“Anode-Free”

Safe and Ultra-High Energy Density Lithium Metal Batteries

Company Overview

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The Opportunities

Electric/Autonomous Vehicles

High Altitude/Consumer Drones

1. Free access to internet and education
2. Surveillance
3. Defense

Consumer Electronics/ Internet Of Things

1. Smart phones
2. Smart watches
3. Wristbands
4. Wireless earbuds

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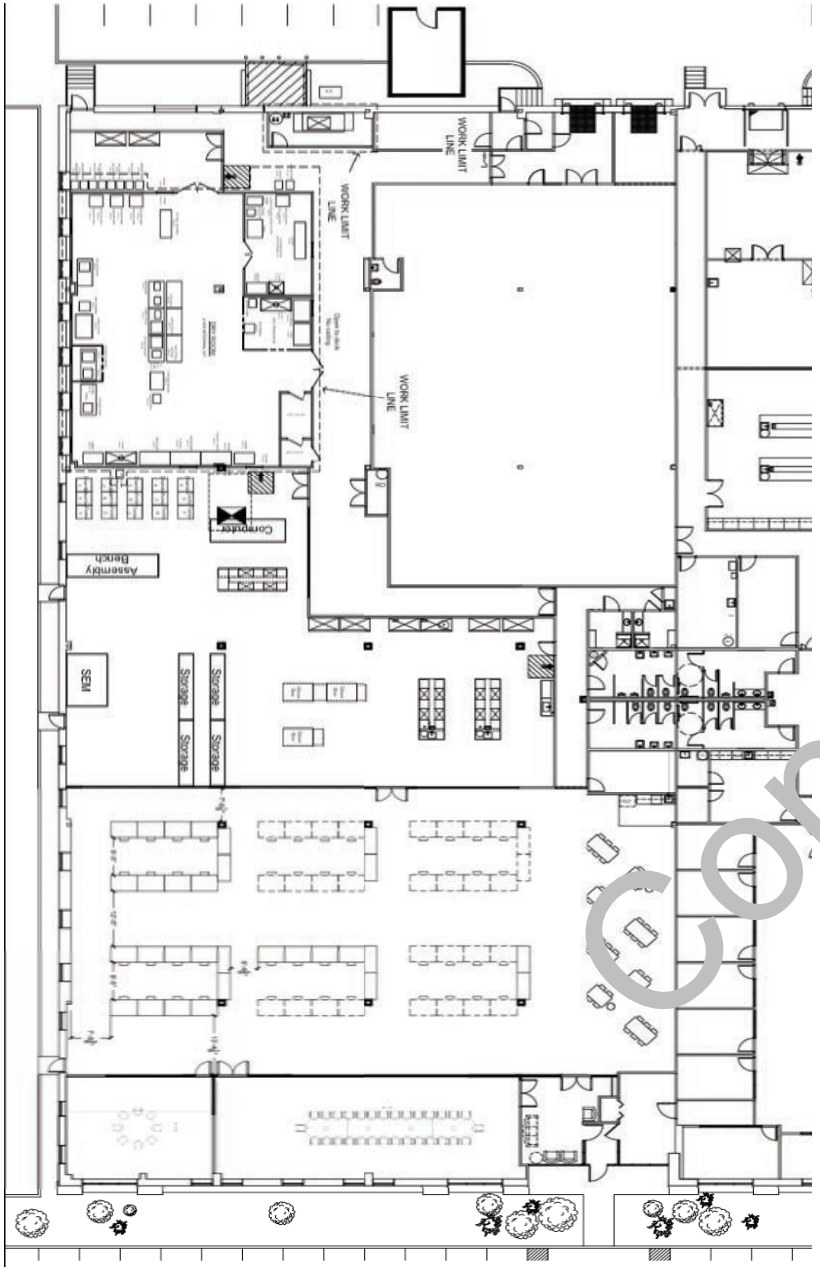
2017 2018 2019 2020 2021

Not just developing a new battery, but enabling a new way of life

Pilot Facility (USA)



