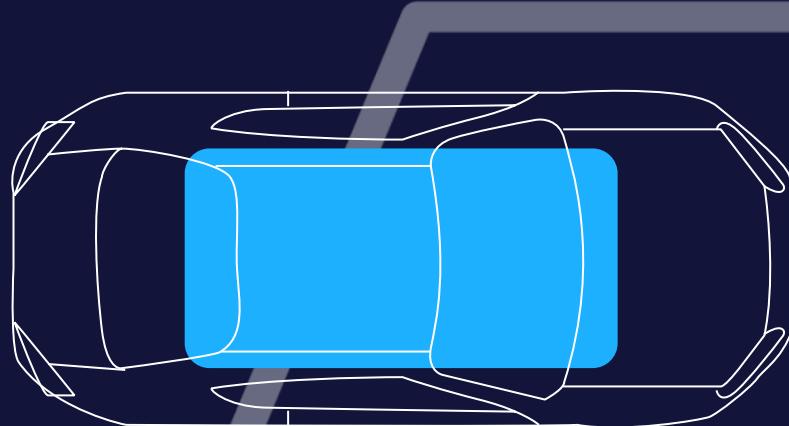


# VOLTAIQ

Enterprise Battery Intelligence™

## Enterprise Battery Intelligence

Leveraging data to win in a battery-powered economy



**Tal Shoklapper**  
**CEO & Co-Founder**  
NAATBatt Annual  
Conference  
February 22, 2023

- Founded in 2012 to turn data into actionable insights for the full battery ecosystem
- Pioneer of Enterprise Battery Intelligence (EBI) software which combines deep electrochemistry expertise & advanced data analytics
- In use by the world's largest automotive, consumer electronics, & battery supply chain organizations



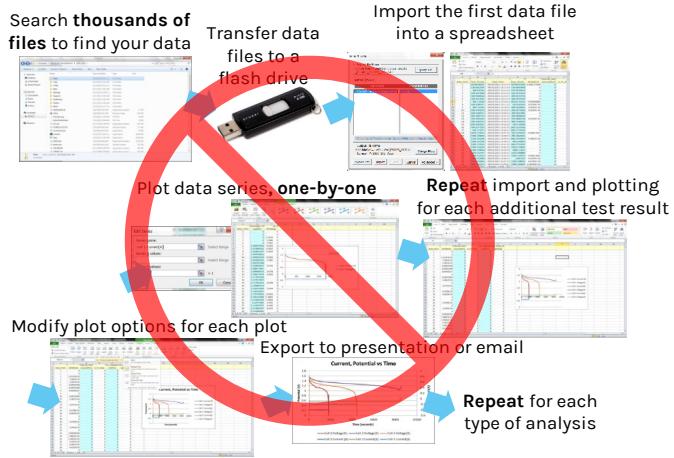
Mercedes-Benz  
Research & Development North America, Inc.



# Status Quo vs. Enterprise Battery Intelligence

EBI enables the agile, real-time learning & risk reduction needed to stay competitive

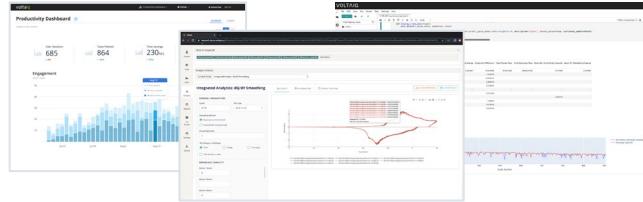
## INDUSTRY-STANDARD ANALYSIS



REACTIVE, STAGE-GATE WATERFALL APPROACH



## VOLTAIQ-POWERED ANALYSIS



Manufacturing line



Test lab



In-field



CONTINUOUS, AGILE WORKFLOW



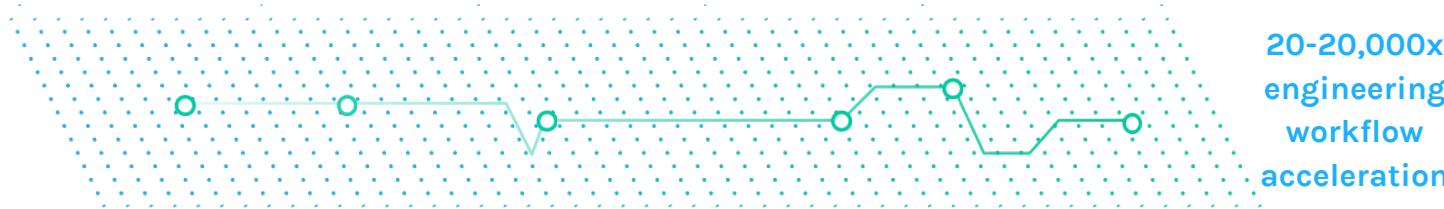
# Enterprise Battery Intelligence Value Proposition

Increase margin, profitability, and speed to market

## The Voltaiq Effect

- Increase revenue by launching product sooner
- Protect revenue by mitigating loss from safety recalls & brand damage
- Increase revenue with faster production ramp
- Increase revenue by maximizing yield
- Increase revenue from improved resale value
- Minimize warranty claims through OTA updates

