



Energizing Innovation™

for wearable devices & connected sensors

September 2020



Safe Harbor Statement

This report includes forward-looking statements covered by the Private Securities Litigation Reform Act of 1995. Because such statements deal with future events, they are subject to various risks and uncertainties and actual results for fiscal year 2017 and beyond could differ materially from the Company's current expectations. Forward-looking statements, including estimates of capacity, selling price and other material considerations, are identified by words such as "anticipates," "projects," "expects," "plans," "intends," "believes," "estimates," "targets," and other similar expressions that indicate trends and future events.

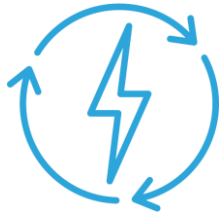
Factors that could cause the Company's results to differ materially from those expressed in forward-looking statements include, without limitation, variation in demand and acceptance of the Company's products and services, the frequency, magnitude and timing of raw-material-price changes, general business and economic conditions beyond the Company's control, timing of the completion and integration of acquisitions, the consequences of competitive factors in the marketplace including the ability to attract and retain customers, results of continuous improvement and other cost-containment strategies, and the Company's success in attracting and retaining key personnel. The Company undertakes no obligation to revise or update forward-looking statements as a result of new information, since these statements may no longer be accurate or timely.

Thinfilm financial reports may be accessed via the following web page:

<https://thinfilmsystems.com/investor-relations/presentations-webcasts/>

our focus – superior energy density, longer life

Disrupting the market with steel, stacking, scale



Designing & manufacturing premium microbatteries

- > 2x energy density
- 2-3x recharge cycles / lifetime
- Safer than Li-ion



Leveraging proprietary IP & unique technology platform

- Unmatched expertise on steel
- Validated roll-to-roll process
- Multi-cell stacking innovation
- Company owned, fully equipped ISO9001 facility




Addressing unique market requirements

- Form factor & energy density for wearables
- Long lifetime & reliability for hearables and connected sensors

market overview

Focus

Microbattery
mWh - Wh



1Bu, \$3-4B


Future

Mid-market
Wh - kWh



For others...

Bulk storage
MWh - GWh



Energy density

Volumetric

600 → 1000 Wh/l

Volumetric

1000+ Wh/l

Gravimetric

Wh/kg

Product highlights

Ultrathin form factors
Long lifetime
Application-specific pricing

Standard form factors
Rapid charging

Maximum capacity
Commodity pricing (per Wh)

Technology platform

Solid-state chemistry
Roll-to-roll steel
Stacking innovation

New anode
Electrolyte improvement

Gigafactory

microbatteries – our entry market

Established, growing markets; well aligned to existing factory

Initial focus

Medical Wearables

150M Units

Continuous glucose monitoring, temperature monitoring, physiological monitoring

Hearables

350M Units

Hearing assist, wireless headphones

**1B
Units**

Subsequent expansion

Connected Sensors

250M Units

Environmental sensors, commercial smart buildings, smart manufacturing

Sports & Fitness Wearables

350M Units

Activity measurement, smart apparel

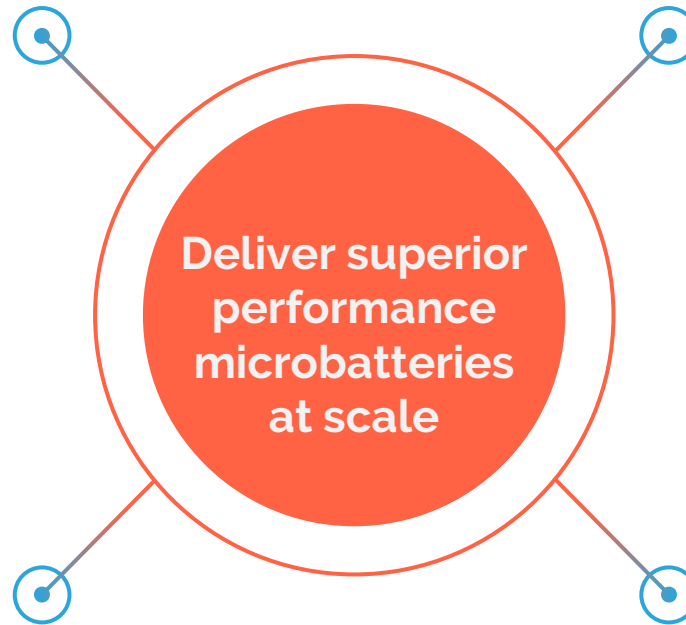
novel architecture transforming microbatteries

