A Work Project, presented as part of the requirements for the Award of a Master's degree in Finance from the Nova School of Business and Economics.

VARTA AG seizes opportunity in segment set to dominate the battery market

Manuel Magalhães

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Work project carried out under the supervision of:

Diogo Barbosa Chalbert Santos

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Abstract:

This paper accesses VARTA AG as a potential PE House target. VARTA AG is a company present in some of the highest growing segments of the battery market – and has the technological and production capacity that allowing it to keep track with market growth. Moreover, VARTA has the technological capacity to tap in an unexplored segment, by the company, of the battery market – the hight growth segment of the Electric Vehicle (EV) Batteries. This Investment Committee Paper states that alongside organic market growth and operation improvement the company is capable of pursuing of interesting value creation strategies, EV Battery Facility and Materials Recycling facility, that make VARTA an interesting target for a Leveraged Buy Out (LBO).

Keywords:

VARTA AG, ICP, Private Equity Challenge, Capital Structure, Battery Market, Investment Thesis

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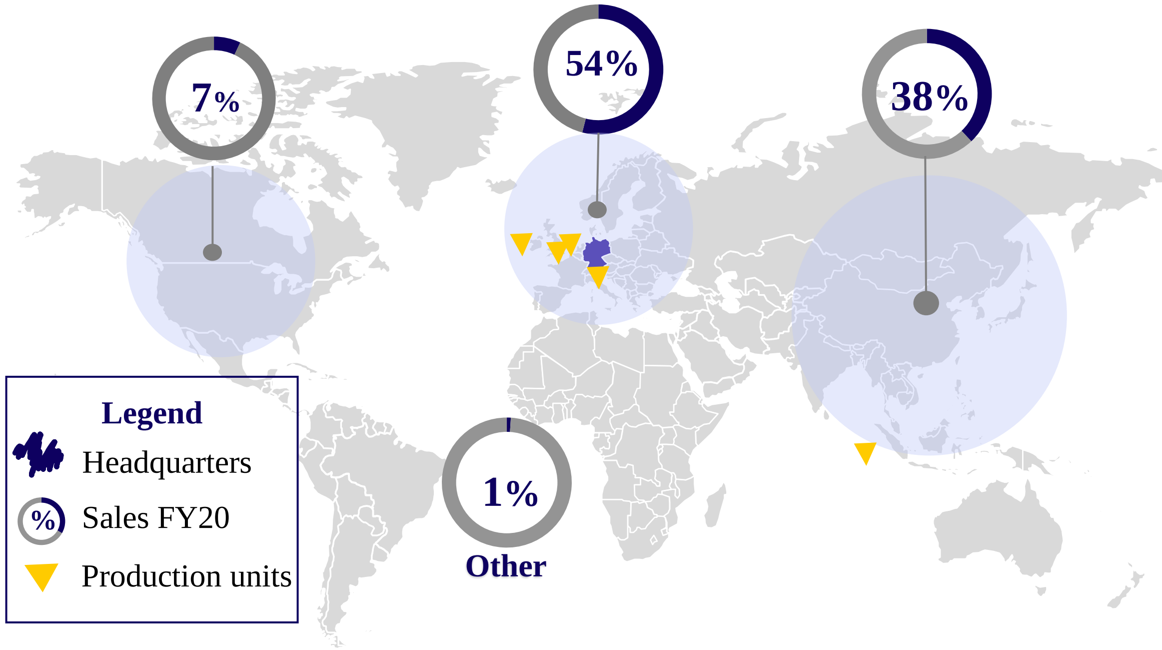
With operations mainly concentrated in Europe and market leadership in core segments, VARTA produces and markets a comprehensive battery portfolio, offering high premium battery solutions for a wide range of applications

Company Snapshot

- VARTA AG is a **global batteries' manufacturing company** comprising consumer batteries and industrial solutions for a variety of applications
- Founded in 1887 the company has been listed on the **Frankfurt Stock Exchange since 2017**
- VARTA´s business activities are focused in **(1) R&D, (2) production** and **(3) distribution**
- The firm offers a comprehensive battery portfolio divided into two separate business segments: **(1) Micro- batteries & Solutions and (2) Household Batteries**
- **Market leader in Hearing Aids** sub-segment
- **European market leader in Household batteries** segment since 2020, with the **acquisition of VARTA consumer**

VARTA's Footprint



- HQ in Ellwagen, Germany
- ~4500 Employees wordwide
- 5 production units
- 4 R&D centers
- Direct sales in more than 75 countries with distribution centers in the **USA, Europe and Asia**

Business Model

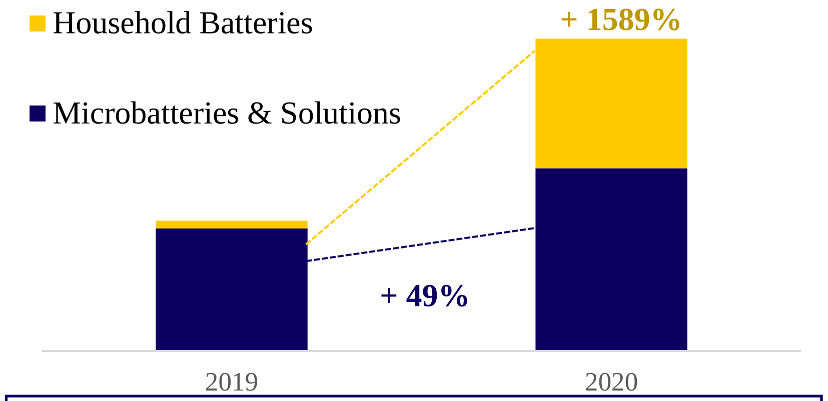
Microbatteries & Solutions			Household Batteries	
Microbatteries for Hearing Aids	Lithium-ion coin power & other special batteries	Power Pack Solutions – Lithium-ion Battery Packs	Consumer Batteries	Energy Storage Systems
Applications				
Hearing Aids	Smart wearables/devices; Automotive/ Medical devices; industrial robotics; IT/Communications		Entertainment; Household	Residential and Industrial energy

VARTA

Resilience against market downturns with proven strong growth in revenues and EBITDA in 2020, despite the pandemic, having the acquisition of VARTA Consumer and the capacity expansion efforts driving results

1887 | 1969 | 2009 | 2011 | 2012 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020

Revenue Growth FY20



- + **139,8%** of revenue growth in 2020, of which **47% corresponds to organic growth**
- Successful **acquisition of VARTA Consumer** in 2020, responsible for **92% of total revenue growth**
- **Exponential growth in revenues and EBITDA in 2020** in major part explained by the M&A transaction and Expansion of Li-Ion production capacity
- **Normalized EBITDA** considered due to abnormal events

Expansion period:

- 2017: successful **IPO** aimed to raise capital to meet lithium-ion batteries demand
- 2020: (1) **Acquisition of VARTA Consumer** and consequent integration of new business segment; (2) **Massive expansion of production facilities** (new production facility operational in 2022); (3) **Funding commitment of ~ € 300 M** from federal/ state governments as part of IPCEI (Important Projects of Common European Interest)

Key Financial results

Values in million euros	**2017**	**2018**	**2019**	**2020**	**LTM**
Total Revenues	**242,2**	**271,7**	**362,7**	**869,6**	**876,2**
Microbatteries & Solutions	*228,7*	*253,4*	*340,9*	*508,1*	*501,6*
Household Batteries	*12,5*	*17,2*	*21,4*	*361,1*	*374,6*
COGS	(99,9)	(106,9)	(123,5)	(315,5)	(315,5)
Normalized EBITDA	**39,1**	**50,2**	**97,5**	**241,0**	**251,2**
FFCF excluding expansion & M&A	**25,5**	**69,1**	**107,5**	**270,7**	**n.a.**
Net Debt	(37,5)	(7,5)	8,8	501,8	n.a

Negative and positive drivers in different segments (e.g., disruption of automotive industry; raising demand for medical devices) arise from **COVID-19 pandemic** resulting in an overall **null impact** in 2020 financial results

VARTA

Skilled and competent management team able to cope with firm-specific and market risks while benefiting from opportunities, proven by strong track record

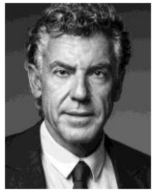
Market Growth Drivers

DEMOGRAFIC	TECHNOLOGICAL PROGRESS	CONNECTIVITY	RENEWABLE ENERGIES
Elderly population is expected to increase substantially (around 6,7%) worldwide as well as **life expectancy until 2050**	Consumer preferences moving towards **high tech products**: need for reliable and high-quality energy solutions and high energy density batteries	Development of the **internet of things (IoT)** and of **smarter and more efficient solutions**	Increased importance of renewable energies, energy efficiency and EU climate targets driving **sustainable growth rates** for **energy storage**
Hearing Aids	Li-ion technology (e.g. smart devices, IT, robotics, communications, etc.)		Energy storage systems

Management Team

Herbert Schein, CEO
+ 25 years

Armin Hessenberger, CFO
+5 years



Prof. DDr. Michael Tojner, Chairman
+15 years
Owner ~56% share

Key Risks

- Risk of **technological substitution**
- **Price pressure** from competitors (mainly from Asia) due to their labor cost advantage
- Dependence on **major costumers** (such as Apple, Samsung, Bose)
- Exposure to **environmental, health and safety** regulations potentiating financial liabilities
- Fluctuations in **commodities price** (e.g. Li, Ni, Co, Mn, etc)
- **Potential prevalence of COVID-19 industry effects, namely the** significant decrease in elderly population and disruptions in the supply chain.

