

The logo for 'liminal' is written in a lowercase, sans-serif font. The letters are a gradient of orange and yellow, with the 'l' being the brightest yellow and the 'n' being a darker orange. The background of the slide is a dark, blue-tinted image of a server room with rows of server racks and a person's hand visible in the foreground, slightly out of focus.

liminal

Scaling Cell Production Quickly, Safely, and Reliably

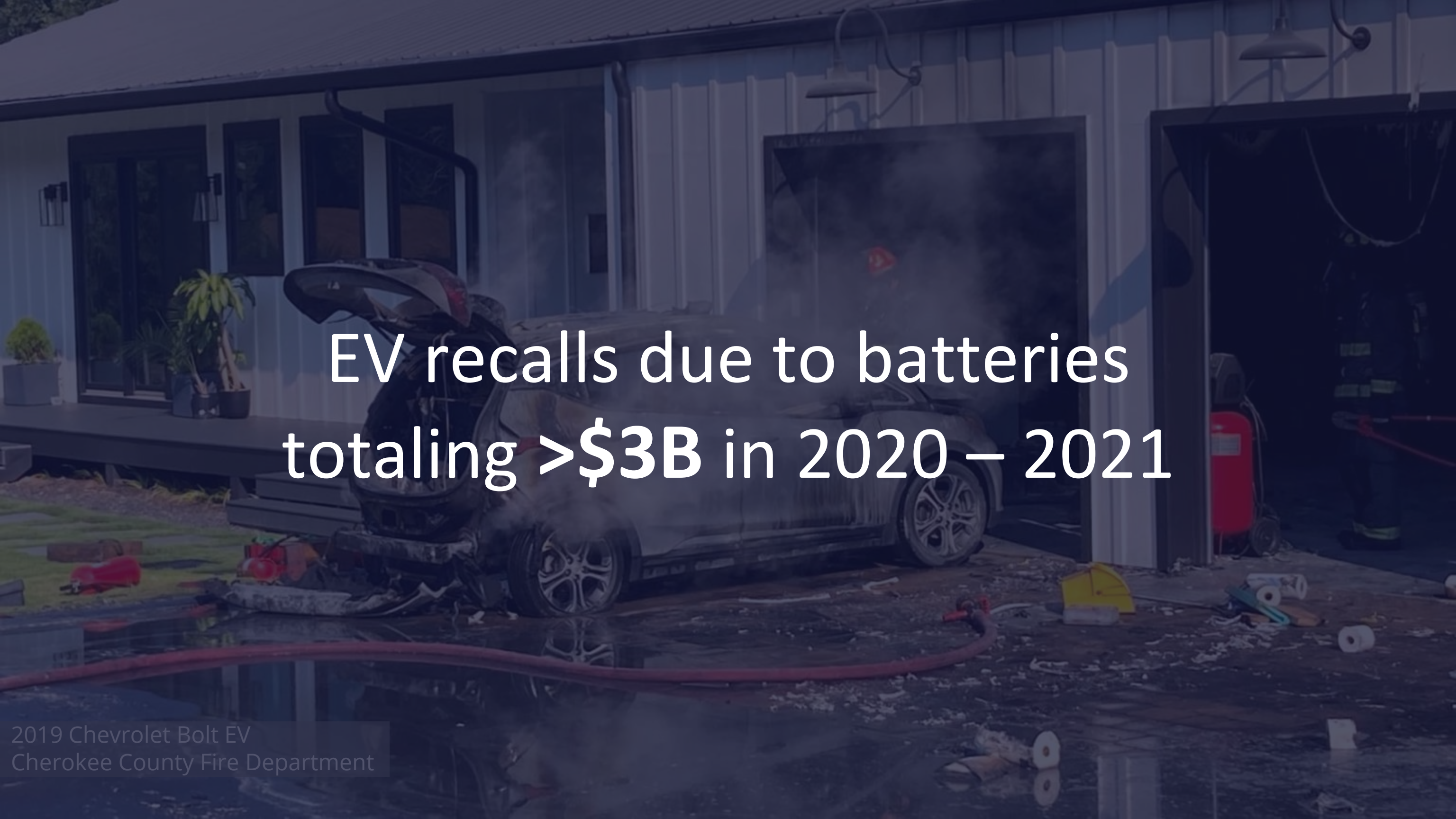
With In-Line Ultrasound and ML-Based Inspection