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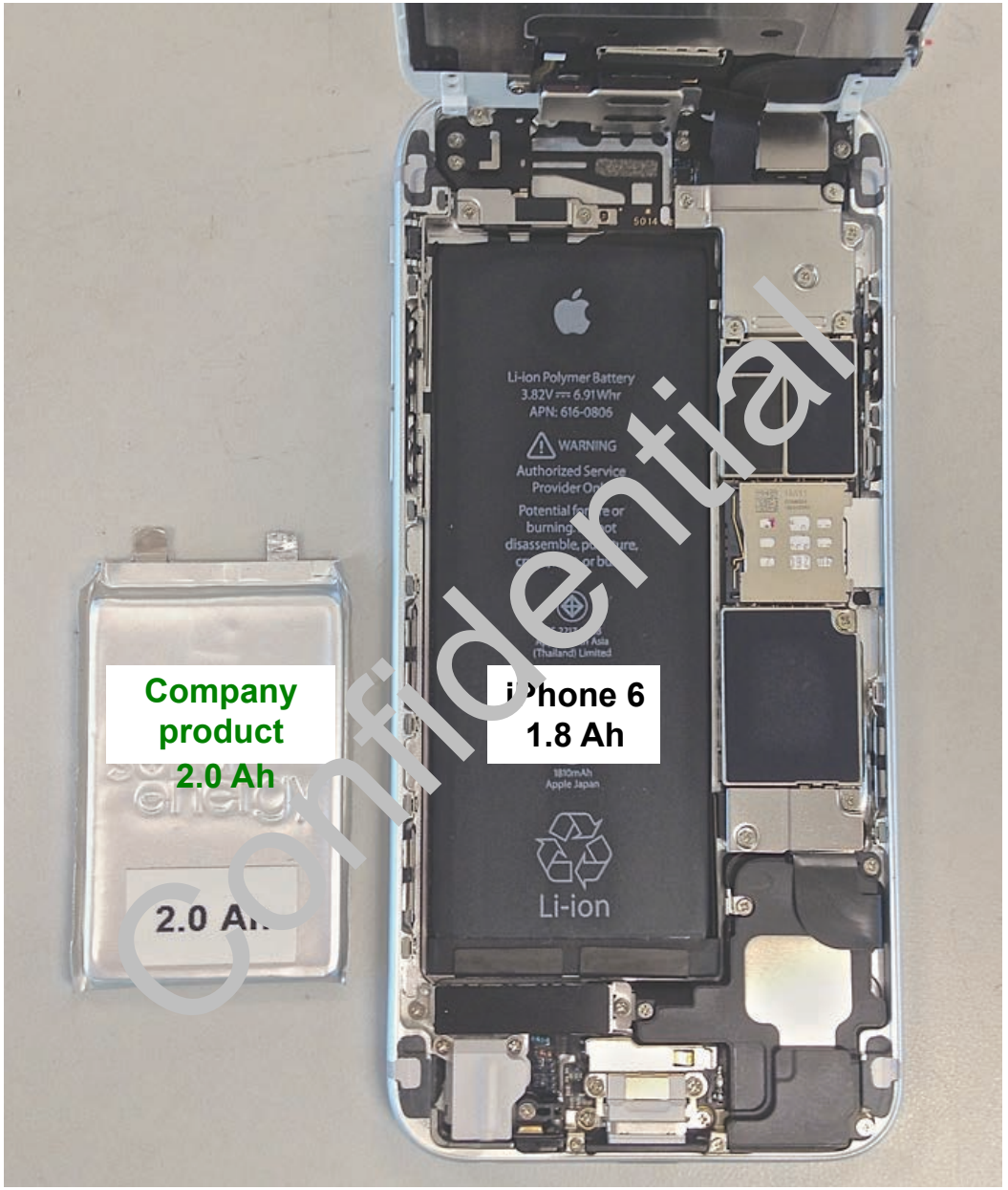
Company Pilot Facility

23,101 sqft
Production area for cathode-lyte, salts, and additives
Dry room for anode-lyte coating
Dry room for cell assembly (5,000 cells per month)
Chemistry lab for R&D