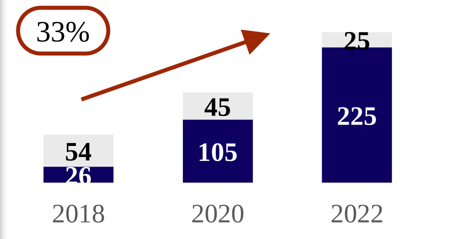
Positive outlook for VARTA's market segments: derived by favorable trends, the expectation is to observe significant growth in the upcoming years

Microbatteries & Solutions

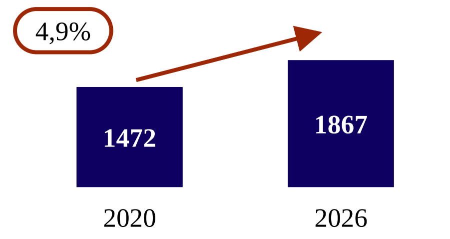
Household Batteries

Market Size

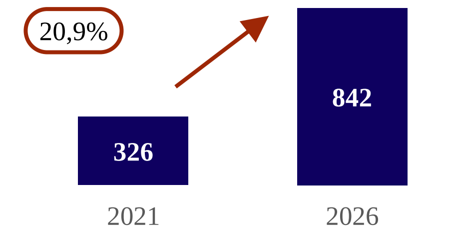
TWS[3] Lithium Batteries [2]



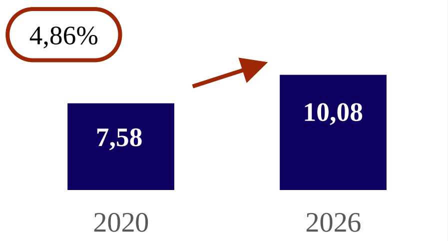
Hearing Aids [2]



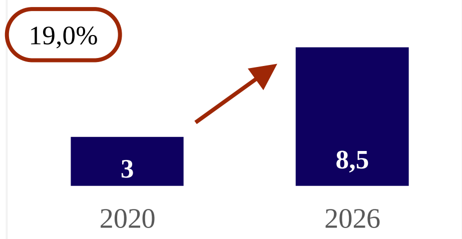
Power Pack [2]



Consumer Batteries[1]



Energy Storage Systems [1]



Market Trends

TWS[3] Lithium Batteries

- Growing demand towards wireless devices, requiring smaller, lighter and more efficient energy solutions, **driving demand for coin shaped li-ion batteries**
- Declining cylindrical batteries market, with manufacturers moving towards coin shaped batteries

Hearing Aids

- Transition from traditional **disposable** hearing aid batteries towards **rechargeable long-life,** lowering growth pace
- Driving growth is the aging of population and increase in **average life expectancy,** directly increasing demand for hearing aids

Power Pack

- **Power pack solutions increasingly adopted in several applications**: smart packaging, medical devices, wireless sensor nodes and smart cards
- **Growing need for thin and flexible batteries** in high growth industries requiring IoT and medical devices

Consumer Batteries

- **Growing trends towards digitalization** of consumer electronic products
- Increasing **product safety and ESG concerns**, driving sustainable solutions and recycling programs
- Increasing popularity of disposable batteries in portable medical devices

Energy Storage Systems

- Increasing demand for **uninterrupted and reliable power supply**
- **ESS as a complement** to the increasing adoption of solar systems by residential sector
- **Government incentives towards renewable energy** significantly increasing awareness to sustainability

1) Values in Bn EUR 2) Values in M EUR 3) True Wireless Headsets
Source: Mordor Intelligence

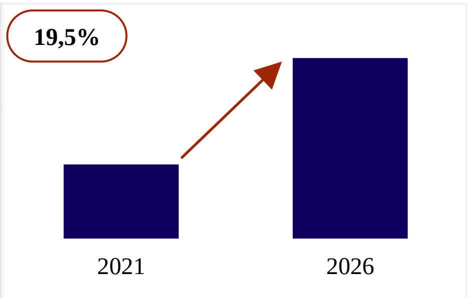
CAGR

VARTA

Overall end markets expected to register double digit growth over the forecasted period, apart from the mature hearing aids market

Smart Wearables & Medical Devices

End-market growth



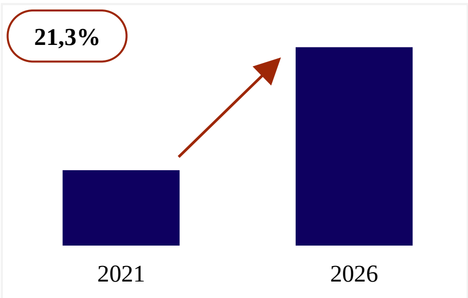
Market Trends

- Increased innovation and **new product categories** in recent years
- **Boom in the fitness trend** (smartwatches)
- Demand for smart assistants (hearables)

Key Players: FOSSIL, SAMSUNG ELECTRONICS, Apple, GARMIN, fitbit

Connected Car Devices

End-market growth



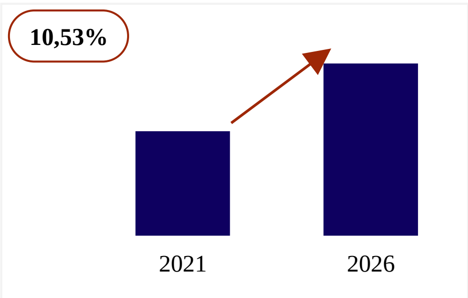
Market Trends

- Vehicle automation as the **most lucrative opportunity** for connected car devices
- Raising demand for **infotainment systems** (in-car Wi-Fi hotspots and data services)

Key Players: Continental, Valeo, Autoliv, Infineon, DENSO, BOSCH

Internet of Things (IoT)

End-market growth



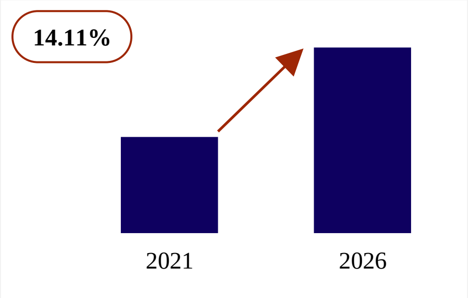
Market Trends

- The significant **growth of the Retail industry** (IoT used to improve operational efficiency and customer experience)
- Increasing adoption of **wireless technologies, data analytics, cloud platforms**

Key Players: HUAWEI, Google, IBM, Microsoft, CISCO

Industrial Robotics

End-market growth



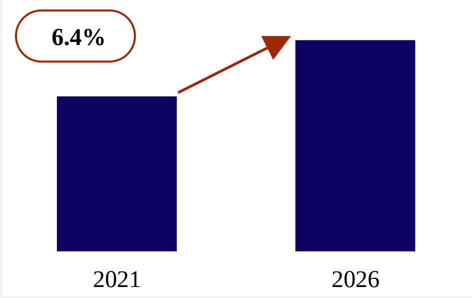
Market Trends

- Robotics play a crucial role in the rising adoption of **smart factory systems**
- Growing adoption of **automation in automotive industry** and increasing demand for **Electric Vehicles**

Key Players: FANUC, KUKA, YASKAWA, ABB, DENSO

Hearing Aids

End-market growth



Market Trends

- **Shortage of skilled professionals** to perform otolaryngology procedures in several countries
- Prevalence of **hearing loss**
- **Increase in average life expectancy**

Key Players: sonova, GN, Cochlear, RION

VARTA

Despite being surrounded by a competitive strong environment, VARTA´s technological leadership and operational efficiency allows the firm to sustain its strong market positioning

Porter's 5 Forces

Power of suppliers

- Extensive long-term relationship **network of suppliers**
- **In-house** made product components for most products
- Raw materials can impact business activities: somewhat **volatile lithium prices**

Threat of new entrants

- High **entry barriers to compete with VARTA** due to technological and human capital expertise and existing patents
- Strong investments in R&D to keep in touch with the most innovative technologies

Thread of substitute products

- **Risk of technological substitution:** VARTA protects the business by betting in a strong R&D network
- **Technological leader** in high density batteries and **focus on lithium batteries** to which the market is shifting towards

Power of costumers

- **Large number of reputable costumers** in diverse sectors
- Small number of customers in the Entertainment segment, the firm´s largest revenue share segment
- Most of firm´s **sales dominated by 4 major clients**

Competition in the industry

- Highly spread competition
- Price pressures from Asian competitors (lower labor costs)
- Increased competition to capture the li-ion market growth - VARTA's positioning insured by intellectual property rights
- Dominant in premium market

Company	Sales[1]	EBITDA Margin	Net Debt/ EBITDA	EV/EBITDA[2]	CAPEX/D&A
Energizer	2,443	15.16%	10.02x	16.9x	0.57x
EXIDE	1,833	10.74%	12.73x	7,0x	4.80x
EVE 亿纬锂能	1,106	21.87%	3.30x	n.a.	4.19x
GP Batteries	692	8.37%	6.85x	7,5x	2.06x
FDK	485	1.35%	37.91x	8,9x	1.31x
ULTRALIFE	96	5.29%	1.78x	10,3x	1.00x
VARTA	870	24.45%	2.36x	26.27x	4.54x

VARTA

Strong financials, leadership positioning and high expected growth in core markets constitute real opportunities for VARTA to create value

