Consolidating Countless Data Silos & Enabling Peta-Scale Anomaly Detection

A leading electronics manufacturer reduces the cost of data collection and loading by 90%, increasing production yield from 50% to 90%

"Through SQream, we are doing things that we were incapable of doing before"
(Senior Director for IT Strategy)

Background

A leading Asian electronics manufacturer was struggling with the complexity and disparity of its data infrastructure. To address this issue and improve business KPIs, the company decided to implement a data centralization project and establish an end-to-end AI platform. The goal was to classify faults and defects in the production process, at the earliest stage possible, using anomaly detection algorithms and maintain and adjust the production floor machines accordingly.

The Challenges

Data Loading

- Daily batches of data loading took over two days. This extended loading time impacted the overall efficiency of the anomaly detection process, as the predictions were not relevant by the time they were produced. Additionally, the large volume of data loaded daily made it difficult to identify and investigate any potential anomalies or faults.

Data Analysis

- The company's data infrastructure did not have a unified analytical platform for both MES (Manufacturing Execution Systems) and MIS (Management Information Systems) data. As a result, the company struggled to "Ask Bigger" and fully analyze and utilize all of its data to make informed decisions and optimize operations.
- The company was facing challenges with its data management due to the proliferation of disconnected data silos. This made it difficult for the business to access the data and refine meaningful insights from it.

The Solution

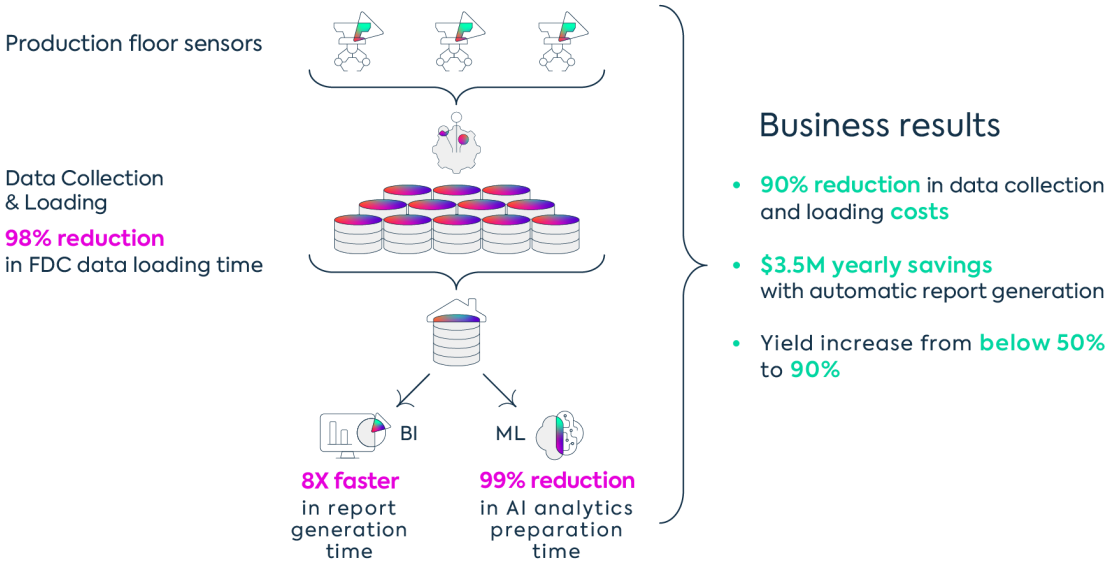
The manufacturer chose SQream as its big data analytics platform, managing over 10PB and constantly feeding the custom-made AI platform. SQreamDB replaced the legacy Hadoop-based ecosystem with only three compute nodes accelerated by 12 GPUs, responsible for more than 280 automated daily reports, preparation of data as part of the ML pipeline, and ad-hoc manual complex queries as required.

On a daily basis, SQream handles up to 100TB of raw data generated by the manufacturing equipment sensors and logic controllers, transforming it into analytics-ready data on the same day.

Before implementing the solution, the manufacturer viewed data loading as a major obstacle due to the volume, so the predictions of the AI platform were just not actionable.

"The ability to predict and take actions based on the current status of equipment is such a significant factor… it cannot be discussed in $$$ terms"
(Senior Director for IT Strategy)

Manufacturing Fault Detection



Business results

- **90% reduction** in data collection and loading **costs**
- **$3.5M yearly savings** with automatic report generation
- Yield increase from **below 50%** to **90%**