Nicolina Nanni
Senior Product Manager
nicolina@liminalinsights.com



The background image shows a factory setting. In the foreground, there are several rows of long, rectangular battery packs or modules, each with a blue oval-shaped feature. In the background, a worker wearing a blue uniform and a cap is visible, working on a piece of machinery. The overall scene is dimly lit, with a blue tint.

**3 yr production ramp is too slow
to meet growing EV demand**

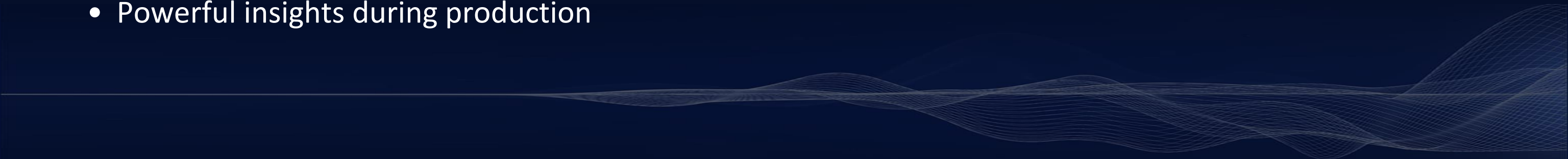
A photograph of a 2019 Chevrolet Bolt EV on fire in front of a building. Thick black smoke is rising from the car. A firefighter is visible near the car, and another is in the background. Fire hoses and equipment are on the ground. The scene is at night or dusk.