Deal Rationale

1 Strong Fundamentals

- **Strong cash generation** – € 274,2 M of operational CFs resulting in € 270,7 M in FCF excluding expansion and M&A in 2020, suggesting **strong capacity to repay debt**
- Proven business model with **profit margins above competitors** (24,5% vs. closest competitor 21,9%)
- **Low maintenance CAPEX requirements,** growing from € 3,5 M in 2017 to € 5 M in 2020 in a period of restructuring and expansion

2 Skilled Talent Pool

- **Experienced CEO with extensive knowledge in business strategy** – increased EBITDA margin from 12,2% in 2016 to 28,7% in the LTM, proving superior performance
- **Aligned incentives** – Chairman holds 56% of VARTA
- Business segments led by **experienced engineers and industry experts**

3 High Growth Industry Markets

- **Market leader** in Microbatteries and **European leader** in Household Batteries
- **Technology leader**, implementing up to date innovations in all stages of the value chain and **Innovation leader** in the area of energy storage solutions
- High capacity to **rapidly implement innovations** into manufacturing processes
- **Proved resilience** of business to economic downturns (e.g. COVID-19)

4 Strong Market Positioning

- High **forecasted growth rates in all core markets** (e.g. Energy storage solutions expect a CAGR of 19% until 2026)
- **Above/ near double digit growth projections** for end markets over a 5-year forecast
- **Actionable strong trends** in core markets and emerging opportunities in adjacent segments (e.g. EV's disruptive batteries market)

VARTA

Value creation strategies on the basis of organic growth and organizational improvements, exploring strategic segments of the battery market

Risk-Return Assessment

A Portfolio Expansion to new end markets

- **Leverage product portfolio** by incorporating a new line of large-format batteries to **serve the high growth Electric Vehicle's (EVs) market** by establishing a **new business unit**, exclusively dedicated to the production of large-format lithium-ion cells.
- **Broaden customer base** by forming strategic relationships with German car manufacturers to ensure cashflow stability (particularly VW, Audi, BMW/Mini)

WHY?

1) Already developed fully functional **high quality prototype**
2) High growth, profitable **market** & favourable trends

B Business Model sustainable expansion

- Incorporate a **recycling lithium battery facility** in VARTA's organizational structure as part of the firm's business model
- Capacity to recover up to 95% of valuable metals form used batteries and produce **sustainable recycled raw materials** (nickel, cobalt, manganese sulphates, and lithium hydroxide) for VARTA to reuse
- Significantly **reduce dependence on commodities**' price variations

WHY?

1) Pressure towards **sustainability awareness**
2) Mitigation of **commodities risk**

C Operational Enhancement

- Design a **cost-cutting plan** to reduce unnecessary expenses inherited from VARTA Consumer and **operational inefficiencies** mainly **attributable to the M&A event and expansion efforts in 2020**, in order to raise the group´s profitability margins.

WHY?

1) After an acquisition event, there's **room for value creation**, in this case, improving cost ratios of COGS and personnel expenses
2) Exponential **raise in commodities price in 2021**, suggesting a **mitigation strategy**

Value creation strategies and market growth drivers behind strong cash flow generation, the EV factory being the most impactful EBITDA driver

Operating Expenses	2019	2020	2021	2022	2023	2024	2025	2026	CAGR[1] %
Microbatteries & Solutions	*340,9*	*508,1*	*527,5*	*649,0*	*806,9*	*829,6*	*829,7*	*834,3*	*9,6%*
Household batteries	*21,4*	*361,1*	*378,8*	*397,9*	*418,9*	*421,4*	*421,4*	*421,5*	*2,2%*
Large-format batteries	-	-	-	-	*660,1*	*748,1*	*821,4*	*880,1*	*10,1%*
Total	**362,7**	**869,6**	**906,2**	**1 046,9**	**1 885,9**	**1 999,1**	**2 072,5**	**2 135,8**	**18,7%**
Total COGS	(123,5)	(315,5)	(352,4)	(402,8)	(809,0)	(855,5)	(896,1)	(930,0)	4,8%
Gross Profit	**239,8**	**549,9**	**553,9**	**646,0**	**1 089,4**	**1 289,3**	**1 368,6**	**1 430,9**	**6,2%**
Other Operating Income	12,1	42,4	72,1	241,6	12,6	12,6	3,6	3,6	-34,0%
Personnel Expenses	(114,4)	(257,1)	(252,0)	(289,6)	(438,4)	(453,7)	(463,0)	(474,8)	2,7%
Other Operating Expenses	(30,4)	(101,6)	(78,1)	(90,6)	(157,2)	(162,6)	(163,4)	(164,7)	1,6%
R&D:	(15,5)	(20,9)	(57,3)	(57,6)	(43,9)	(45,9)	(39,0)	(40,8)	-2,5%
EBITDA	**91,6**	**212,6**	**238,5**	**447,9**	**449,9**	**494,0**	**514,6**	**529,3**	**5,6%**

1) For comparison, CAGRs are calculated using 2023 as base year, due to the introduction of EV and recycling production process

Revenues:

Drivers behind growth include **market trends for growing demand** and **past expansion efforts** for existing segments and **new source of revenue (EVs)** responsible for roughly **40% of forecasted revenues**

Costs

Huge **decrease in operating costs** as a pilar to the investment strategy is **driving results**, through:

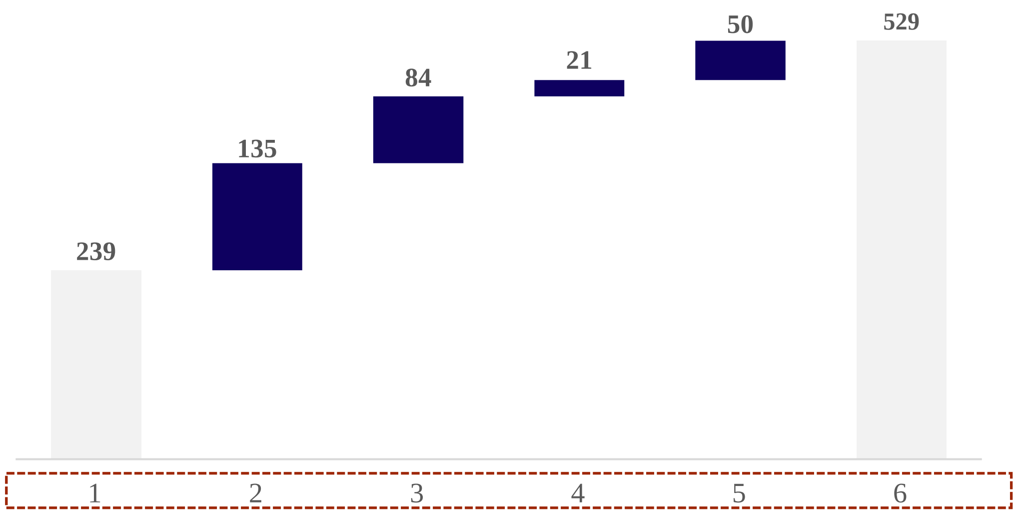
1. Reduction of **COGS** via improving contract terms with suppliers
2. Realignment of **personnel capacity** requirements
3. Additional source of raw materials: **incorporation of recycling facility**, allowing for **significant cost savings YoY**

VARTA

Forecasted EBITDA to be more than doubled, potentiating a high exit multiple

FCF (in €m)	2019	2020	2021	2022	2023	2024	2025	2026	CAGR %
EBITDA	**91,6**	**212,6**	**238,5**	**447,9**	**449,9**	**494,0**	**514,6**	**529,3**	**17,3%**
Cash Flow From Operations	97,1	242,3	246,1	350,2	336,7	414,3	428,0	434,8	
Cash from investing	(106,8)	(373,4)	(154,5)	(731,9)	(4,6)	(4,7)	(4,8)	(4,9)	
Unlevered FCF to the firm	**(9,6)**	**(131,2)**	**91,6**	**(381,6)**	**332,1**	**409,6**	**432,2**	**429,9**	**36,2%**
FCF excluding Expansion & M&A	**93,8**	**238,8**	**241,6**	**345,7**	**332,1**	**409,6**	**432,2**	**429,9**	**12,2%**
% Growth		*155,8%*	*1,2%*	*43,1%*	*-3,9%*	*23,4%*	*3,3%*	*1,6%*	
% Revenues	*25,7%*	*27,5%*	*26,7%*	*33,0%*	*17,6%*	*20,5%*	*20,4%*	*20,1%*	