Product



Same capacity, ½ the weight, ½ the size

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Product Specifications

Parameter	Unit	Criteria	LCO	NMC 622	NMC 622	NMC 811	NCA	NMC 811	NCA	NCA
Nominal cell capacity	Ah	≥ 97% of target capacity	2.00	2.05	2.10	2.07	2.08	2.48	2.35	3.03
Nominal cell voltage	V	± 0.02 V	3.93	3.85	3.83	3.81	3.77	3.81	3.77	3.77
Nominal cell energy	Wh	≥ 95% of target energy	7.86	7.89	8.04	7.89	7.83	9.43	8.85	11.44
Specific energy density	Wh/kg	≥ 95% of target energy	**354.05**	**330.23**	**34[illegible]**	**362.91**	**370.73**	**402.92**	**405.21**	**425.40**
Volumetric energy density	Wh/L		**1051.74**	**946.2[illegible]**	**10[illegible]37**	**1010.41**	**1033.80**	**1148.42**	**1146.66**	**1232.41**
Cell weight	g	± 3%	22.20	23.[illegible]	23.20	21.73	21.12	23.41	21.84	26.89
Pouch forming dimension	L		0.007	0.[illegible]08	0.008	0.008	0.008	0.008	0.008	0.009
Cell thickness	mm		4.40	4.9[illegible]	4.80	4.39	4.26	4.62	4.34	5.22
Cell demension	mm		se[illegible]							
Nominal charge rate	A	0.1C	0.20	0.21	0.21	0.21	0.21	0.25	0.23	0.30
Maximum charge rate	A	0.2C	0.40	0.41	0.42	0.41	0.42	0.50	0.47	0.61
Nominal discharge rate	A	0.1C	0.20	0.21	0.21	0.21	0.21	0.25	0.23	0.30
Maximun discharge rate	A	1.0[illegible]	2.00	2.05	2.10	2.07	2.08	2.48	2.35	3.03
Charge voltage	V	± 0.05 V	4.4	4.3	4.3	4.3	4.3	4.3	4.3	4.3
Discharge voltage	V	± 0.0[illegible] V	3	3	3	3	3	3	3	3
			Available Now (Sep 2016)			**Coming Soon (Dec 2016)**				

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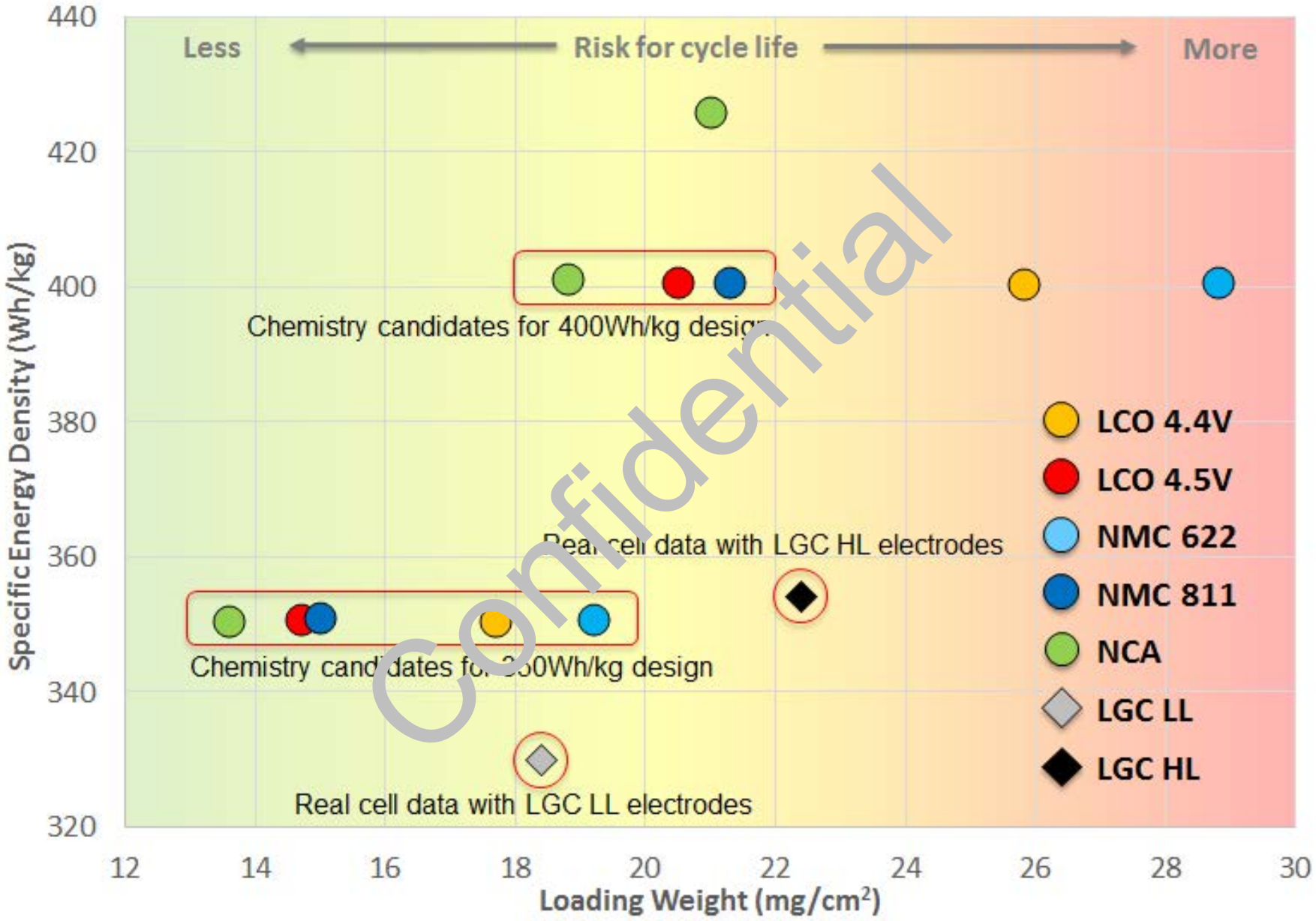
Product (please pick your cathode)