EV recalls due to batteries
totaling >\$3B in 2020 – 2021

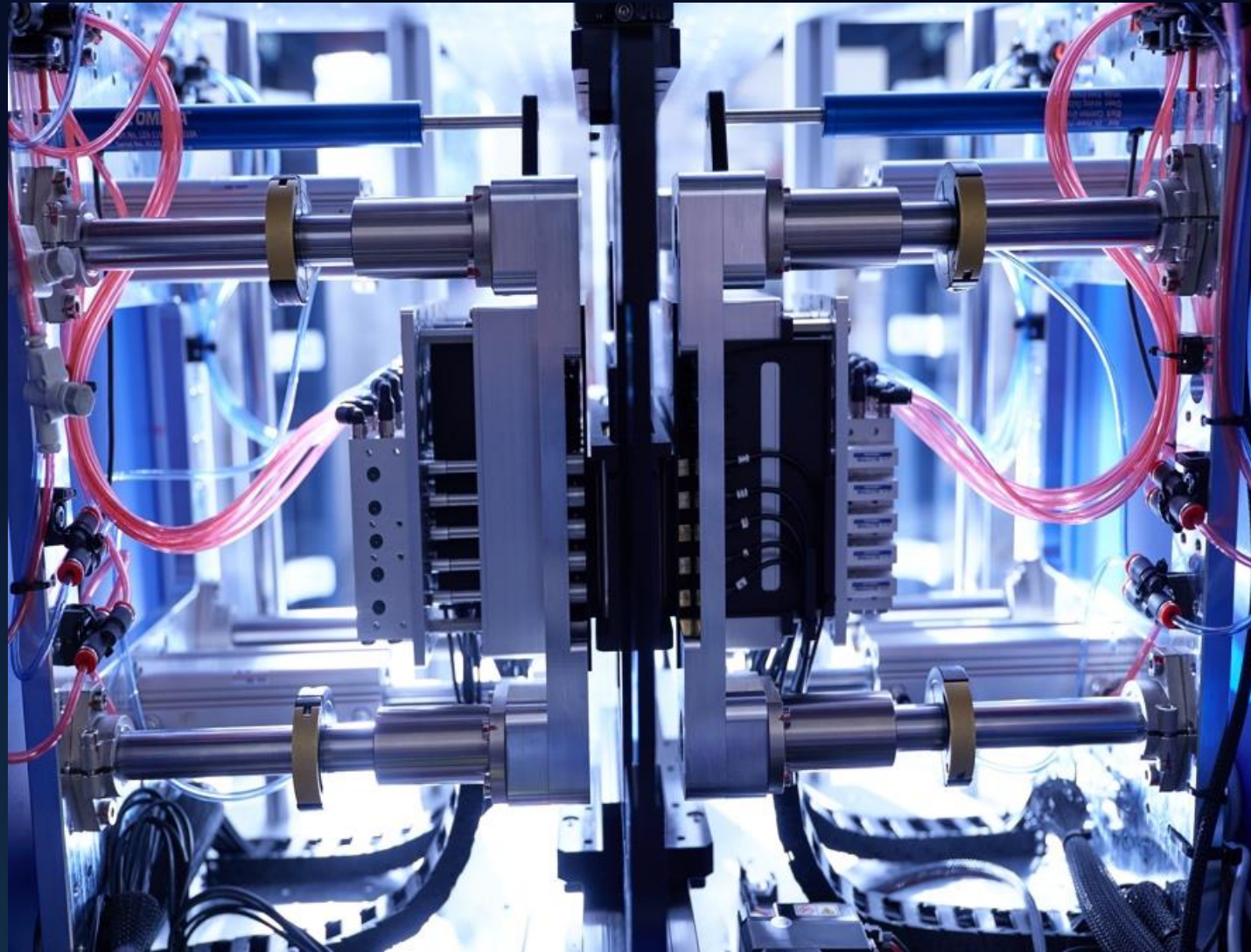
Standard Inspection Methods

- Quick tests are valuable, but insensitive to critical internal defects
- 2D/3D tests are powerful, but too slow and cost prohibitive
- Limited ability to detect issues during production