EBITDA BRIDGE



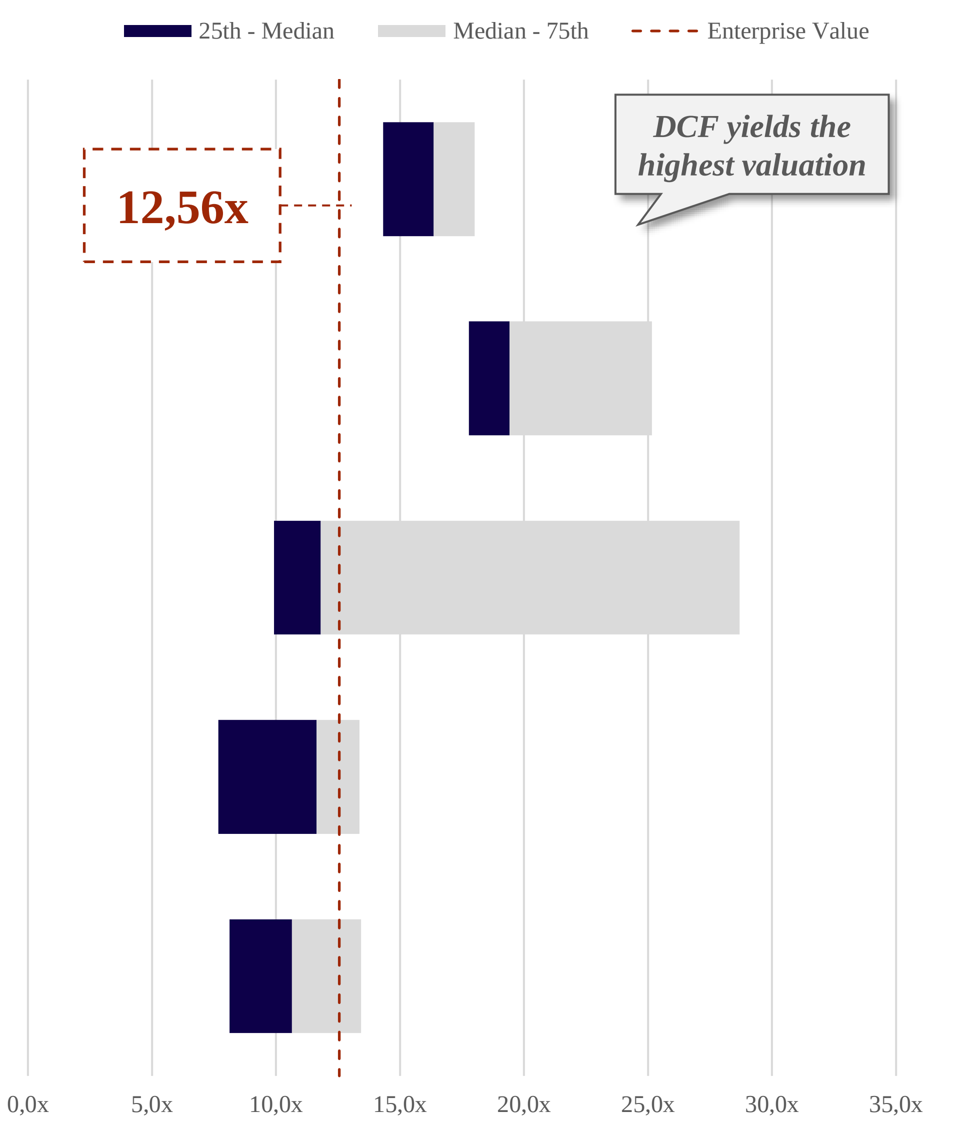
- Expected **increase in EBITDA at a CAGR of 17,3%** throughout the investment period
- Entry in the **EV market as main growth driver**, accounting for **46,6% of total growth**
- **Operational cost-cutting efforts** and the **cost savings** from the **recycling process** are responsible for roughly **€ 105 M of** EBITDA margin generated
- Around **€ 50 M** of margin improvement is **attributable to** the natural growth of **end- markets**
- Significant improve in EBITDA allows for a **solid exit in 2026**

1 – EBITDA Entry | 2 – EV Strategy | 3 – Recycling plant | 4 – Operational Enhancement | 5 – Market Growth | 6 – EBITDA Exit

VARTA

Considering a multiple of 12.56x, VARTA is valued at € 3 042 M to be paid upfront in 2022

Football Field[1]



Methodology	Weight	EV/EBITDA multiple
DCF Exit Multiple Method	10%	**16,4x** 14,3x – 18,0x
DCF Gordon Growth method	10%	**19,4x** 17,8x – 25,2x
EV/EBITDA Precedent Transactions	10%	**11,8x** 9,9x – 28,7x
EV/EBITDA 10-year Trading Comparables	35%	**11,6x** 7,7x – 13,4x
EV/EBITDA LTM Trading Comparables	35%	**10,6x** 8,1x – 13,4x

Valuation at an EV/EBITDA Multiple of **12,56x** leading to an **Enterprise Value** of **€ 3 042 M**

Trading comparable methods yield a closest estimation given VARTA´s context, therefore considered with a **higher weight:**

1. **Large enough sample** of comparables to mitigate firm-specific risks/opportunities and **close business models** are being considered
2. Precedent transactions **are highly biased by the higher willingness to pay for synergies**, as it is usually associated with strategic purchases
3. DCFs are highly sensitive to future assumptions, which may not accurately reflect value in **fast growing companies** such as VARTA

VARTA

Attractive fund returns and aligned stakeholder incentives by leveraging about 6.5x EBITDA

Sources

		€ M	x EBITDA	%
Debt	**Senior Debt**			
	Tranche A (amortizing)	*605,7*	*2,5x*	*16,4%*
	Tranche B	*242,3*	*1,0x*	*6,5%*
	Subordinated Debt			
	Mezzanine (bullet)	*726,8*	*3,0x*	*19,6%*
	TOTAL DEBT	**1 574,7**	**6,5x**	**42,5%**
Equity	**Fixed Return Instruments**	**1 794,6**	**7,4x**	**48,4%**
	Ordinary Equity	**334,9**	**1,4x**	**9,0%**
	Institutional Investors	*321,5*	*1.3x*	
	Sweet Equity	*13,4*	*0.1x*	*mgmt*
	TOTAL EQUITY	**2 127,5**	**8,8x**	**57,5%**
	Total Sources	**3 704,3**	**15,3x**	**100%**

Uses

		€ M	%
Aquisition	EBITDA 2021	242,3	
	Entry Multiple	12,56x	
	Enterprise Value	**3 042,1**	**82,2%**
EV Factory	EV Factory	562,3	
	IPCEI Grant	200,0	
	EV COST	**360,3**	**9,7%**
Recycling	Recycling Facility	165,0	
	Grants	2,0	
	RECYCLING COST	**163,0**	**4,4%**
Aquisition fees	**Total Fees (5%)**	**136,9**	**3,7%**
	DD fees (2%)	60,8	
	Other transaction fees (2,5%)	76,1	
	Total Uses	**3 704,3**	**100%**

HIGHLIGHTS

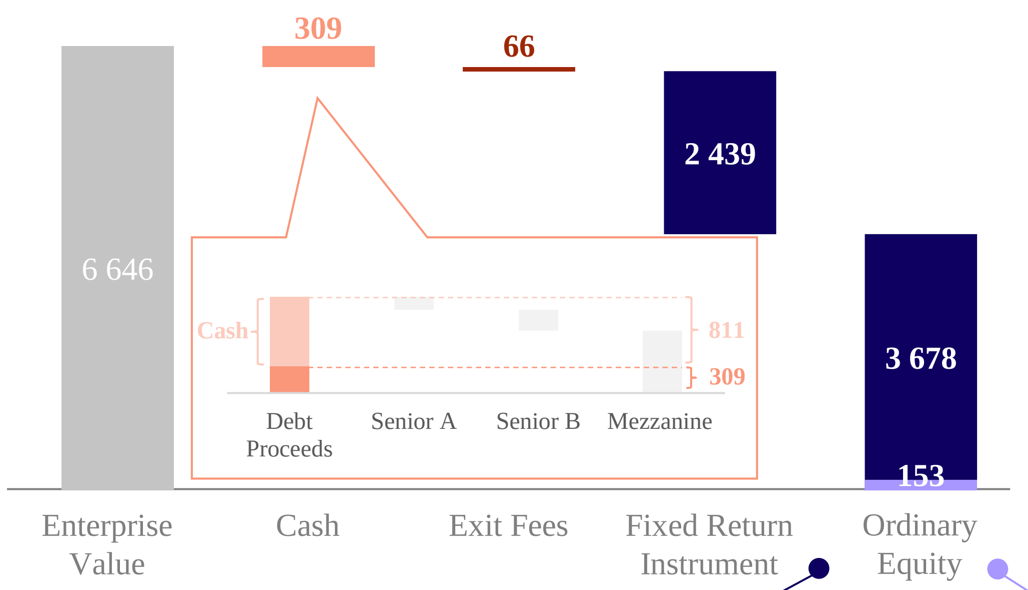
- Around € **2 878 M of equity value at the acquisition** and net debt of approximately € 164 M (Financial Debt of **€ 417 M and cash and cash equivalents of € 253 M)**
- Factories' cost to be completely incurred during the first year of the holding period, **avoiding the need for CapEx facility**
- Financing structure chosen according to the **highest return yield scenario at the exit (MM and IRR)** assuming maximum amount of leverage of 6.5x (maximum senior debt of 3.5x)
- Scenarios constructed upon the assumption that senior debt requires a stipulated LTV covenant below 0.5x

	2022E	2023E	2024E	2025E	2026E
Cash	*139*	*194*	*332*	*490*	*(309)*
CF	*(385)*	*55*	*138*	*157*	*(799)*
CC	-	1,2x	1,5x	1,6x	0,3x
IC	-	3,6x	4,1x	4,5x	4,9x
ND/ EBITDA	3,2x	2,7x	1,9x	1,2x	0,6x