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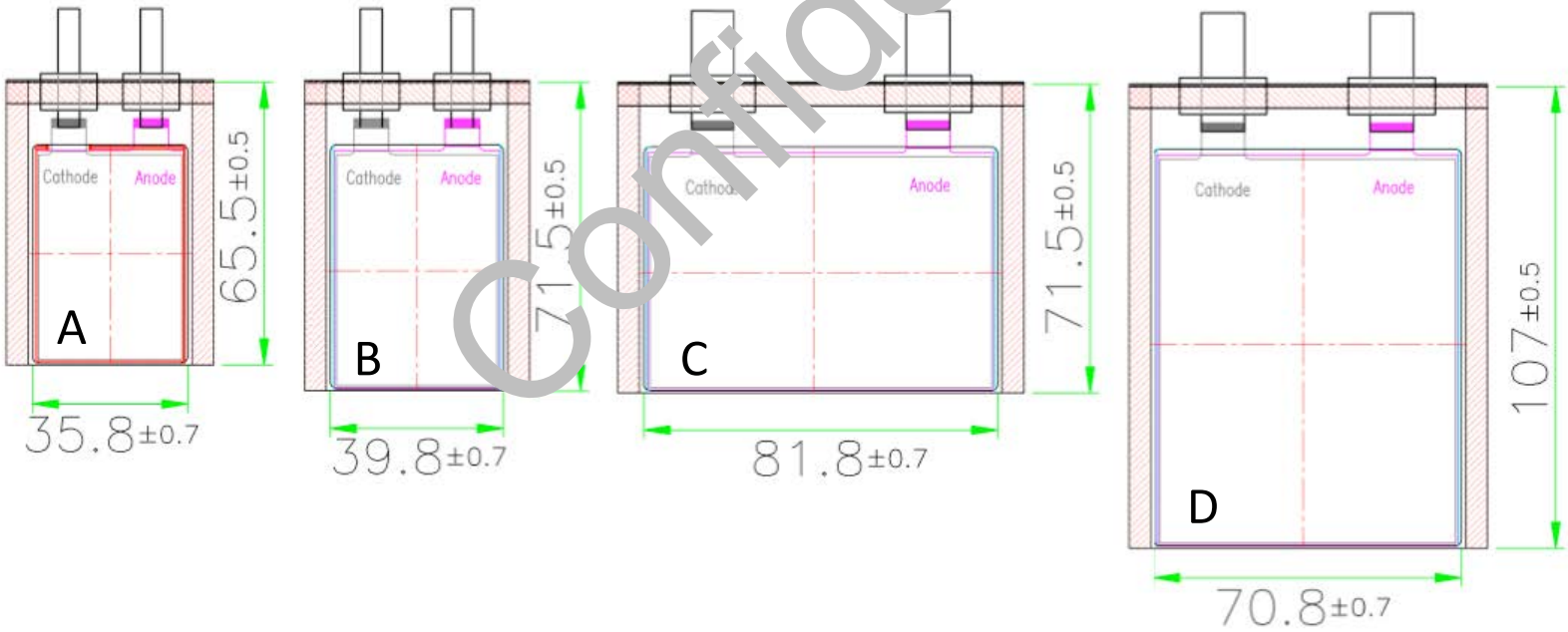
Product (please pick your cell form factor)

