VISUALIZE POWER FLOWS IN REAL TIME

ELECTRICITY SUPPLIER RELIES ON ALTAIR TO MANAGE POWER INFRASTRUCTURE

About the Customer

The Electric Storage Company is a Northern Ireland-based firm that manages electric power in households from renewable sources using battery storage and Internet of Things (IoT) technologies. The company installs smart batteries in homes and communities, along with sophisticated management software that lets homeowners sell excess energy back to grid operators when prices are high and helps them maintain the lowest possible energy input costs.

The company is the lead organization for the Project Girona collaborative network which is backed by UK Research and Innovation. The project is implementing a smart power grid in Northern Ireland that utilizes renewable power sources and storage systems. Project Girona is scheduled to be completed in 2022.

Their Challenge

The Electric Storage Company's clients include large industrial operations like Belfast Harbor, one of the largest complexes of cargo and passenger ship terminals in Europe; Titanic Studios, an eight-acre film and television production facility; and the Harland & Wolff shipyards. The company also provides energy management services to residential customers, including people living in public housing projects that couldn't typically afford green energy infrastructure.

Managing varieties of base load and intermittent renewable power sources requires the ability to ingest, process, and analyze high frequency information emanating from the grid and thousands of devices. The company needs real-time insight into energy markets, the grid, battery systems, and generation facilities, as well as customer-level power consumption patterns. Understanding

INDUSTRIAL AND RESIDENTIAL POWER CONSUMERS ARE SEEING ELECTRICITY COST REDUCTIONS OF UP TO

80% ▼

CARBON USE REDUCTIONS OF UP TO

65% ▼

WITH RENEWABLE TECHNOLOGY ENHANCED WITH THE PARIS PLATFORM

consumption and generation trends optimizes power routing and battery storage and ensures that power sold back to the grid or on the open market is fetching the best possible price. The company must maximize the value of every unit of power available to its customers.
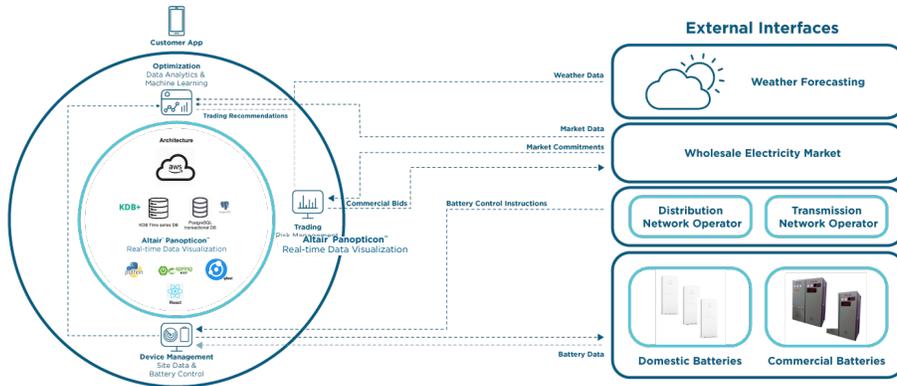
Altair Panopticon provides the control and visualization layer that allows managers, engineers, and analysts to understand how the system is working and alter the power flow as needed.

Our Solution

The Electric Storage Company built a unique system called PARIS — Predictive Analytical Renewable Integration System. The company conducted a search for best-of-breed tools that could support its data visualization, storage, processing, and deployment requirements.

The company worked with a consulting firm to develop an architecture and then selected Amazon Web Services (AWS) to provide cloud infrastructure, Kx kdb+ as database, and Altair® Panopticon™ as the stream processing and data visualization layer. The Electric Storage Company team combined these components into a software-as-a-service (SaaS) offering which is now available to customers throughout the UK and Ireland.

"We needed industrial strength products to build and run PARIS and we picked these components, including Altair Panopticon, because they allowed us to build a comprehensive, highly scalable system that will bring cheaper, cleaner, smarter electricity to mass market," said CEO and cofounder Eddie McGoldrick. "We also have a mission to make data open and accessible to everyone, and Panopticon's visualization technology makes that easy for us."

Results

Panopticon provides PARIS users with excellent visibility into energy markets, including power trades and purchases, as well as electrical flow between generation sources, batteries, the grid, and power-consuming equipment. Managers can use control dashboards in Panopticon to oversee and direct energy routing and ensure that the system's AI-powered decision engine is buying power from the cheapest sources available and selling power at the highest prices on the spot market.

Users say the system is easy to learn and use, even in complex industrial environments. They can see as much detail as they need without losing their view of overall trends and patterns in power production, consumption, and pricing; they can "play back" the timeline of price changes and system performance in real time, faster than real time, or slower than real time to better understand of causal relationships; and they can make on-the-fly comparisons and groupings as needed. Panopticon makes anomalies and outliers in the data easy to spot, and automated alerts notify engineers and managers when user-determined conditions are met, including conditions based on complex calculations involving multiple real-time and historical data streams.

Eddie McGoldrick summarized how Panopticon has helped their company:
"We have four primary aims: democratize, digitalize, decarbonize, and decentralize. Panopticon's visualization technology is central to the functioning of our PARIS system and is a key piece of enabling technology that allows us to deliver on all four aims," he said.
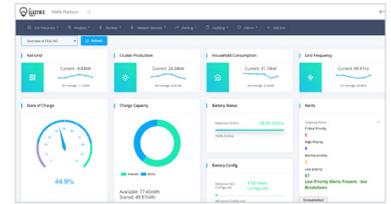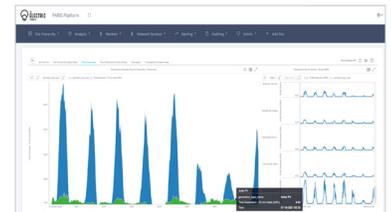

The PARIS platform's welcome dashboard displays a real-time view of battery cluster status.

This data visualization of network frequency data identifies issues that require responses from battery storage systems.

This chart compares the battery performance of multiple power storage sites.

This visualization compares the amount of power being generated and overall performance for each site being monitored.