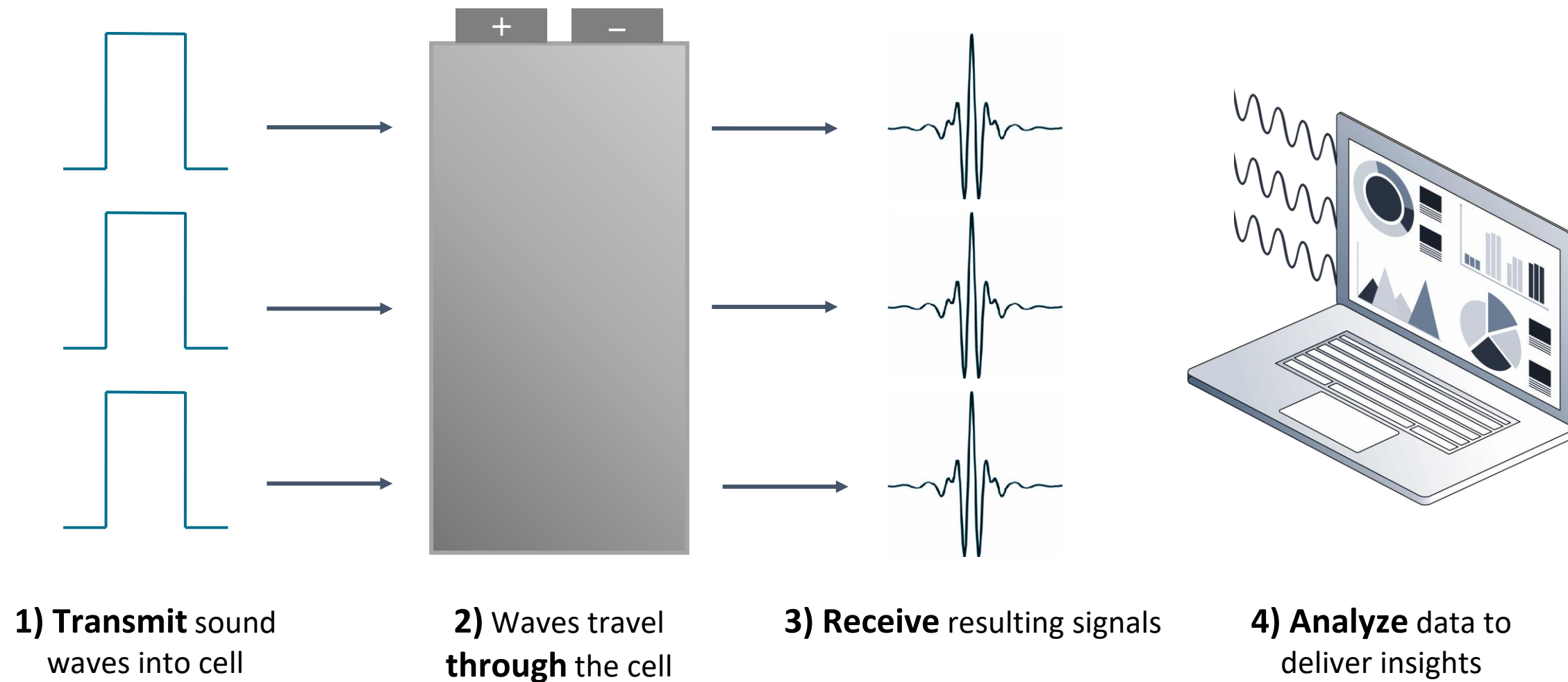
Ultrasound Inspection

- Fast, non-destructive inspection of any cell type
 - 2-dimensional, spatially resolved data
 - Powerful insights during production
- 
- A decorative graphic consisting of