Capacity (Ah)	Energy (Wh)	Thickness (mm)	Energy density		Cell design
			Volumetric (Wh/l)	Specific (Wh/kg)	
2.77	10.4	5.08	895.9	415.2	A
4.82	18.2	8.60	921.2	420.6	A
6.35	23.9	8.60	949.9	424.7	B
7.40	27.9	5.08	947.2	420.3	C
12.86	48.5	8.60	979.4	429.2	C
10.57	39.8	5.08	1051.7	432.0	D
18.38	69.3	8.60	1081.4	435.8	D



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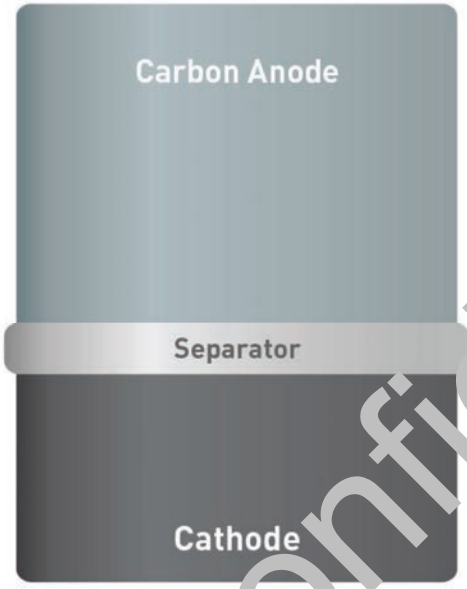
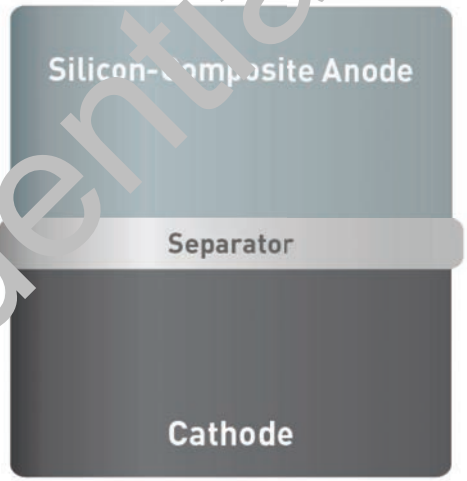
Technology