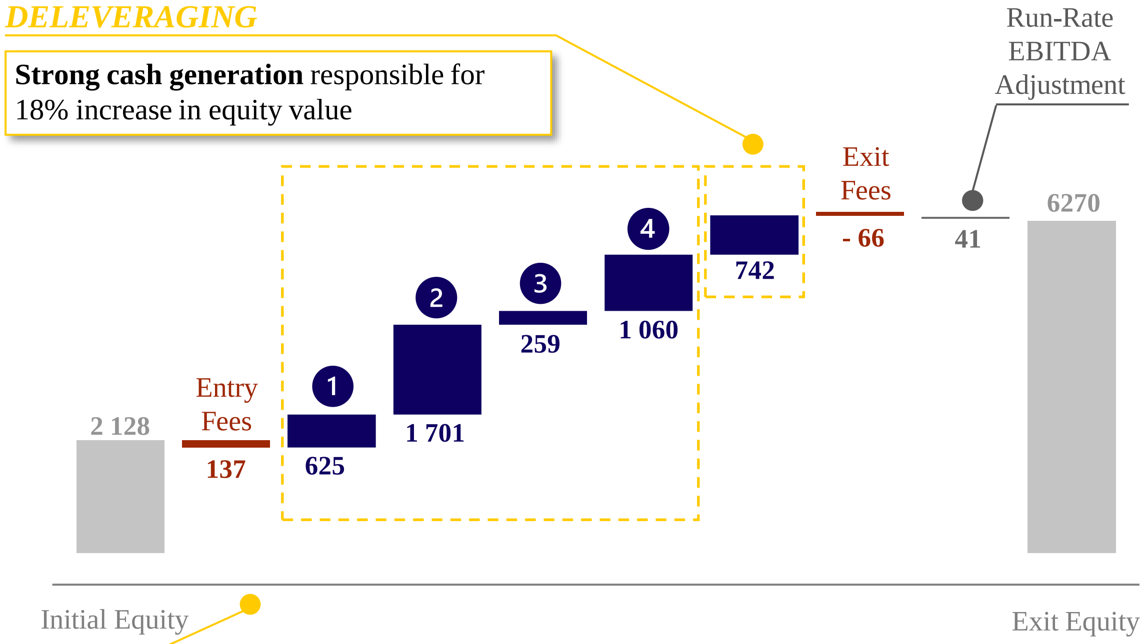
VARTA

Attractive fund and management returns as a result of value creation strategies, yilding a MM of 2.89x and an IRR of 23,67%

Returns Breakdown[1]



Equity Bridge[1]



INSTITUTIONAL PROCEEDS

INVESTMENT	**€ 2 114 M**
PROCEEDS	**€ 6 117 M**
IRR	**23,67%**
MM	**2,89x**

MANAGEMENT PROCEEDS

INVESTMENT	**€ 13 M**
PROCEEDS	**€ 152 M**
IRR	**62,81%**
MM	**11,44x**

EBITDA GROWTH

1. **Market growth:** strong high growth markets potentiating natural organic growth
2. **EV Strategy:** Main growth driver accounting for ~41% of Equity value creation
3. **Operational enhancement:** low capital/risk strategy increasing equity by 6,3%
4. **Recycling plant:** profitable sustainability efforts generating 25,6 % additional value

1) Values in million €

VARTA

Even under extremely conservative assumptions, VARTA can still generate interesting returns while meeting bank covenents

Sensitivity Analysis – Investment Case

EXIT Multiple	2024	2025	2026	2027	2028
11,56x	2,18x	2,43x	2,66x	3,03x	3,44x
12,06x	2,29x	2,55x	2,77x	3,15x	3,58x
12,56x	2,40x	2,66x	2,89x	3,28x	3,72x
13,06x	2,51x	2,78x	3,01x	3,41x	3,86x
13,56x	2,63x	2,89x	3,13x	3,54x	3,99x

EXIT Multiple	2024	2025	2026	2027	2028
11,56x	29,7%	24,9%	21,6%	20,3%	19,3%
12,06x	31,8%	26,3%	22,6%	21,1%	20,0%
12,56x	33,9%	27,7%	23,7%	21,9%	20,6%
13,06x	36,0%	29,1%	24,7%	22,7%	21,3%
13,56x	38,0%	30,4%	25,6%	23,4%	21,9%

Sensitivity Analysis – Bank Case

EXIT Multiple	2024	2025	2026	2027	2028
11,56x	1,78x	1,99x	2,17x	2,17x	2,19x
12,06x	1,88x	2,08x	2,27x	2,27x	2,28x
12,56x	1,97x	2,18x	2,37x	2,36x	2,37x
13,06x	2,06x	2,28x	2,47x	2,46x	2,47x
13,56x	2,16x	2,38x	2,57x	2,55x	2,56x

EXIT Multiple	2024	2025	2026	2027	2028
11,56x	21,2%	18,7%	16,8%	13,8%	11,9%
12,06x	23,3%	20,2%	17,8%	14,6%	12,5%
12,56x	25,4%	21,5%	18,9%	15,4%	13,2%
13,06x	27,3%	22,9%	19,8%	16,2%	13,8%
13,56x	29,2%	24,2%	20,8%	16,9%	14,4%

Due Diligence

Key Risk	DD	Scope
Forecasts overestimation (e.g. market growth, demand, trends); Undermine competitive positioning (e.g. emerging of better innovative products, technological substitution); misjudgement of risk-return EV strategy (e.g. profitability, production)	**Commercial**	Market forecast & outlook; competitive landscape; EV market
Overestimation of factories capacity, budget; Underestimation of COGS; High dependence on commodities price and current exceptional terms of payments (both with clients and customers)	**Operational**	Value Chain; Production plants; Cost of materials
Multiple exceptional activities in the last 5 years creating noise around current financials; Hidden assets; dependence of public funding; misalignment of management incentives	**Financial**	Valuation ; Capital Structure
Emerging litigations from non-licenced activity; misjudgement of environmental impact from battery recycling process	**Legal**	Fiscal; Licencing; EU Laws & ESG

Strategic and secondary sales comprise two attractive exit strategies, combining strong advantages with low completion risks, being CATL and Carlyle strong candidate buyers

EXIT

Strategic Sale

Advantages:

- **Higher exit valuation**: buyers tend to pay a higher price (benefit from synergies)
- **Numerous potential buyers**: industry marked by strong M&A activity
- Industry with **large players** with the resources required to finance the acquisition
- **Immediate exit** without regulatory requirements and costs inherent to other exit options (as it occurs in an IPO)

Red Flags:

Timing wise, **strategic buyers might try to enter sooner**, as markets are becoming more competitive and mature, with smoother growth expectations and lower prices, specially at the time of the exit

Secondary Sale

Advantages:

- Experience in defining **deal terms and risk allocation models**, potentiating an immediate full exit
- **Limited number of potential targets** in the battery industry resulting in high valuations of secondary buyers
- **Ability to leverage the high growth potential** of this industry with great prospects of returns

Red Flags:

Conditional on the **success of value creation strategies** and cash generation after the committed massive investments

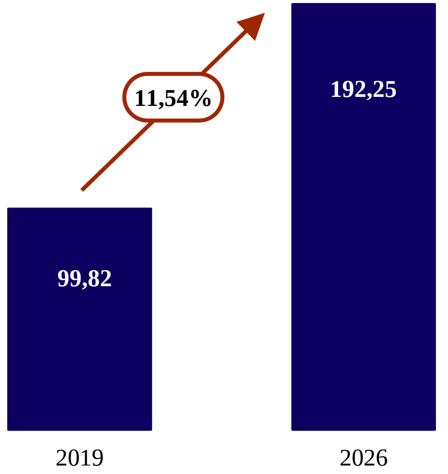
The most likely strategy to pay a higher premium valuation is to ***exit via strategic sale*** *to a major competitor, a straightforward exit, without major costs involved and generating an attractive exit multiple, due to high synergies potential.* ***CATL*** *is a safe bet for a strategic sale, as buying VARTA would be aligned with the firm's growth strategy and future goals. Alternatively, a* ***secondary sale*** *is also expected to yield a high valuation and* ***Carlyle*** *is a strong potential buyer for VARTA's concept.*

TABLE OF CONTENTS

VARTA

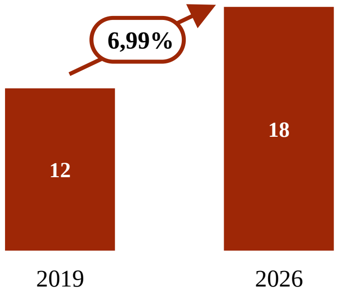
VARTA operates in both primary and secondary battery markets, enabling the scope of operations to include a diversified target, benefiting from different drivers of growth

BATTERIES MARKET[1]

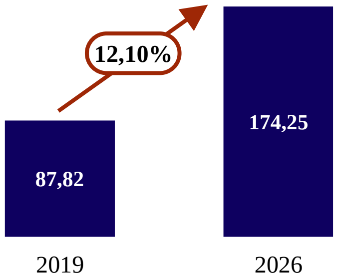


- Market is divided into **two submarkets**: (1) Primary Batteries and (2) Secondary Batteries
- Electric vehicles (EV) market as the main growth driver, **expected to provide massive growth for the secondary lithium-ion battery market**
- Asia-pacific to dominate the market in terms of growth and players
- **Highly competitive market without dominant players**

SUBMARKETS[1]



- Primary batteries are **non-rechargeable batteries**
- Commonly used for **household applications** – Toys, TV remote, calculators, hearing aid batteries
- Alkaline batteries to dominate the market and account for half of the market share
- Primary lithium batteries to have around 20% of the market



- Secondary batteries are **rechargeable batteries**
- Applications examples are Electric Vehicles batteries, Bluetooth headphones, Laptop batteries
- Secondary battery market **is expected to experience high growth** with Lithium-ion batteries to dominate the market

Batteries	Battery Type	Technology
Battery Market	**Primary Batteries**	Alkaline Battery
		Lithium-ion Battery
		Other Batteries
	Secondary Batteries	Lead-acid Battery
		Lithium-ion Battery
		Other Batteries