several overlapping, wavy, light blue lines that flow horizontally across the bottom of the slide, creating a sense of motion or data visualization.

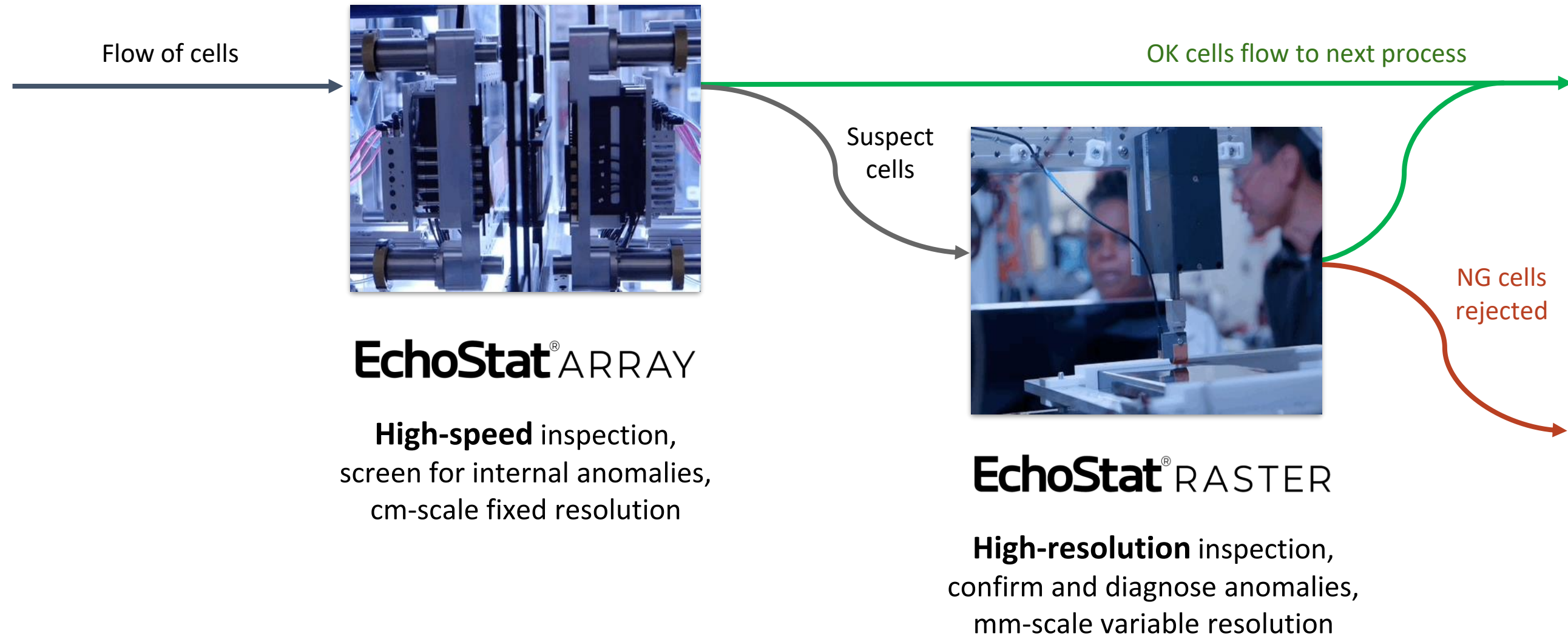
EchoStat® | Powerful inspection & analytics