Gen 0
Li-Metal
100-200 Wh/kg
200-300 Wh/L
Dangerous

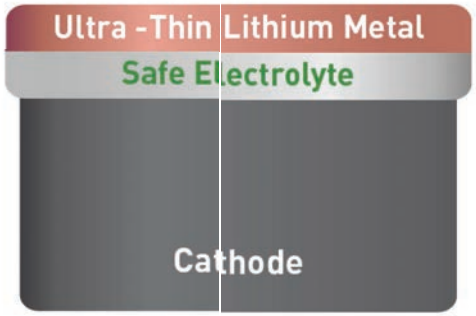


Gen 1
Li-ion
200-250 Wh/kg
600 Wh/L
Safe



Gen 2
Li-ion
250-300 Wh/kg
700 Wh/L
Safe

Company



Gen 3
Li-Metal
400-500 Wh/kg
1200 Wh/L
Safest

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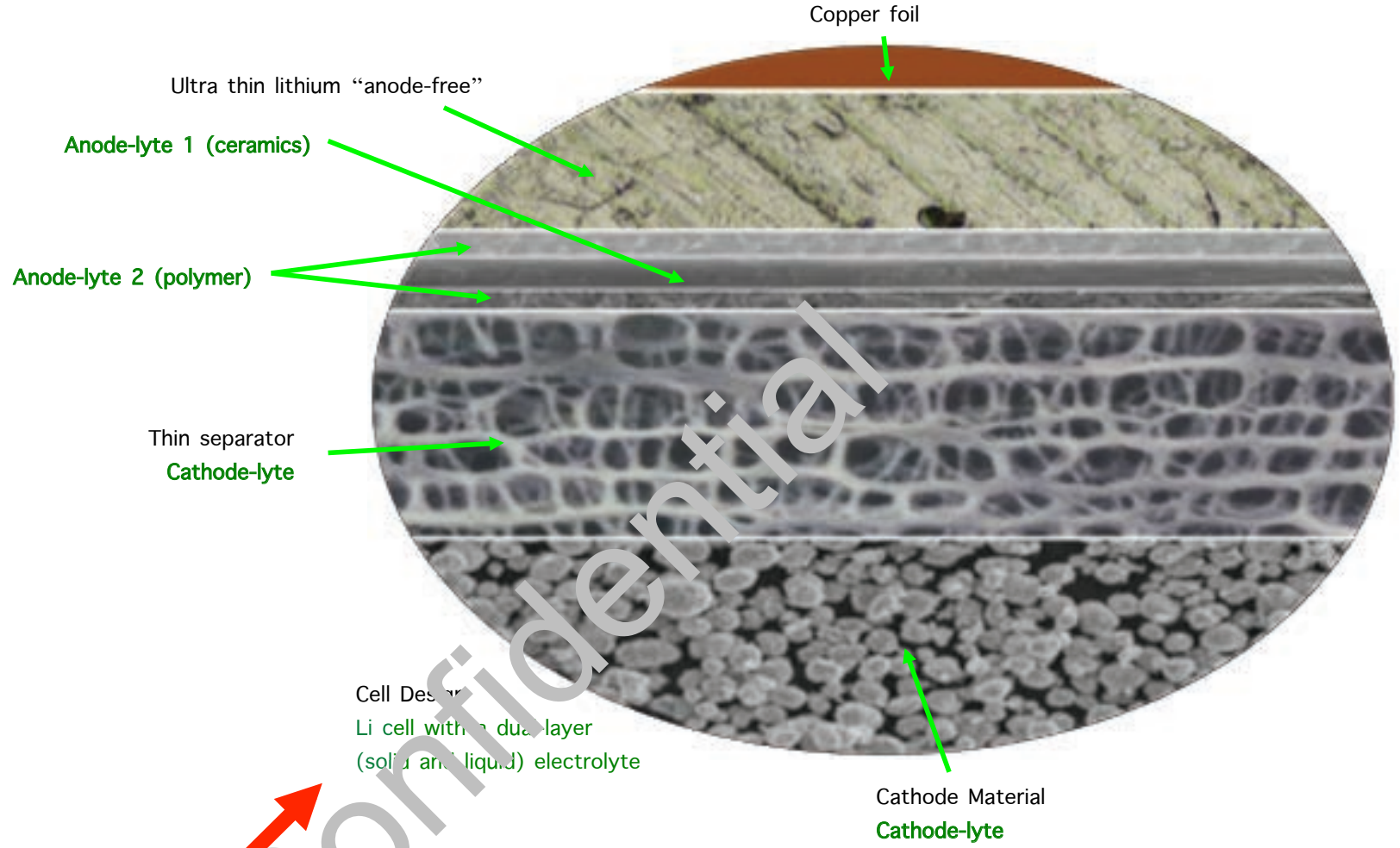
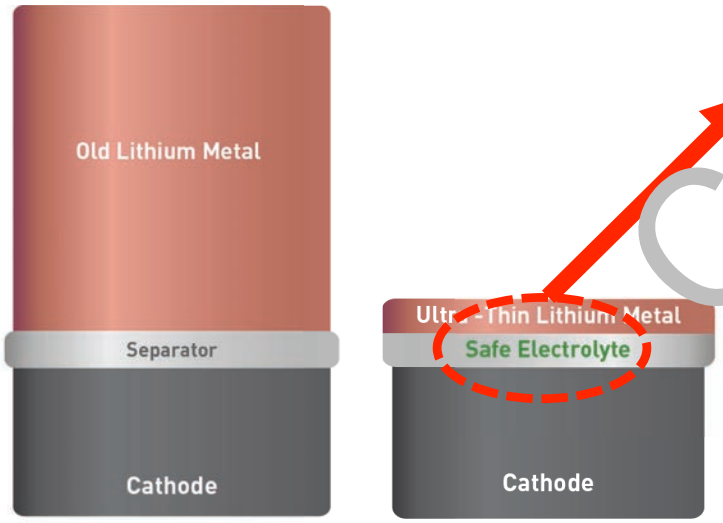
echnology





