CASE STUDY

How Zelos Automated Data Analytics and Accelerated Their Technology Goals with Voltaiq

Data-driven insights are critical to advancing battery technology, and driving the business goals of any battery company. However, the team at Zelos – a Silicon Valley company pioneering zinc alkaline batteries – lacked a systemized way to fully understand their batteries through data analysis.

A web of interconnected Python scripts and Excel spreadsheets pulled data from their numerous battery testers, but the process was far from smooth. Unfortunately, after the creator of this legacy system left the company, the system proved too demanding for the team to manage. As a result, battery tests and development operations were seriously hampered.

When they switched to Voltaiq, Zelos' experience drastically improved. With Enterprise Battery Intelligence (EBI), they were able to transform their battery data into powerful, insightful assets that accelerate their operations.

> **With Voltaiq, we are experiencing time savings of 8-10 hours per battery engineer per week. This is a huge positive – essentially an entire day's work that each engineer can reinvest into higher value, revenue-driving activities.**
>
> **– Jon Truskier**
> **Director of Battery Cell Development at Zelos**

Major Time Savings — Zelos have experienced time savings of 8-10 hours per engineer, per week.

Seamless Integration — The Voltaiq platform was simple to set up, and it was rapidly up and running, automating battery data processing and analysis.

Intuitive Solutions — Voltaiq provides Zelos battery-specific tools and solutions that take them directly to key results, speeding up critical decision-making processes and eliminating the need to sift through mountains of data.

Superior to Building In-House — Previous attempts to build an internal battery intelligence platform had failed; Voltaiq brought excellence out-of-the-box, future-proofing the business.

The Problem: Inefficient Battery Data Analysis & Wasted Time

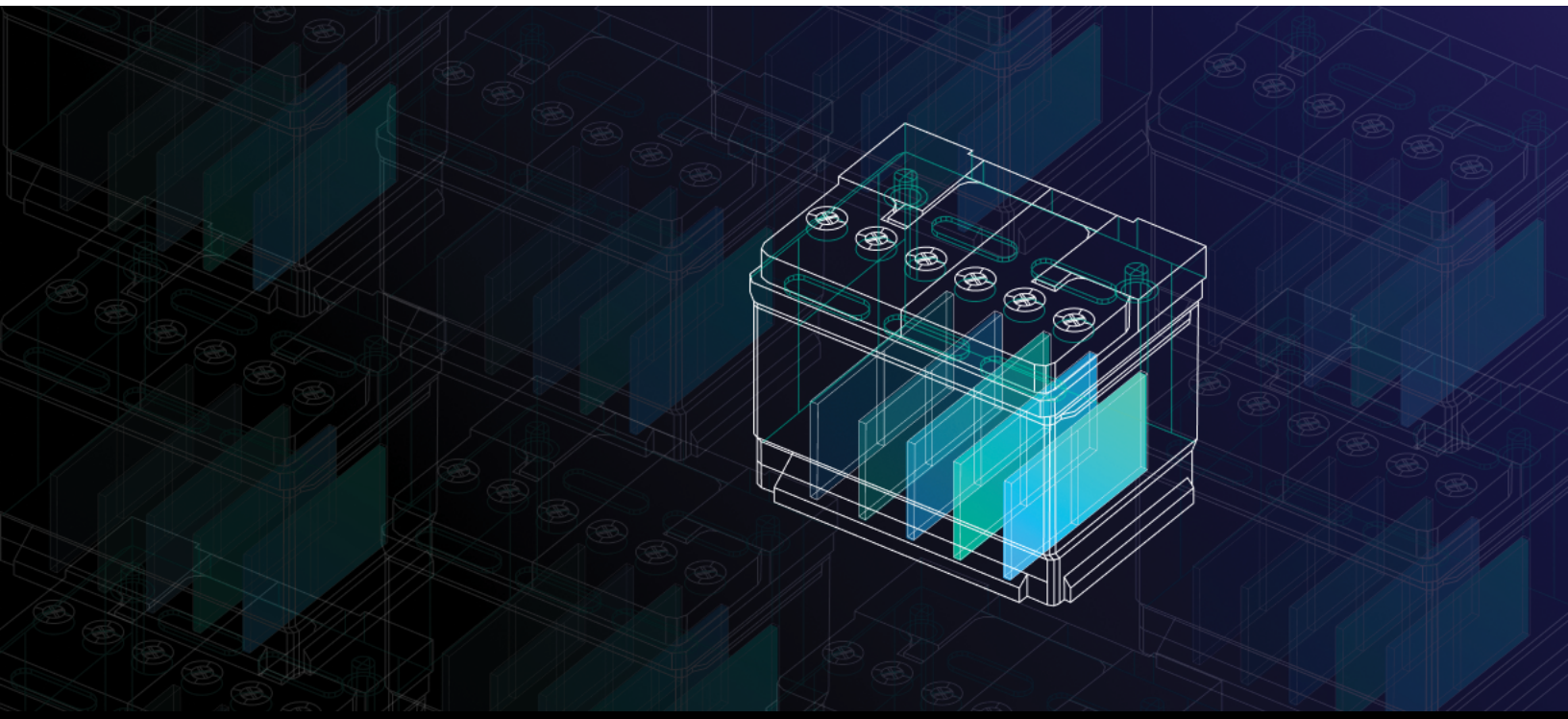
A previous team member had conducted various battery diagnostics and converted the results into a harmonized data set. But when he left the company, we didn't understand the nuts and bolts of this system, and it eventually shattered and fell apart. I was wasting half of my day trying to figure out how to get the data system to function, which I didn't have time for.