EchoStat[®] | Powerful inspection & analytics



Gigafactory-integrated EchoStat deployments in 2023



3 challenges addressed by EchoStat

Without EchoStat

Escapes lead to safety risk & poor performing cells in the market

Undetected electrolyte saturation issues, or long time to detection

Unpredictable cell performance, uncaptured value

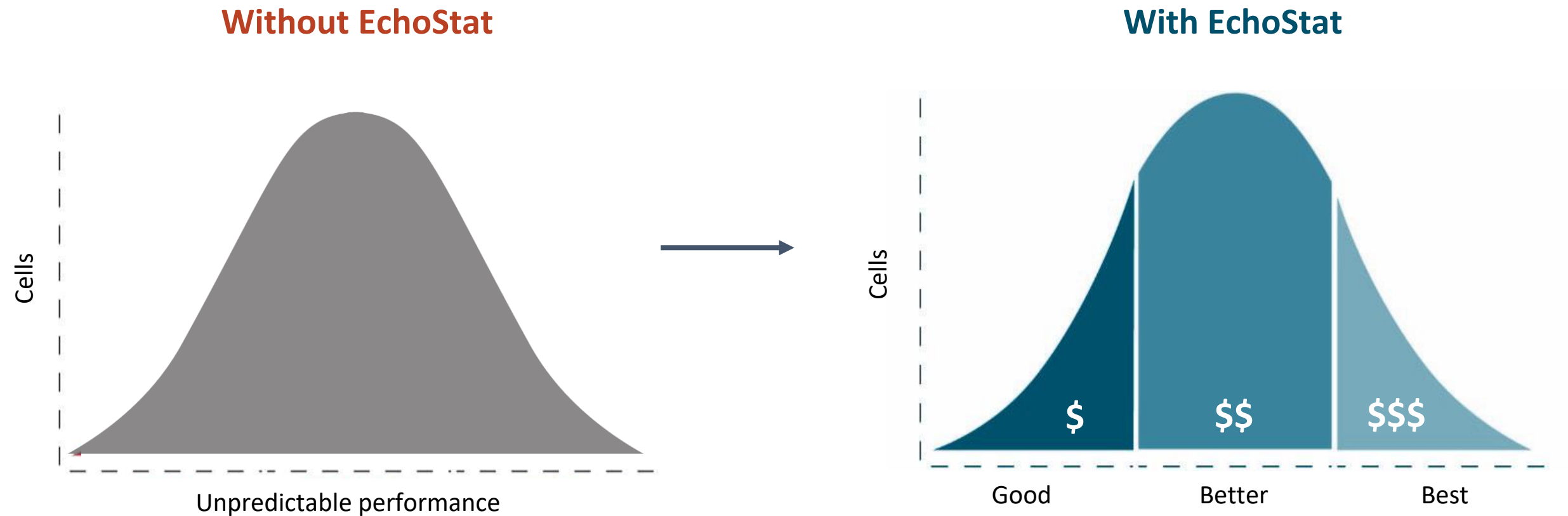
With EchoStat

Uncover anomalies and minimize escapes with **Anomaly Detection**

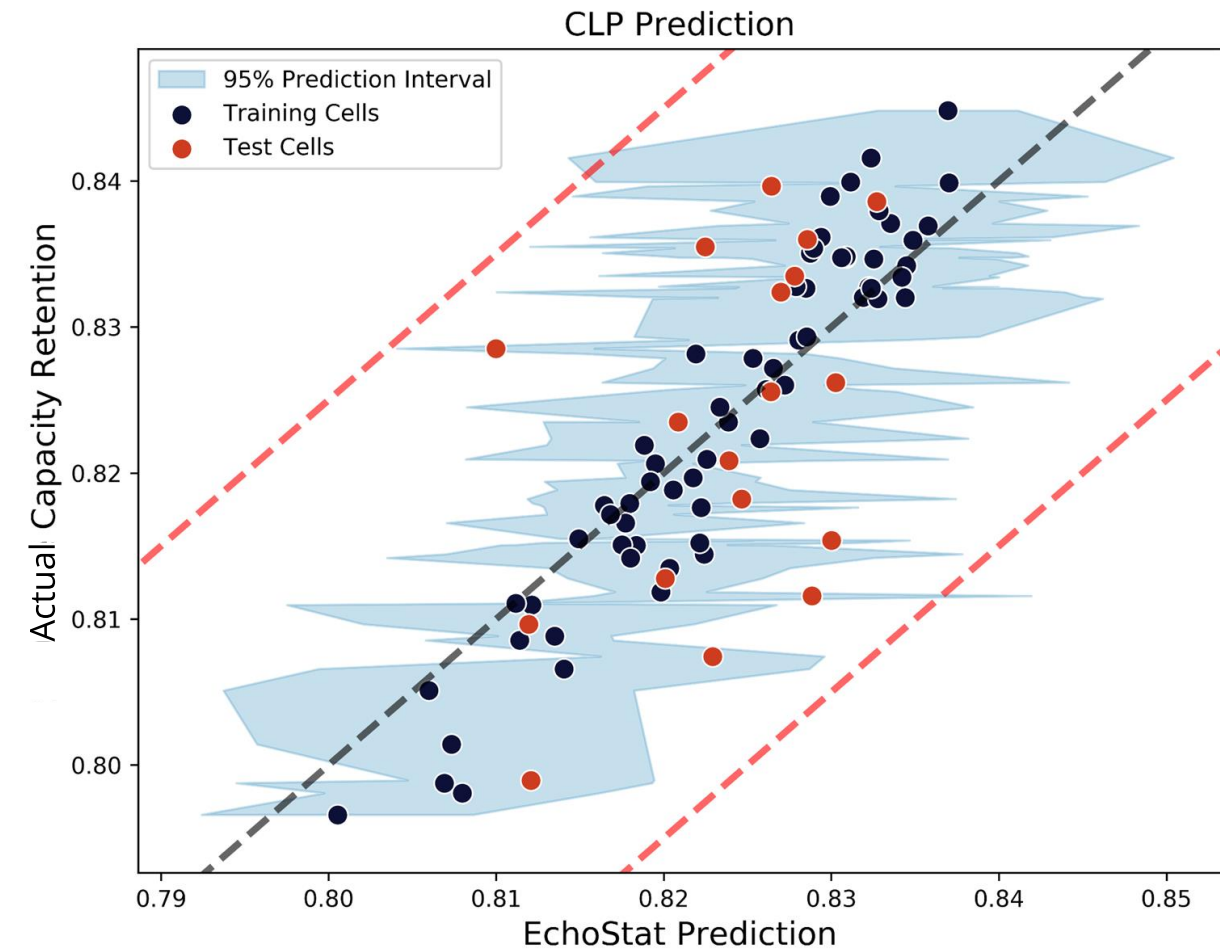
Address the blindspot of fill and soak QC with **Electrolyte Saturation Analysis**