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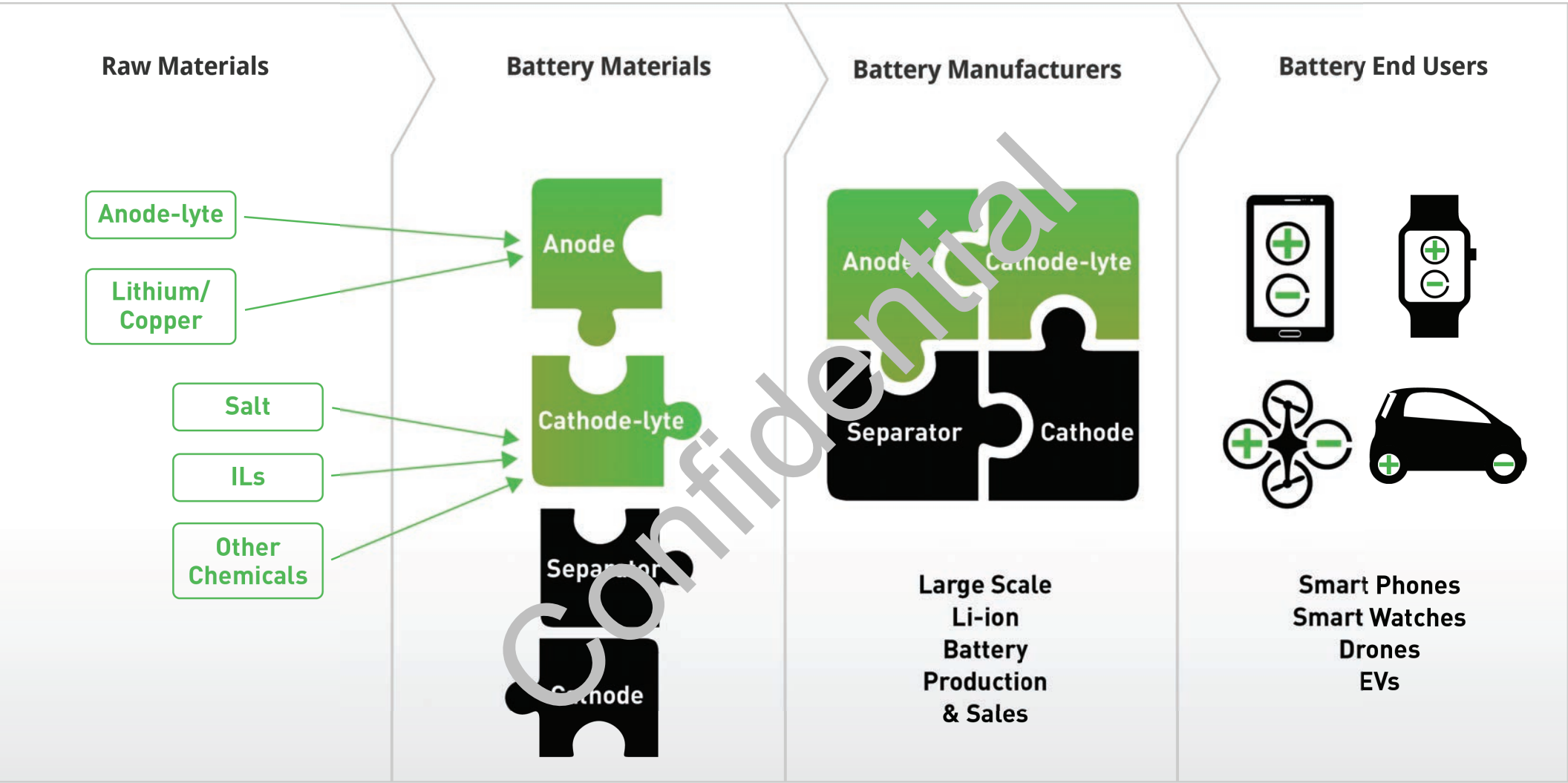
Competitors