Established anode-less solid state chemistry

- Invented in 1990s
- Requires no further invention
- Demonstrated entitlement energy densities within months

Proven ultrathin steel substrates

- Proprietary Thinfilm development
- Reliably shipped millions of EAS units
- Roadmap down to 10 microns



Innovative cell stacking & packaging

- Leverages steel hermeticity
- Delivers high volumetric energy density
- Enables form factor customization

Installed ~\$40M scale-up R2R factory

- Sheet-to-sheet development line
- Cost-effective path to high volume
- Supports technology roadmap

delivering value to target markets



Premium Product

2x energy density

2-3x longer life

2x charging speed

No risk of fire/explosion

Form factor options



Hearables: lower OEM costs with longevity

SSLB 1000+ cycles (vs. 300-400 for li-ion)

- supports full nightly charge over 3-4 years
- reduces OEM warranty/service expenses



Wearables: never-before-possible form factors

SSLB energy densities allow same battery life in ½ current volume
SSLB shape options match wearable shape, contours

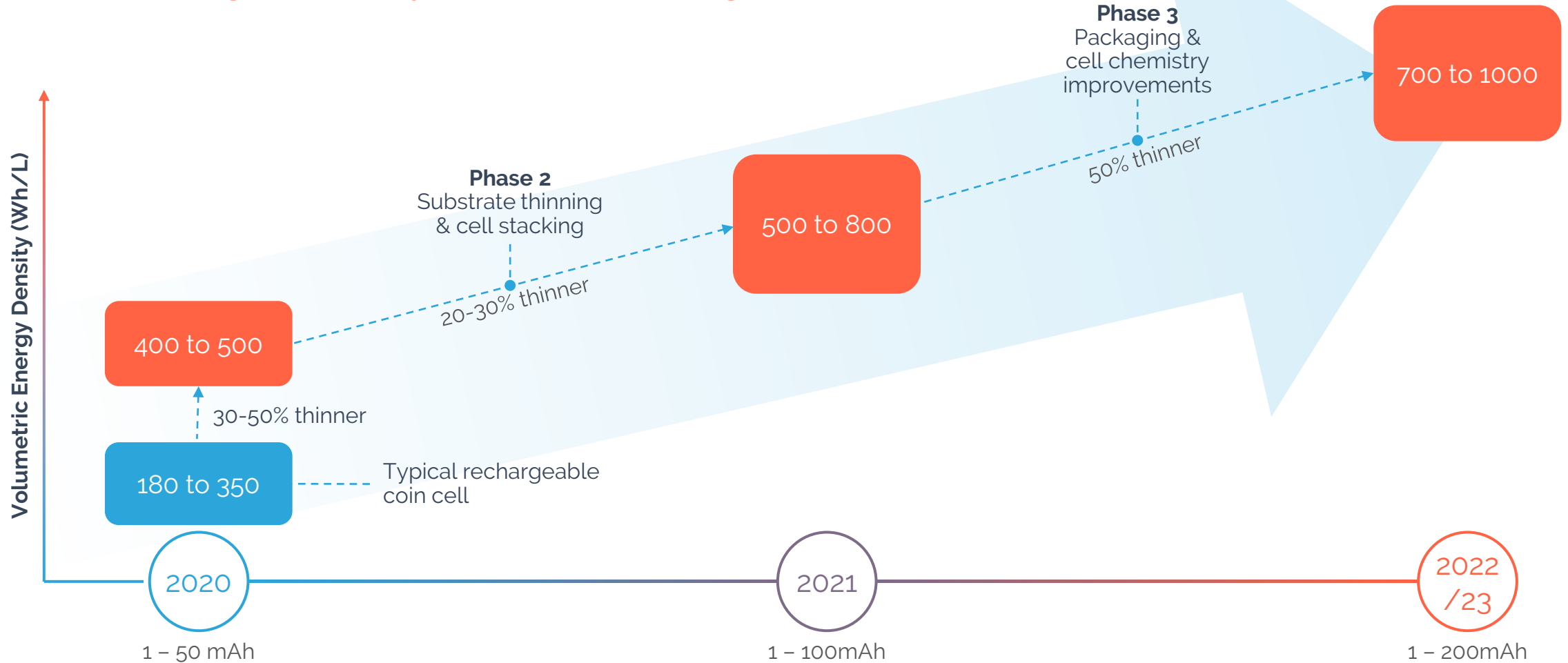


Sensors: safe, perpetual operation

SSLB cycling enables long-life trickle charging via energy harvesting
- minimize or eliminate sensor maintenance costs due to failed battery
SSLB safety allows placement in hard-to-reach areas