Predict cell performance for all cells with **Cycle Life Prediction**, enable grading

EchoStat enables accurate prediction of cell life expectancy

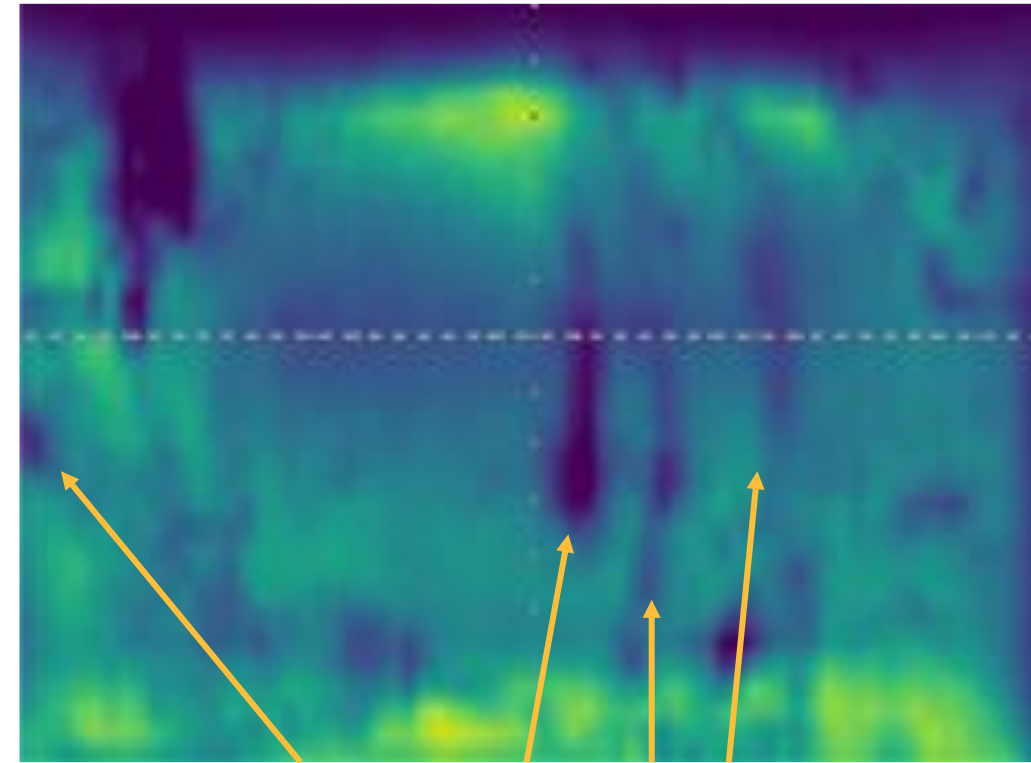


Predict cell performance with >90% accuracy using ARRAY



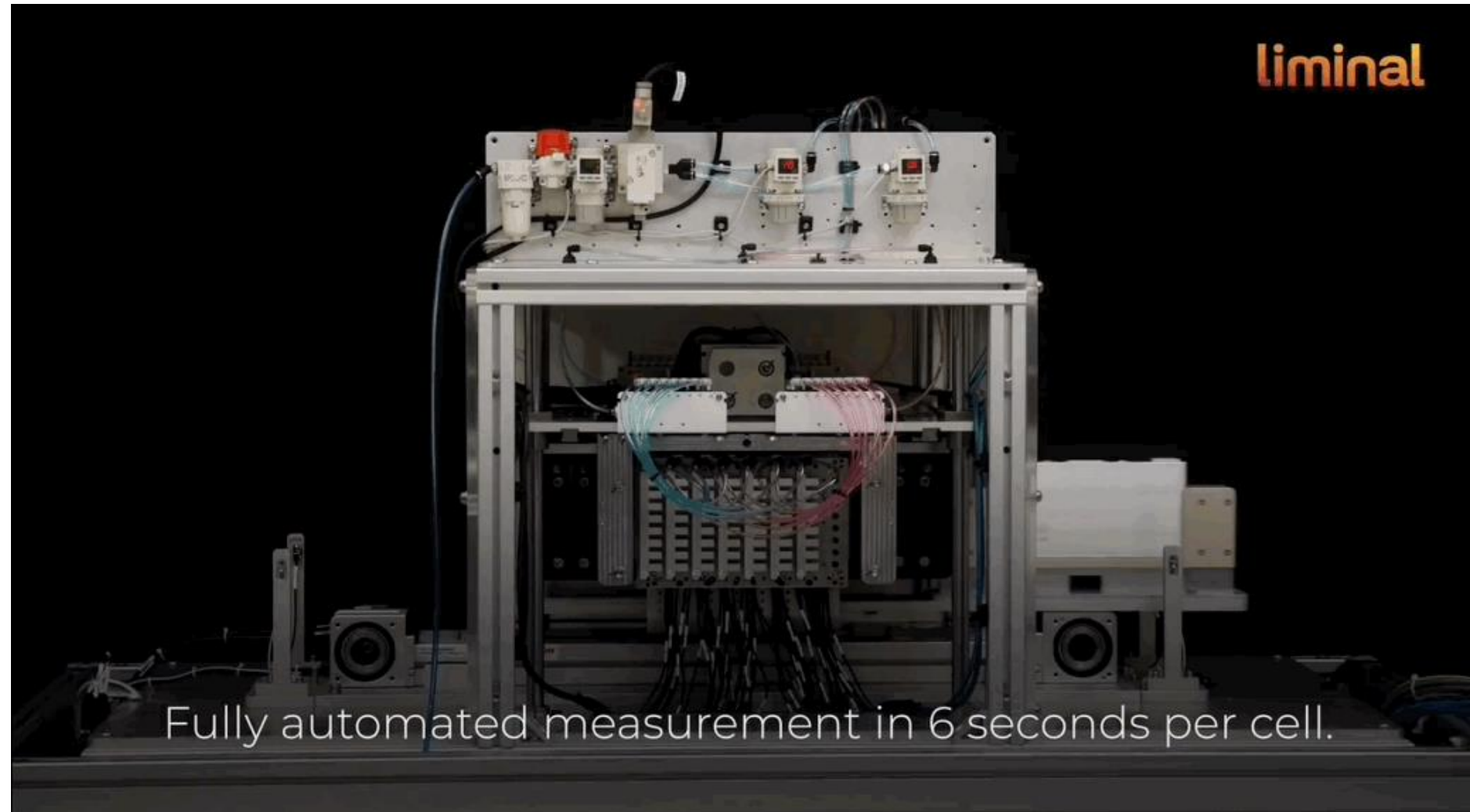
Case study technical data on 100Ah+ prismatic cells from a leading cell manufacturer

Accurately detect cells with separator anomalies using RASTER



Case study technical data on large format prismatic cells from a leading cell manufacturer

At-Line EchoStat ARRAY



In-line ARRAY coming 2024



2019 Chevrolet Bolt EV
Cherokee County Fire Department

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The future of battery insights starts
here

Come visit us at 6-G44