passenger cars to commercial vehicles

Large scale orders for premium automotive OEM

- Aumann's energy storage production solutions are an essential technological pillar for a premium OEM's electrification path
- 6,000 sqm production space, output 200k units p.a.
- Five types of high-voltage batteries for PHEV and BEV produced by more than 60 heavy-load robots

First large scale order for commercial vehicle OEM

- Aumann is making a valuable technological contribution to the climate-neutral transport of goods and products
- 3,200 sqm production space, output 100k units p.a.
- Up to five types of multi-layer battery packs of up to 1.3 tons in weight to be used in e-commercial short and long haul vehicles





Starting with first battery activities a few years ago, Aumann became a first address for full-scale battery system production in the premium car segment. Aumann proves its expertise by now also delivering solutions for fully electric commercial vehicles





## Case study "Hydrogen fuel cell" - Aumann and Proton Motor

Collaboration for serial production of fuel cells

- Aumann and Proton Motor developed a machine prototype for fuel cell production since early 2017
- Now, Aumann will exclusively carry out the expansion of the machine prototype into an automated fuel cell stack manufacturing line used for serial production
- The machine has flexibility in geometrical ranges and stack height and will be able to produce up to 2,500 hydrogen fuel cell units per year

Handelsblatt (24 June 2021) Hydrogen is regarded as an energy carrier of the future - but the automotive industry has only brought a few models onto the market. [...] Opportunities are said to exist in the transport sector [...].





For more than a decade, Aumann is a valued R&D partner with deep technological knowledge in automated serial production solutions for fuel cells



## Key highlights of Aumann

Megatrend focus drives E-mobility business



Technological pioneer for all E-mobility production solutions



Decades of automotive experience and long-term client partnerships



Asset-light business model and highly skilled engineers



Solid financials with strong equity and net cash

www.aumann.com



No matter who will prevail the E-mobility revolution they will need production solutions Made by Aumann

www.aumann.com

### Contact



Aumann AG Dieselstr. 6 48361 Beelen Germany www.aumann.com

Investor Relations Tel.: +49 2586 888 7800 Fax: +49 2586 888 7805 Email: ir@aumann.com



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