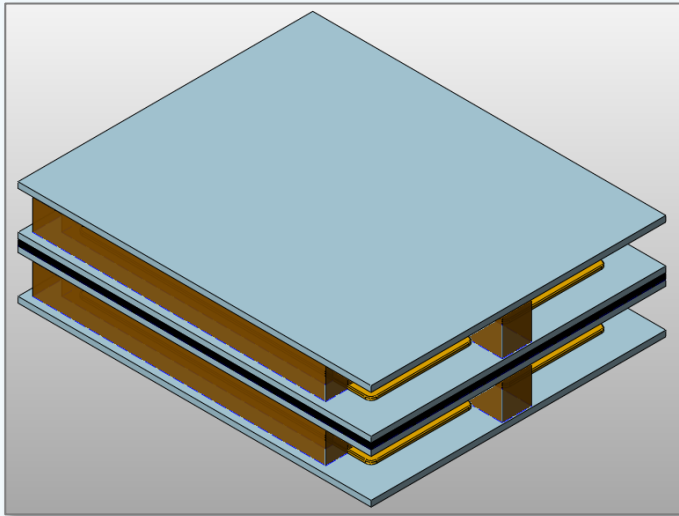
developing leading energy densities

Expanding capacity while reducing thickness

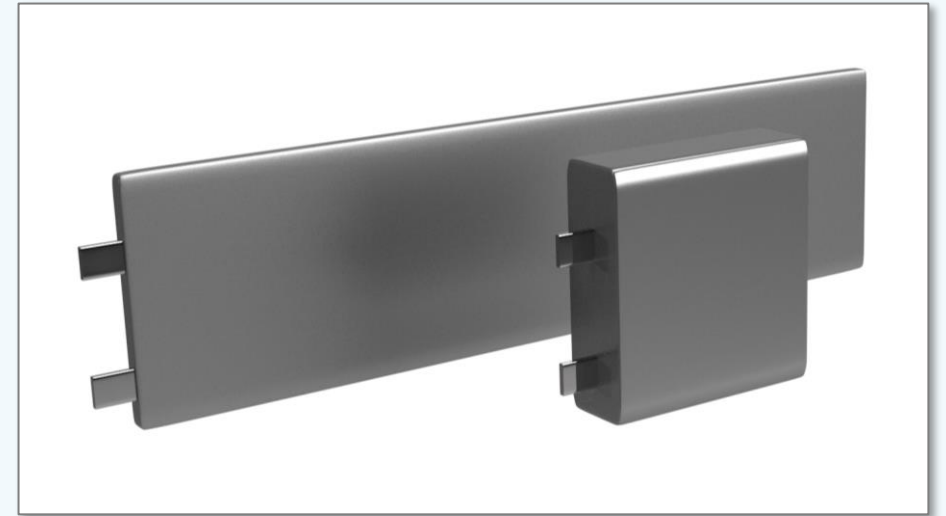


stacking innovation to increase capacity

Unique stacking techniques



Thinfilm encapsulation IP

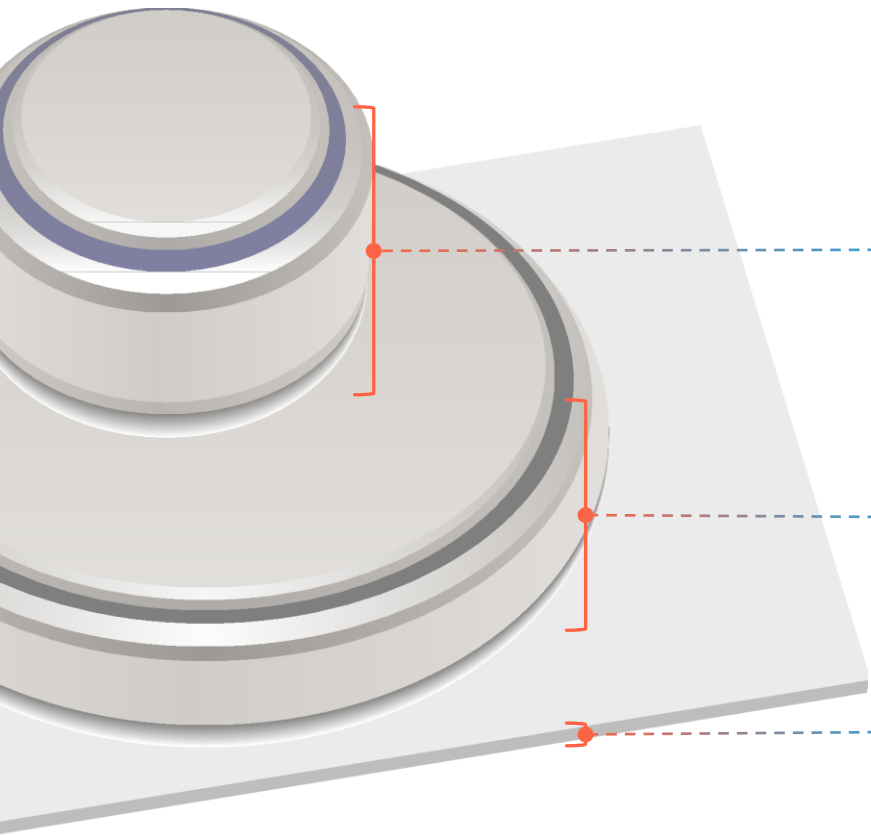


Equivalent Energy Capacities

High-efficiency stacking expands inherent SSLB energy density advantages to larger capacities

providing ultrathin form factors

Dramatic reduction in minimum thickness; new shape potential



Button cell competition
4600 microns thick

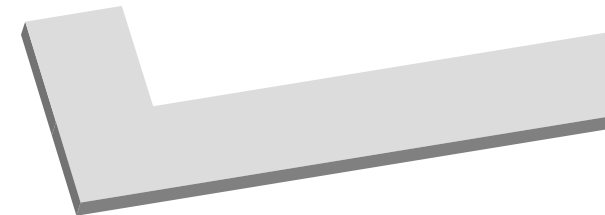
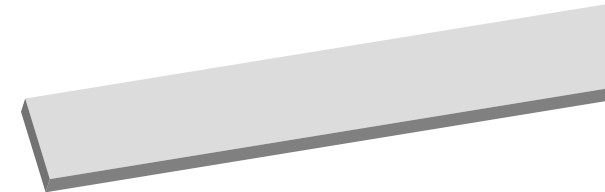
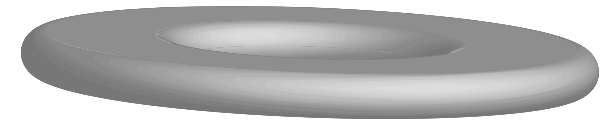
Irregular designs
for new form factors

Coin cell competition
3200 microns thick

High aspect ratios
for strip designs

Thin film SSLB
45-500 microns thick

Beyond rectangles
to maximize capacity



strategic investments



Developing a technology & manufacturing platform within existing ISO9001-certified facility

- High energy density, mAh-class Solid-state Lithium Batteries
- Cell stacking technology



Producing premium microbattery products

- Energy storage capacity scaling to 200mAh with superior cycling performance
- Form factor options enable thinner, more comfortable wearables

