Supplementary Information (SI) for RSC Sustainability.

The Impact of Cell Standardization on Niche Markets for Battery Applications: An Analysis of Various Cylindrical Cell Formats – Supplementary Materials

Table S1: Niche related market volumes.

Market niche	Reference
Electric Wheelchair	Avicenne Energy 2022 – **Estimated 5%** of LSEV Volume 2025[1]
Electric Scooter	Avicenne Energy 2022 – **Estimated 30%** of eBikes Volume 2025[1]
Electric Bike	Avicenne Energy 2022 – eBikes Volume 2025[1]
Power Tools	Avicenne Energy 2022 – PowerTools for 2025[1]
Power Banks	Avicenne Energy 2022 – **Estimated 10%** of Cellular Phones Volume 2025
Industrial / Maritime	Avicenne Energy 2022 – BESS for Industrial/Commercial – high Scenario Volume 2025[1]
Home Storage	Avicenne Energy 2022 – Home BESS 2025[1]
Golf Cart	Avicenne Energy 2022 – **Estimated 5%** of LSEV Volume 2025[1]
Forklift	Avicenne Energy 2022 – Forklift Volume 2025 [LIBs + Lead][1]
Commercial Drones	Avicenne Energy 2022 – Commercial Drone Volume 2025[1]
Boat / Camping	Estimated

Niche	Associated systems	System size category	Theoretical system configurations	Covered system configurations	Coverage rate	Comment
electric Wheelchair	18	M	108	98	90.7%	System Configurations below 2 Ah_{CC} excluded
electric Scooter	15	S	60	56	93.3%	System Configurations below 2 Ah_{CC} excluded
electric Bikes	26	S	104	103	99.0%	System Configurations below 2 Ah_{CC} excluded
Power Tools	60	XS	120	91	75.8%	System Configurations below 2 Ah_{CC} excluded
Power Bank	14	XS	28	28	100.0%	
Industrial / Maritime	41	XL	410	301	73.4%	System Configurations above 50 Ah_{CC} excluded
Home Storage	40	L	320	236	73.8%	System Configurations above 50 Ah_{CC} excluded
Golf Carts	15	L	120	89	74.2%	System Configurations above 50 Ah_{CC} excluded
Forklift	29	XL	290	62	21.4%	System Configurations above 50 Ah_{CC} excluded
Drones	9	XS	18	18	100.0%	
Boat / Camping	27	M	162	96	59.3%	System Configurations above 50 Ah_{CC} excluded

Table S2: Detailed information about analyzed niches.[2]

Table S3: Determined cell types for scenario analysis.

Scenario	Cell Type	Chemistry	Energy density [Wh/L]	Capacity range [Ah_{cc}]
N.A.	21700 Cylindrical	LFP//G	314.0 – 431.7	2.4 – 3.3
A	21700 Cylindrical	NMC811// G	565.1 – 682.9	3.8 – 4.6
A	21700 Cylindrical	NCA//SiG	627.9 – 745.7	4.2 – 5.0
N.A.	18650 Cylindrical	LFP//G	306.1 – 420.9	1.6 – 2.2
A1	18650 Cylindrical	NMC811// G	551.0 – 665.8	2.5 – 3.1
A1	18650 Cylindrical	NCA//SiG	612.2 – 727.0	2.8 – 3.3
A2	4680 Cylindrical	LFP//G	330.2 – 454.1	13.7 – 18.9
A2	4680 Cylindrical	NMC811// G	594.4 – 718.2	22.0 – 26.5
A2	4680 Cylindrical	NCA//SiG	660.4 – 781.4	24.4 – 29.0
B1	50100 Cylindrical	LFP//G	340.3 – 467.9	20.9 – 28.7
B1	20100 Cylindrical	NMC811// G	592.6 – 716.1	5.2 – 6.2
B1	16100 Cylindrical	NCA//SiG	646.2 – 767.3	3.6 – 4.3

References

1 C. Pillot, *Worldwide Rechargeable Battery Market 2021-2030. 29th Version*, 2022.

2 R. Jan-Hendrik, *Dataset of devices for market analysis and modelling*, 2025.