## Enterprise Battery Intelligence Platform



## The Battery Lifecycle



Research & Development



Product Development



Production



In-Field Use



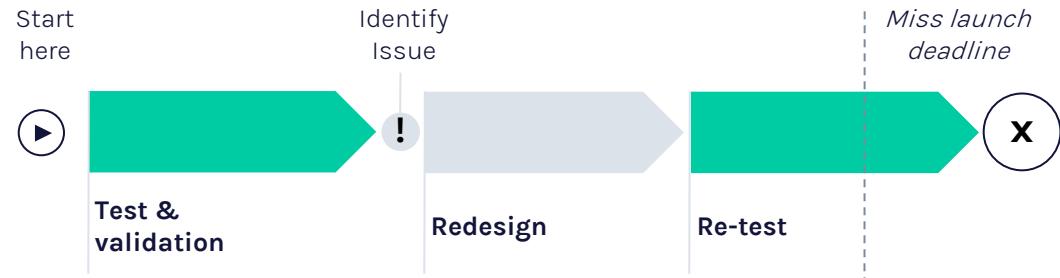
Second Life & Recycling

# The fundamental challenge with batteries: It takes a long time to tell if they're good or bad

**Voltaiq Enterprise Battery**  
Intelligence provides a real-time look into battery behavior, so you can spot and correct anomalies early – to launch on time and de-risk battery-powered products

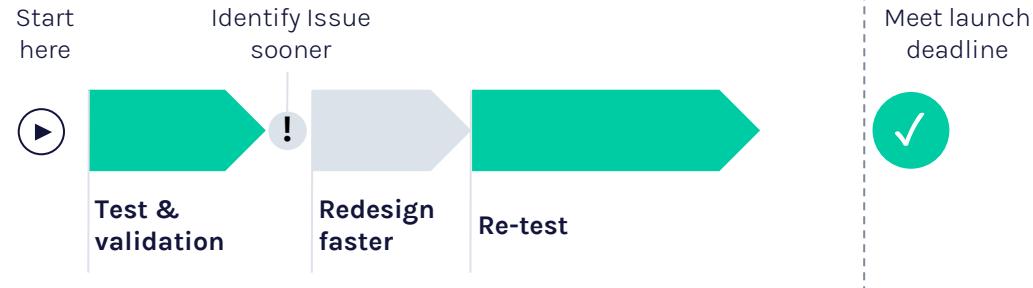
## EV Product Launch: Typical Scenario

Battery fails qualification – product misses launch window



## EV Product Launch: EBI-Optimized

Voltaiq detects battery failure early – on-time product launch





# Battery Manufacturing 2.0

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# Cell Production is Slow & Difficult – Panasonic & LG Case Study

Even the industry's best **struggle** to achieve production **quality, throughput, and profitability**

Panasonic Energy North America (e.g. Tesla Gigafactory)

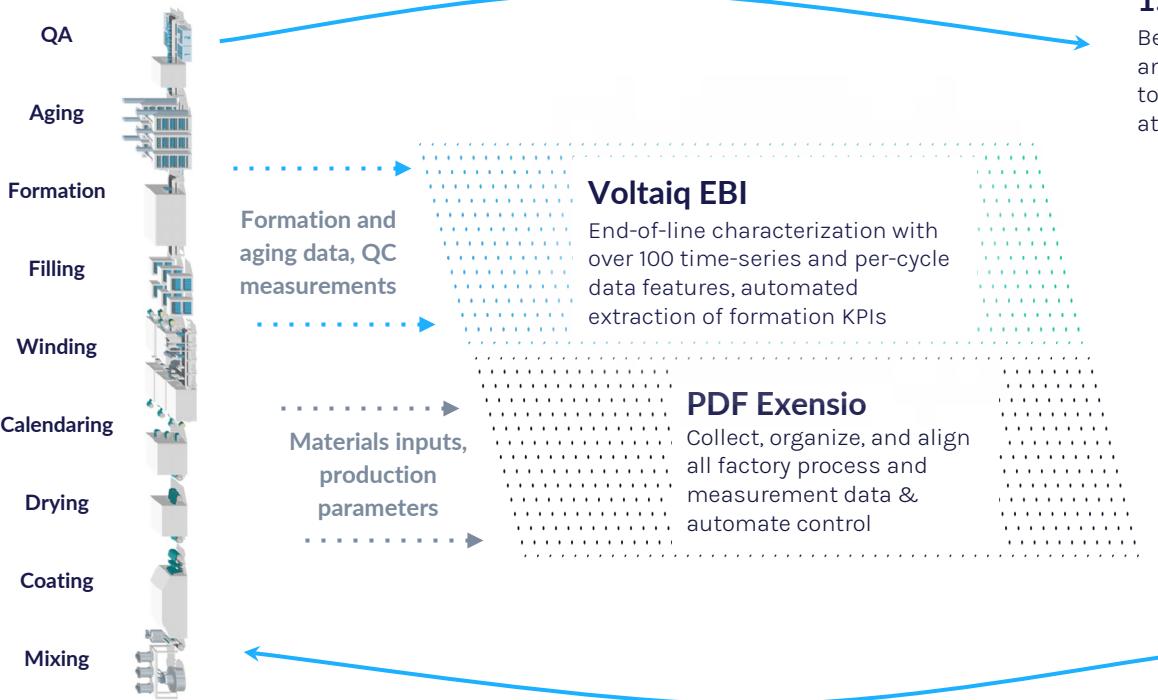


LG Energy Solution Wroclaw, Poland



# Voltaiq & PDF Solutions: Analytics for Battery Manufacturing

Iterate faster to accelerate production ramp, improve overall yield and quality



## 1. Evaluate

Best-in-class battery analytics to determine cell-to-cell variability and quality at end-of-line



## 2. Correlate

Link root cause of quality issues to upstream process variability and materials inputs



## 3. Remediate

Remediate issues and optimize upstream processes



## 4. Iterate

Automate improvement in process yield & efficiency and product quality & reliability





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