TERMINOLOGY

- **Capacity:** How much energy does the battery can hold, **measured in Kw/h**
- **Drain:** Battery capacity to release energy – Low drain batteries are better for low-energy consuming products
- **Energy Density:** How much energy does the battery can hold relatively to its size

High capacity, drain and energy density, as well as capacity/weight ratio **driving demand for Lithium batteries**

KEY MARKET TRENDS

Increasing **penetration of EV cars** across all OEMs[2] anticipating a massive growth of demand for the li-ion large cells batteries

Strict **emission norms** by government authorities, such as the US and the UK expected to spread to all Europe, coupled with growing attention towards **fossil fuel costs and imports dependency** of Europe

Clear **preference for advanced technologies**: Smaller, lighter, fewer wires, more mobile, driving demand for portable electronics, including LCD displays, smartphones, tablets, and wearable devices such as fitness bands

Increasing **production of power/energy from renewables** boost the necessity for grid-scale and household scale energy storage systems

1) Values in Bn EUR | 2) Original Equipment Manufacturer | Source: Mordor Intelligence & ScienceDirect | ⬭ CAGR

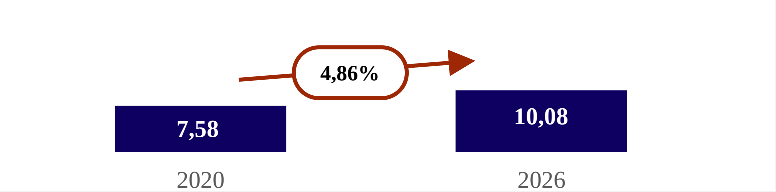
VARTA

Both primary and secondary markets are prospecting high growth levels, potentiating natural organic growth opportunities for the company

Primary Batteries Market

Household Batteries[1]

KPIs



Growth Trends

- **Primary Alkaline Batteries:** projected to grow at a **3,3% CAGR** and account for 5.8% of the global market
- **Primary lithium batteries:** projected to grow at a **3,6% CAGR**. Growing substitute improved performance batteries (e.g., zinc-carbon, manganese-alkali, zinc-silver oxide)
- **US is the largest market** (China in 2nd) with a global market share of 27,04%

Market Drivers

- **Growing trends towards digitalization** of consumer electronic products, pushing towards innovative solutions
- Increasing **product safety and ESG concerns**, driving sustainable solutions and recycling programs
- Increasing popularity of primary batteries in portable medical devices

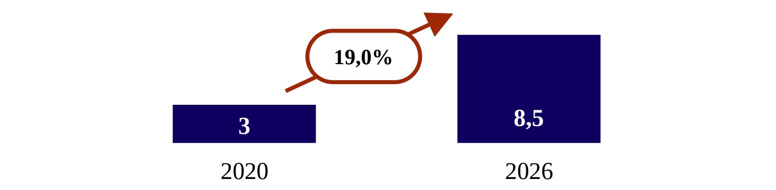
Players

AMARA RAJA, FDK, Energizer, LG Chem, Panasonic, ULTRALIFE, DURACELL

Secondary Batteries Market[1]

Residencial Energy Storage Systems (RESS)[1]

KPIs



Growth Trends

- **Lithium batteries** account for **more than 50% of the market** and it is expected to increase
- **North America** is the fastest growing market whereas the biggest one is **Europe** with much of the demand coming from the countries such as Germany, the United Kingdom, and France

Market Drivers

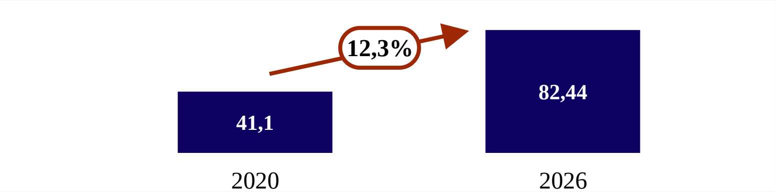
- Increasing demand for **uninterrupted and reliable power supply**, driving market growth
- **ESS serve as a complement** to the increasing adoption of solar rooftop systems by the residential sector
- **Government incentives:** Several countries have introduced the **net metering program,** encouraging solar energy in the residential sector by allowing costumers to **save in electricity expenses -** significantly increased awareness and attractiveness of green energy market, driving ESS demand

Players

sonnen, LG Chem, Panasonic, saft, SAMSUNG SDI

Rechargeable Li-ion Batteries

KPIs



Growth Trends

- **Lithium-based batteries**: fastest-growing segment of the market during the forecast period, given the **high capacity-to-weight ratio** (better performance and decreasing prices)
- **Asia-Pacific** and **North America** are estimated to be the key markets for industrial batteries, due to the increasing industrial activities and demand for high-capacity power backup in these regions

Market Drivers

- Accelerated growth of automotive/renewable energy sectors
- **Increase recycling efficiency** of lead-acid and lithium-based industrial batteries
- **Superior** performance of industrial batteries in terms of **energy density**, driving demand for lithium cells
- **Declining lithium-ion battery prices**, raising consumer attractiveness

Players

EnerSys, YUASA, EXIDE INDUSTRIES LIMITED, EAST PENN INTERNATIONAL

CAGR | Sources: Mordor Intelligence, Markets And Markets, Globe News Wire, Fortune Business Insights | 1) Values in Bn EUR

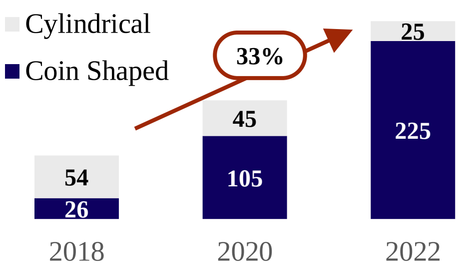
VARTA

High consumer demand for lithium-ion batteries suggesting strategic leverage of battery expertise in the segment and the entrance in the high growth EV battery market

VARTA'S END

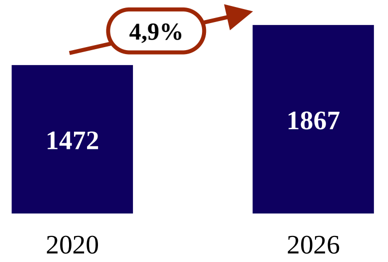
Rechargeable Li-ion Batteries

TWS[1] Lithium[2]



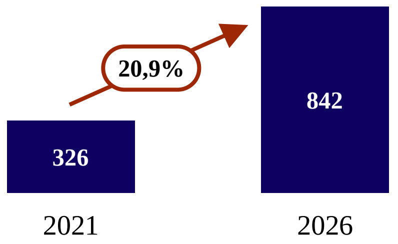
- VARTA is the **largest player in the coin-shaped li-ion batteries - estimated to currently have 50% of the total market**
- Consumer preferences towards **wireless devices** driving growth of TWS batteries, boosting VARTA's Entertainment & Industrial sub-segment
- **Declining cylindrical batteries market, with manufacturers moving towards coin shaped batteries (**LG Chem has a strong grip on the cylindrical TWS battery market controlling around 90% of the market)
- Despite facing growing competition, **technology leadership and first mover advantage in coin shaped batteries allows VARTA to control the premium segment, expected to capture 60% of total market share in 2022**

Hearing Aids[2]



- Disposable zinc-air button batteries dominating market sales
- **Trend towards rechargeable long-life hearing aid batteries**, implying single time purchases of batteries, expecting a slight negative impact in the market. However, VARTA might benefit from this transition due to its **leadership position and technological know how of hearing aid rechargeable batteries**
- Expected **longer life expectancy** in the future driving growth in demand from elderly population
- **VARTA, Energizer Holdings and Duracell account for almost 75% of the market**

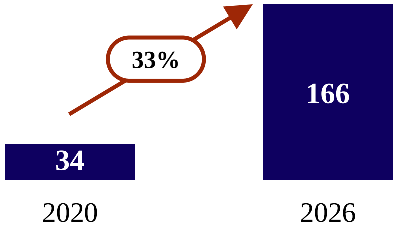
Power Pack[2]



- **Increasingly adopted in several applications**: smart packaging, medical devices, wireless sensor nodes and smart cards,
- **Growing need for thin and flexible batteries** in high growth industries, particularly requiring IoT and medical devices
- **Consumer electronic batteries are expected to dominate** the market
- **APAC** region holds a significant share of the global micro battery market in 2020 – region **expected to grow at the highest CAGR**

HIGH GROWTH MARKET SEGMENT THAT VARTA COULD EXPLORE

Electric Vehicle[3]

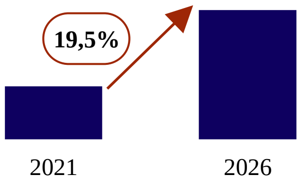
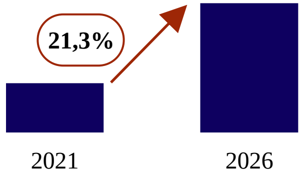
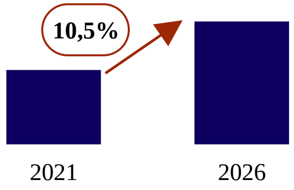
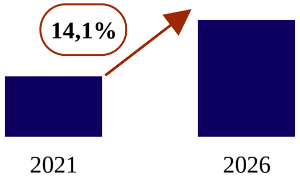
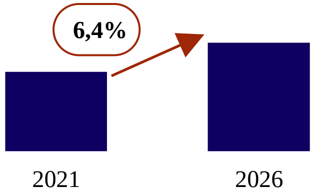