- **Sion Power** and **PolyPlus**: exotic cathodes (oxygen, sulfur, water, sea water)
- **Seeo**, **Sakti3**, and **Quantumscape**: all solid-state lithium metal batteries, not practical for room temperature or high capacity applications
- **Company**: high energy density lithium metal batteries with practical cathodes (LCO, NCA, NCM622, NCM811) capable of room temperature operations

Business Model
(Company contributions are in green)



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Go-to-Market Strategy

1a. Company build cells with their materials and send the cells to final users for testing

1b. In parallel as 1a, send cells to cell manufacturers for testing

They offer **fast prototyping**, **design flexibility**, and **Li-Metal pilot scale production capability**

2a. For small volume but high margin markets (high altitude drones), they first build and supply the cells at their pilot facility directly, then they identify and partner with specialty cell manufacturers.

2b. For large volume (consumer electronics and automotive), they identify and partner with large cell manufacturers, and have them ramp up internal cell production capability with Company's materials. Their pilot facility and successful field trials in 2a will help mitigate risk and provide confidence for large scale cell production.

3. They supply **electrolyte** and **anode** materials and **IP license around cell assembly process** to large cell manufacturers, and they will start large scale production and supply cells to large final users.

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Team

Q.H. (Founder & CEO)
M.K.(VP of R&D): ex-ATMI/Entegris, Director and VP of R&D/BD
R.W. (VP of Operation): ex-BASF, Global Director of Systems Integration, CTO and VP of BD at Novolyte before acquired by BASF Ikuo
Y.(Special Advisor): ex-Sanyo, CTO at Sanyo rechargeable battery business unit

A.T. (Anode-lyte Project Leader): ex-Contour, received his PhD from University of Texas at Austin under Dr. Arumugam Manthiram J.K. (Senior Scientist): ex-Cymbet/Medtronic
I.D. (Senior Scientist): ex-XG Sciences
Y.K. (Senior Scientist): ex-Apple/Oak Ridge National Lab
M.D. (Principal Scientist): ex-Samsung, 20 years of experience in polymer and gel electrolyte
X.C. (Senior Scientist): received his PhD from Clark University and BS from University of Science and Technology of China
L.C. (Research Scientist): several years of experience with battery design in academia and industry

J.H (Cathode-lyte Project Leader): ex-Pellion, studied at Northeastern University with K. M. Abraham
R S, (Principal Chemist): ex-Coorstek/Mitsubishi Chemical
J.X. (Senior Scientist): studied with Jeff Dahn at Dalhousie University
W.L. (Principal Scientist): ex-BASF
L.Z. (Research Scientist): graduated from Peking University in Chemistry

YK Son (Cell Development Principal Engineer): ex-Apple/Samsung/Johnson Controls
Y.T. (Project Lead): young, smart and energetic
Y.M. (Senior Engineer): ex-Samsung
J.C. (Senior Engineer): ex-Contour/Schlumberger
Y.Y. (Engineer): ex-Samsung
H.L. (Engineer): ex-Samsung

T.A. (Director of Facilities): ex-A123

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