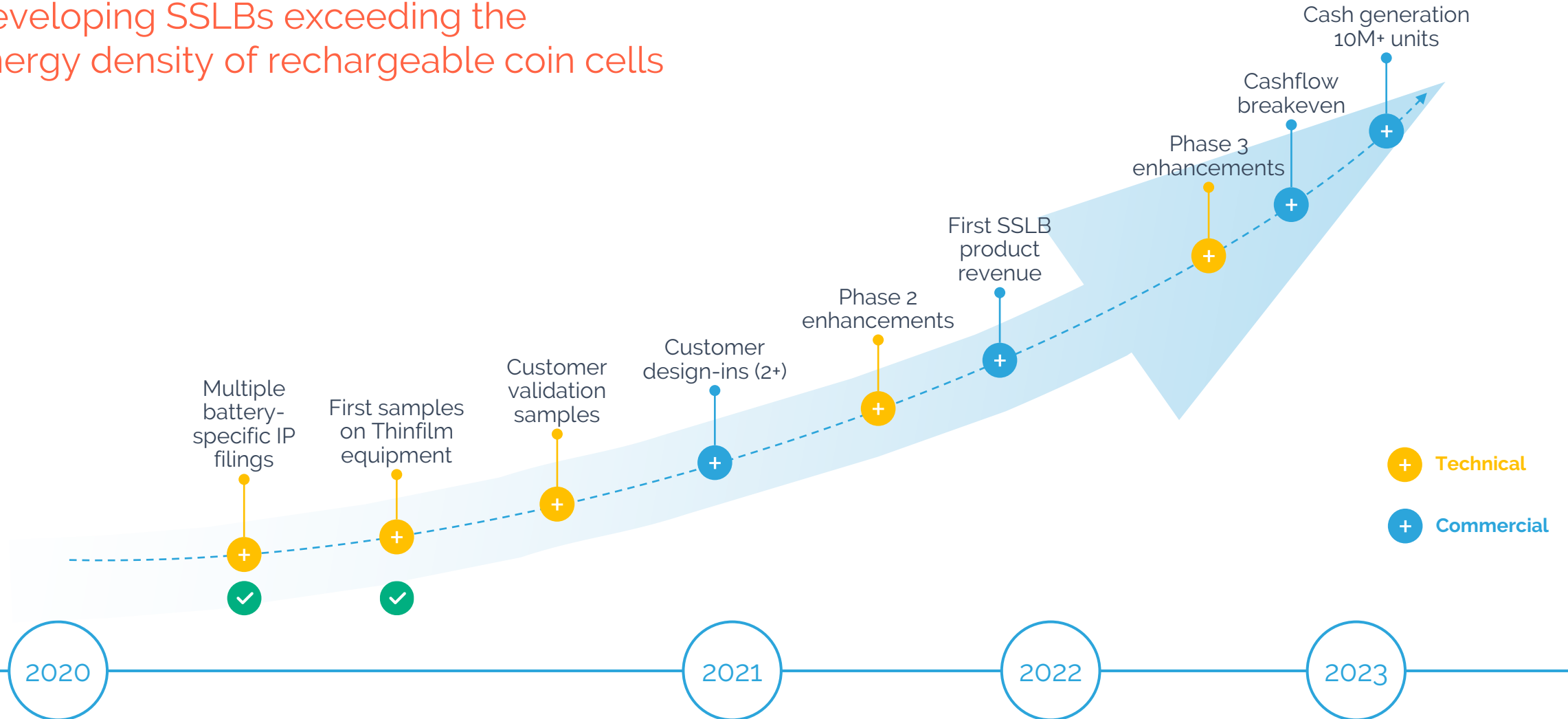


Executing go-to-market strategy

- Targeting market leading OEM customers in diverse markets
- Partnering with leaders in wireless power, energy harvesting, power management

execution

Developing SSLBs exceeding the energy density of rechargeable coin cells



energizing wearables & connected sensors

Winning through steel, stacking, scale

Opportunity

- Billion-unit end markets
- 3-4B USD addressable opportunity
- 1-4 USD premium pricing

Differentiation

- Premium microbattery products
- Rechargeable with > 2x energy density
- 2-3x cycling improvement vs. Li-ion
- Safe and reliable
- Customization potential → stickiness

Sustained cash generation based on defensible technical differentiation

Full factory EBITDA potential \$100M+

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