- Climate concerns, government policy, technological development and lower prices to **boost demand for EV**
- **Lithium-ion battery segment** is expected to dominate the market
- Asia-Pacific to be the **highest growth region** in terms of **EV battery manufacturers** due to cost advantages
- Lack of raw materials – cobalt, lithium and granite – may result in **higher prices** or in recycling of Li-ion batteries that secure the supply of raw materials and assure that lithium batteries dominate the market

CAGR | 1) True Wireless Stereo 2) Values in M EUR 3) Values in Bn EUR | Sources: Commerzbank; 360 Market Updates; Markets and Markets; Mordor Intelligence

VARTA

Apart from hearing aids, end markets are expected to register double digit growth over the next 5 years

	Smart Wearables & Medical Devices	Connected Car Devices	Internet of Things (IoT)	Industrial Robotics	Hearing Aids
KPIs					
Growth Trends	• TWS is expected to grow at a **CAGR of 14,4%** until 2028 • **North America** is the largest market • Asia Pacific expected to be the **fastest growing market**	• **European and North America** regions are expected to dominate this market, followed by Asia Pacific	• APA is the **largest and the fastest growing market** • USA expected to be a prominent market, explained by the **rapid adoption** of end-user innovations (e.g. home automation systems)	• APA is the largest and the fastest growing market • China's industrial robot production rose by **29,2%** Y.o.Y in June 2020	• Europe is the largest regional market • In 2020, the **adult patients** segment had the largest share of the hearing aids market
Market Drivers	• Increased innovation and **new product categories** in recent years • **Boom in the fitness trend** (smartwatches) • Demand for smart assistants (hearables)	• Vehicle automation presents the **most lucrative opportunity** for connected car devices • Increasing incidence of vehicle theft and road accidents • Demand for **infotainment systems** (in-car Wi-Fi hotspots and data services) • **Legislations in vehicle safety**	• The significant **growth of the Retail industry** (IoT used to improve operational efficiency and customer experience) • Increasing adoption of **wireless technologies, data analytics, cloud platforms** • **Lower cost of devices** driving costumer adherence	• Robotics play a crucial role in the rising adoption of **smart factory systems** • Growing adoption of **automation in automotive industry** and increasing demand for **Electric Vehicles** • Growing industries (chemical, food and beverage, etc.)	• **Shortage of skilled professionals** to perform otolaryngology procedures in several countries • Prevalence of **hearing loss** • **Aging of population and increase in average life expectancy** driving demand for hearing aid devices
Players	FOSSIL, SAMSUNG ELECTRONICS, Apple, GARMIN, fitbit	Continental, Valeo, Autoliv, Infineon, DENSO, BOSCH	HUAWEI, Google, IBM, Microsoft, CISCO	FANUC, KUKA, YASKAWA, ABB, DENSO	sonova, GN, Cochlear, RION

CAGR | Sources: Mordor Intelligence, Statista, Markets and Markets, PR Newswire

VARTA

Despite being surrounded by a competitive strong environment, VARTA´s technological leadership and best-in-class operational performance allows the firm to sustain its strong market positioning

Porter's 5 Forces

Power of suppliers

- Extensive long-term relationship **network of suppliers**
- **In-house** made product components for most products
- Raw materials can impact business activities: somewhat **volatile lithium prices**

Threat of new entrants

- High **entry barriers to compete with VARTA** due to technological and human capital expertise and and existing patents
- Strong **investments in R&D** to keep in touch with the most innovative technologies

Thread of substitute products

- **Risk of technological substitution:** VARTA protects the business by betting in a strong R&D network
- **Technological leader** in high density batteries and **focus on lithium batteries** to which the market is shifting towards

Power of costumers

- **Large number of reputable costumers** in diverse sectors
- Small number of customers in the Entertainment segment, the firm´s largest revenue share segment
- Most of firm´s **sales dominated by 4 major clients**

Competition in the industry

- Highly **spread competition**
- **Price pressures** from Asian competitors (lower labor costs)
- **Increased competition** to capture the li-ion market growth - VARTA's positioning insured by **intellectual property rights**
- Dominant in premium market

Impact Level

Comparables

- **VARTA is a direct rival to Energizer,** one of the word's largest primary batteries and portable lighting manufacturer
- VARTA beats all competitors in terms of **EBITDA margin,** the closest being EVE´s. EVE Energy is a fast-growing global high-quality lithium battery manufacturer, possesses core technologies and comprehensive solutions for consumer and power batteries.
- **The lowest Net Debt/ EBITDA belongs to** Ultralife the only competitor surpassing VARTA. **Ultralife** is a smaller competitor essentially focused on the industrial battery solutions segment and in communications systems, counting on a significant **lower operating profitability**
- VARTA´s low level of debt, prudent use of working capital and its focus on high-growth investments, will certainly give room to **further increase its FCF generation**
- VARTA's second **highest CAPEX/D&A** is explained by the firm´s investment efforts, reflecting a strong confidence of the management team in its future performance

Company	Sales[1]	EBITDA Margin	Net Debt/ EBITDA	EV/EBITDA[2]	CAPEX/D&A
Energizer	2 443	15,16%	10,02x	16,9x	0,57x
EXIDE	1 833	10,74%	12,73x	7,0x	4,80x
EVE 亿纬锂能	1 106	21,87%	3,30x	n.a.[3]	4,19x
GP Batteries	692	8,37%	6,85x	7,5x	2,06x
FDK	485	1,35%	37,91x	8,9x	1,31x
ULTRALIFE	96	5,29%	1,78x	10,3x	1,00x
VARTA	870	24,45%	2,36x	26,27x	4,54x

1) All values are from 2020 and are in Million euros | 2) EV source: Bloomberg | 3) Multiple value is an outlier with significantly high values: 88.27x

Strategic and secondary sales comprise two attractive exit strategies, combining strong advantages with low completion risks and high valuations, although higher exit multiples are typically expected in a strategic sale scenario

Exit multiple of **12.56x EBITDA**. Strategic entry in the high growth EV market expect to **consolidate and strengthened VARTA´s positioning as a premium battery manufacturer**, particularly in Europe, while broadening the firm´s customer base by incorporating powerful strategic customers, assuring **cash flow stability**. Incorporation of the recycling process, and operational performance improvements amplifying the **strong cash generation** during the forecasted period. VARTA is expected to be a stronger player upon exit, yielding high returns for investors.

Strategic Sale

Rationale:
High growth, attractive markets served by VARTA, concentrated in few key players due to the business complexity, yet increasing competition trying to capture exponential market growth, mostly via M&A transactions

Advantages:
- **Higher exit valuation**: strategic buyers tend to pay a higher price in order to benefit from synergies
- **Numerous potential buyers**: industry marked by strong M&A activity
- Industry with large players with the resources required to finance the acquisition
- **Immediate exit** without regulatory requirements and costs inherent to other exit options (as it occurs in an IPO)

Red Flags:
Timing wise, **strategic buyers might try to enter sooner**, as markets are becoming more competitive and mature, with smoother growth expectations and lower prices, specially at the time of the exit

!
CATL | Panasonic | SAMSUNG SAMSUNG SDI | LG Energy Solution

EXIT

Secondary Sale

Rationale:
Potential to create new buyout strategies after the holding period as VARTA still has plenty of room to grow, particularly at an international level and also size wise

Advantages:
- Experience in defining **deal terms and risk allocation models**, potentiating an immediate full exit
- **Limited number of potential targets** in the battery industry resulting in high valuations of secondary buyers
- **Ability to leverage the high growth potential** of this industry with great prospects of returns

Red Flags:
Conditional on the **success of value creation strategies** and **cash generation** after the committed massive investments

!
THE CARLYLE GROUP | EQT | BlackRock

The most likely strategy to pay a higher premium valuation is to ***exit via strategic sale*** *to a major competitor, a straightforward exit, without major costs involved and generating an attractive exit multiple, due to high synergies potential.* ***CATL*** *is a safe bet for a strategic sale, as buying VARTA would be aligned with the firm's growth strategy and future goals. Alternatively, a* ***secondary sale*** *is also expected to yield a high valuation and* ***Carlyle*** *is a strong potential buyer for VARTA's concept.*

VARTA

Promising return outlook for both CATL and Carlyle encouraged by strong drivers for the acquisition of VARTA

Strategic Sale

CATL

CATL is a **leading global provider of lithium-ion batteries for electric vehicles and energy storage systems**, with business covering R&D, manufacturing and sales.

Headquartered in China, counts with **10 production plants, 9 in China and 1 in Germany** and 4 R&D centers, 3 in China and 1 in Germany.

- **EV sales** as main source of revenue and and growth driver
- Lithium-ion batteries supplier to **lead domestic auto producers** such as Shanghai Automotive, First Automobile, Geely, Yutong
- Recently entered **Germany in an attempt to capture EV growth market** (currently supplying Tesla and BMW)

Values in $M	2015	2020
China	5,627	42,412
% Revenue	*99,4%*	*84,3%*
Europe	33	7,907
% Revenue	*0,6%*	*15,7%*

Growth strategy marked by **strong M&A activity** aimed to **control battery value chain,** assuring commodities supply for increasing demand, and **strengthening market share**

2021: Acquired two miner companies, one in Canada and another in Australia, for $ 317 M and $ 900 M, respectively

2020: Acquired battery manufacturer Fujian Yongfu Power Engineering (Chinese) for $ 135 M in order to expand capacity for energy storage solution segment

STRATEGIC SALE MAIN SYNERGIES

EVs: CATL can benefit from VARTA's strong positioning among premium German car manufacturers, particularly Audi, Porsche, and Volkswagen, reinforcing the firm´s customer base and EV market share.

