

Liminal provides battery intelligence solutions to help cell manufacturers ramp up production faster, and increase yield and reliability.

PROBLEM

Challenges with battery cell manufacturing

- 3-year production ramp is too slow and expensive
- Cell cost must drop >40% for global EV adoption
- Reliability issues cost >\$3B in 2020-2021

Current inspection methods are insufficient & inefficient

- In-line tests are poor indicators of cell performance
- Tedious protocols needed to detect subtle variations in large EV cells
- Delayed feedback slows production ramp-up and optimization

SOLUTION

EchoStat® uses ultrasound & ML analytics to deliver powerful in-line insights

Ultrasound Inspection

- Fast, non-destructive, physical inspection of any cell type
- Provides spatially-resolved data in seconds
- Powerful insights during process engineering and series production

The EchoStat Advantage

- Improve process efficiency and detect errors earlier in production
- Predict cell performance more accurately than traditional methods
- High-resolution scans can detect separator and electrode defects

The EchoStat® Advantage



ELECTROLYTE, SATURATION, QUALITY

50% shorter process
time, detect outliers
95% earlier



CELL PERFORMANCE PREDICTION

85%+ accuracy
predicting end-of-life
cycle number



END-OF-LINE QUALITY ASSURANCE

95%+ faster than
standard QA tests
with the same result

EchoStat's analytics platform examines the data with proprietary machine-learning software that provides deep insights into each cell's variation from the baseline, across multiple production runs and production lines.

Active product evaluations with major cell manufactures and auto OEMs

We have room for a limited number of production-scale validation partners in 2023.

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liminal

The future of battery
insights starts here