- Jon Truskier
Director of Battery Cell Development at Zelos

Stationary energy storage will increase worldwide deep-cycle battery demand in the coming years. Zelos, headquartered in Silicon Valley, is pioneering the use of zinc alkaline batteries. These batteries contain zinc and manganese dioxide – resources which are abundant, non-toxic, low cost, and have well-established supply chains. In 2020, Zelos was awarded a competitively-selected multi-year $1.8 million California Energy Commission grant for R&D scale-up.

What's crucial in our technology is the fact that we mitigate the usual failure modes that are well-known for zinc-alkaline batteries. There are certain instabilities in both zinc anode and manganese dioxide cathode, and we can stabilize this technology by creating a certain interface between the two.

- Sasha Gorer
Chief Operating Officer & Co-Founder at Zelos



For a company like Zelos, data-driven insights as well as approaches to battery data are absolutely crucial, potentially the difference between product success and failure. Without the right data taken at the right time, they cannot effectively develop their cutting-edge technology. Slow and inadequate battery data analysis also leads to time-consuming redesigns, and possibly even the production of faulty batteries. Battery issues if not detected early, can cause expensive recalls and reputational damage to the brand. Battery data is everything, and Zelos lacked the resources to process the massive amounts of data generated by their tests and processes.

Prior to incorporating Voltaiq into their battery development processes, the Zelos engineers depended on a homemade in-house solution built by longstanding team members. Google Sheets and Python programming were woven together to create a highly idiosyncratic battery data system. Testing and data retrieval entailed pulling information from Google Drive. Charting data required a slew of Python scripts that necessitated copying, pasting, and executing multiple command lines and uncustomized plots. Though a few engineers could work the system, it required serious effort to onboard anyone new.

The real trouble started when the creator of this jerry-rigged battery data process left the company. When Google updated their Drive and Sheets products, the system failed, and no one at the company knew how to rebuild it.

Zelos' in-house battery data analysis process became a vicious cycle. Whenever there was an update or hardware was upgraded, something else in the system broke. They spent a long time attempting to figure it out, and squandered time that could have been spent on high-value battery development tasks.

Eventually, Zelos sought a dedicated battery data solution. However, the first one they used – a Voltaiq competitor – proved inadequate.

The competitor failed to provide enough support during the software rollout. Then, though the platform promised to streamline operations, Zelos' engineers were still spending a significant amount of time on data reading, categorization, and interpretation. The platform itself required a very high bar of coding expertise in order to use, and this made it impractical as a team tool. Despite engaging hours of customer support, the challenge remained the same as with their in-house tool:

Dozens and dozens of hours were being lost to troubleshooting their battery data analysis process, and this was a huge source of frustration – especially during the pandemic, when everything needed to happen remotely.

> **"With our previous software tool, there was a lot of frustration associated with interoperability, especially in Covid times. This Voltaiq competitor was not able to provide us with any help, either in deployment or ongoing use.**
>
> **- Sasha Gorer**
> **Chief Operating Officer & Co-Founder at Zelos**

The Resolution: Early Faulty Cell Detection Through Accessible Data

> **Having EBI – a highly flexible analytical platform that is capable of capturing anything that we produce, every type of data that we generate; and is capable of keeping this data fixed and stored in our database, and then analyzing it – is extremely beneficial. With Voltaiq, we can create different types of tests to identify faulty cells as early as possible and figure out what kinds of signatures we can observe in the data so we can exclude those.**
>
> **- Sasha Gorer**
> **Chief Operating Officer & Co-Founder at Zelos**

Voltaiq was brought in to improve battery data analysis after a competitive RFP process conducted by Zelos. Following an evaluation of their options, Zelos chose Voltaiq because they found that the EBI platform is significantly more user-friendly and considerably more successful at gathering, processing, and analyzing all of the important battery data.

With Voltaiq, Zelos engineers can rapidly identify which cells are faulty and exclude those from release. Voltaiq offers data for practically any function to help them differentiate the bad batteries from the good ones, and all of it is readily available and easy to plot. The number of hours the Zelos team were spending on sorting data and ensuring it was posted correctly has now been drastically reduced, resulting in early detection of faulty cells, more productivity, and a higher level of efficiency. Empowered by this faster time-to-insight, the team and the company can accelerate their product process, and drive top-level business goals.

> **Previously, we spent a significant amount of time sorting data and ensuring that it was posted correctly. With Voltaiq, it's gone from many hours to almost nothing. We can scale up to more tests, and we don't have to worry about managing the increased data load – because the software takes care of all of that for us.**
>
> **– Jon Truskier**
> **Director of Battery Cell Development at Zelos**

And much to the relief of the whole Zelos team, no advanced coding is required. The software is very simple to use, and even colleagues with no prior coding skills can easily retrieve all data. Sharing data with colleagues has become more efficient with the platform, and battery testing processes are optimized. Their engineers were previously held back by their outdated time-consuming battery data processes, but with Voltaiq, they now have the time to focus on the business-critical jobs that really matter. Now, Zelos can continue creating and developing environmentally friendly, safe, and sustainable battery technologies without being hindered by painstaking data analytics and unreliable data solutions.

Contact us and experience the Voltaiq difference today.