Energy Storage Systems: CATL can strongly increase capacity in the segment.

Europe: CATL can consolidate its recent efforts towards internationalization significantly strengthening positioning in Europe.

Portfolio expansion: CATL can broaden its portfolio of offerings, particularly benefiting from VARTA´s household segment.

DRIVERS

- High potential synergies from the acquisition
- Strong successful M&A record

Secondary Sale

SECONDARY SALE RATIONALE

Carlyle is **seeking opportunities** linked with **EV high growth market** making VARTA an **attractive target**.

After the investment period, VARTA will still have **room for a buyout**, aligned with Carlyle's value creation leavers namely, internationalization, new product developments, M&A opportunities, among other.

DRIVERS

- VARTA meets the specs for the PE investment strategy

- **32%** of direct investments in **Europe**, **12,3% in Industrials** (68 direct investments, 3 pending projects)
- Selective within the industrial sector, yet **flexible on investment size** (from $50 million to more than $1 billion)
- Performance derived through levers of value creation such as international expansion, new product development, M&A, strategic positioning strategies
- Investment strategy underpinned by several **key themes driving growth** in the most attractive companies within the industrial sub-sector, including **migration of powertrain technologies to electric vehicles**

THE CARLYLE GROUP

Carlyle is one of the **world's largest and most diversified global investment firms**, with $293 billion of assets under management across 3 business segments and 433 investment vehicles.

Direct investments include **management-led/ Leveraged buyouts.**

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Electric Vehicle Batteries Market

Market Demand

The battery market has increased during the last years, and it is expected to keep on increasing. The main driver fuelling this growth is, in a very impactful way, the EV batteries market segment.

Consumers environmental concerns alongside with government policies has had significant impact on this surge in demand. These factors are mostly responsible for the exponential market growth. Currently these two factors are still driving growth; however, in the future government is not expected to subsidize Electric Vehicles as it is currently doing. It is subsidizing corporate investment in EV related businesses as it is subsidizing EV's, not only by allowing for a significant discount when acquiring one but also through other measures such as free parking. These policies are expected to eventually come to an end.

The lack of such support could negatively impact the market as it currently stands; fortunately, in the upcoming years Battery Electric Vehicles (BEVs) should achieve price parity with Internal Combustion Vehicles (ICEs). Given this, cost savings that they entail on the user and environmental concerns demand for Electric Vehicles, and in turn for Electric Vehicles Batteries, is expected to remain strong in the upcoming years. One can clearly see this when multiple automotive manufacturers are committing themselves to manufacture solely BEVs. For example General Motors plans to be fully electric by 2035, and it is not the only one. Given automotive manufacturers plans demand is expected to skyrocket.

Market Competitors

The market is concentrated – 3 companies hold in their hands almost 70% of the market. CATL is the largest player in the market accounting for over 30% of it. LG Chem energy solution, Panasonic, Samsung SDI, BYD, SK Innovation are also significant players. However, differently from the other competitors CALB almost solely manufactures EV Batteries. Given this it is a very interesting company to look into when analysing this segment of the market.

All these companies have had outstanding growth in recent years, none experienced growth below 100% from 2016 to 2020. CATL in particular has experienced unbelievable growth having increased 3400% since 2016, turning them into the largest manufacturer in the world. To understand the height CATL has reached it interesting to see that its founder is now richer than Jack Ma, Alibaba owner.

Players in this market have already announced dozens of projects to build facilities in the upcoming years. Projects announced are usually large facilities with capacities for several GWh, this reasons from a problem that these companies face. These factories optimal size has as minimum output of 8 GWh, below this companies usually are not as efficient. As such, companies have to chose between smaller factories, satisfying current demand, or bet in larger pricier factories that more than satisfy current demand. CATL in 2020 had 109 GWh of production capacity and only deployed 47 GWh – nevertheless it plans to triple capacity in two years.

Market Trends

Battery prices are expected to significantly decrease in the upcoming years, by 2030 prices should fall by half of what they currently are. This decrease in prices is more than offset by the increase in quantity that should increase by more than ten-fold by then.

This price decrease is driven by mass production and by the raw material costs. Companies have been finding ways to decrease cathode costs, that account for over 50% of the total cost. By changing the chemical composition of cathodes companies are able to significantly decrease the costs.

CATL for example has changed the cathode they used for LFP which cost effective. LFP cathode avoids making use of more expensive materials, such as cobalt, that have a large impact on the final price of the battery. Albeit being cost effective they are not the ideal cathode to manufacture the best possible battery – they are neither the most the fast charging battery nor the one with the highest energy density. Nevertheless, they are the suppliers of Tesla which has, arguably, some of the best batteries in the market. Companies should strive for cost effective solutions without compromising quality, in other words they should still offer a useful battery.

As it stands 94% of the market is in the hands of Asian manufacturers – most of them are currently investing in Europe to work closer with automotive manufacturers. VARTA already has this advantage.

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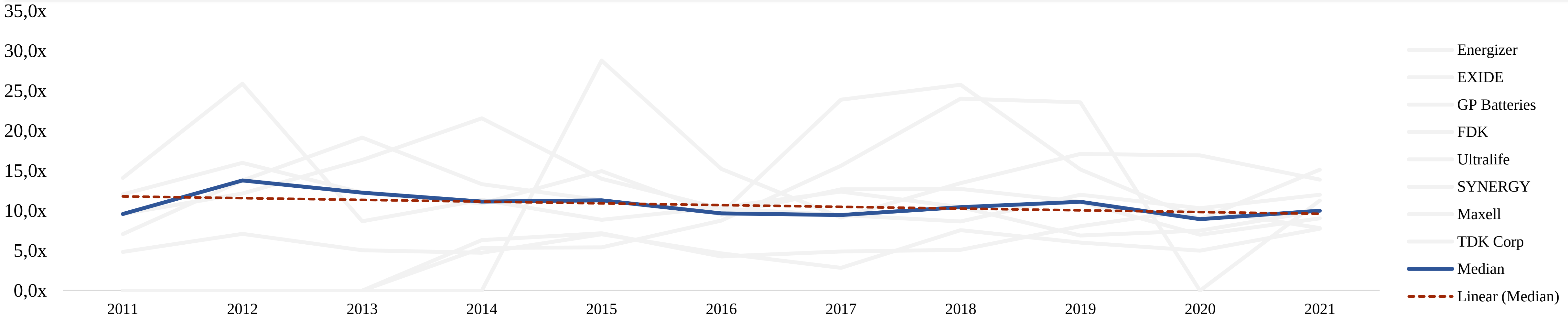
Competitors product offerings per segment

				Product Portfolio					
Competitor	Headquarter	Sales (€ M)	# Employees	Hearing Aids	Li-ion CoinPower	Power Pack	Consumer	Energy Storage	Others
Energizer	USA	2,443	5,900	X	X	X	X	X	
EXIDE	India	1,833	5,202		X	X		X	Submarine Batteries, E-Rickshaw vehicles
EVE 亿纬锂能	China	1,106	9 669		X	X	X	X	
GP Batteries	Singapore	692	6,000		X	X	X		Electronic and Acoustics
FDK	Japan	485	2,486		X	X	X		
ULTRALIFE	USA	96	532		X	X		X	Communication Systems, military solutions

EXIT Multiple Rationale

Historical EV/EBITDA



No Multiple Arbitrage

1. Comparable firms median EXIT Multiples have been **slightly decreasing throughout the years** – nowadays it is hovering around the 10,0x EV/EBITDA. As such the this value is expected to follow the historical trend and decrease slightly upon the exit.
2. Even though the market growth expected in the entertainment segment is set to settle down – the boom demand for TWS lithium-ion batteries is expected to occur during the investment period – all others segments are expected to **keep the demand pace of the forecas**t. Moreover**, demand in the Large Format Batteries Segment is expected to remain strong** with several reports pointing towards it. This will enable the **buyer to take full potential of the EV facility** that, upon the exit in 2026, is still not working with full capacity, leaving 20% on the table for future growth.
3. After entering the EV segment, VARTA will have **new "comparables";** this companies have, on average, **higher EV/EBITDA Multiples**. Samsung SDI to have a similar portfolio to that of VARTA.

EXIT Multiple Drivers

Decreasing trend to bring the multiple value down

1. Company largest segment market to slowdown
2. Falling prices for lithium-ion batteries to bring Multiple down
3. Potential to explore the EV segment and the fact that the EV facility is not yet at full capacity to offset this effect and bring multiple up

New segment to increase the company Multiple – Samsung SDI as good comparable has a currently a 21,7x EV/EBITDA Multiple

Effects to offset each other and to maintain the EV/EBITDA Multiple constant throughout the years

Potential Buyers for VARTA AG – Main Financials

CATL (in billion EUR)	**2020**
Revenues	44.0 €
EBITDA	8.8 €
Net Debt/EBITDA	1.2x
Total Assets	137.8 €

Panasonic (in billion EUR)	**2019**
Revenues	62.1 €
EBITDA	4.9 €
Net Debt/EBITDA	0.4x
Total Assets	46.7 €

Samsung SDI (in billion EUR)	**2020**
Revenues	8.4 €
EBITDA	0.5 €
Net Debt/EBITDA	9.9x
Total Assets	16.0 €

LG Energy (in billion EUR)	**2020**
Revenues	1.1 €
EBITDA	-0.4 €
Net Debt/EBITDA	n.a.
Total Assets	**14.9 €**

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