CUSTOMER CASE STUDY

Streamlining Data Infrastructure for Power Generation Operations

Modernizing Legacy Systems for Real-Time Insights and Operational Efficiency

Solution: PI and Ignition Modernization **Industry:** Power Generation **Use Case Focus:** Data Infrastructure Modernization

GOALS

- Modernize legacy power generation data systems to support real-time operational insights.
- Establish unified data accessibility across multiple generation sites and platforms.
- Transition historical data storage to modern time-series databases for long-term analysis.
- Enable advanced analytics and decision support capabilities across the organization.

CHALLENGES

- Relying on legacy eDNA data systems limited real-time operational visibility.
- Fragmented SCADA historian platforms prevented efficient cross-site data analysis.
- Operating with siloed systems restricted integration with external business tools.
- Managing outdated visualization screens delayed decision-making processes for operators.

SOLUTIONS

- Migrated critical calculations from legacy eDNA to PI Asset Framework.
- Rebuilt visualization screens in PI Vision and configured new PI interfaces.
- Deployed MQTT and DNP interfaces on-site to stream data to central Ignition servers.
- Integrated InfluxDB via Kymera adaptors to enable long-term time-series historization.

RESULTS

- Created a unified data platform supporting both real-time and historical analysis.
- Improved operational visualization and data accessibility across the power generation fleet.
- Enhanced integration with external applications like Power BI and energy management systems.
- Established a robust foundation for future advanced analytics and operational decision-making.

EXECUTIVE SUMMARY

A power generation company faced operational inefficiencies due to legacy eDNA systems and fragmented SCADA historian platforms, which limited real-time visibility and cross-site analysis. The project team executed a multi-phase modernization migrating legacy calculations to PI Asset Framework, rebuilding screens in PI Vision, and deploying a central Ignition server with InfluxDB historization. This dual-platform modernization created a unified data infrastructure, significantly improving operational visualization, system integration with Power BI, and establishing a scalable foundation for advanced predictive analytics.

Legacy Infrastructure Challenges

The client operated a complex power generation portfolio but struggled with fragmented data infrastructure. Legacy eDNA systems and disconnected SCADA historians created severe data silos across generation facilities. This fragmentation prevented operators and engineers from achieving comprehensive real-time visibility. Cross-site performance analysis was highly manual and slow, restricting the organization's ability to respond to operational changes. To resolve these challenges, the company required a comprehensive modernization strategy to unify its data streams, transition away from legacy technologies, and establish a high-performance foundation for centralized analytical capabilities.

Implementing a Modern Dual-Platform Solution

To address these limitations, the technical team executed a multi-phase modernization program centered on two core technologies. First, they transitioned legacy eDNA operations to the PI System, migrating essential calculations to the PI Asset Framework and rebuilding operator dashboards in PI Vision. Second, they implemented an Ignition-based SCADA and historian framework. On-site MQTT and DNP protocols were deployed to feed real-time data to a central Ignition server. The team integrated InfluxDB via Kymera adaptors to manage long-term time-series data storage and engineered optimized Flux queries for rapid analytics.

Driving Operational Efficiency and Analytics Readiness

The modernization effort successfully consolidated disparate data sources into a highly accessible, unified operational platform. Real-time dashboards now provide immediate visibility into performance metrics across all generation sites, enabling rapid decision-making. Custom connectors seamlessly link the new data infrastructure with business systems such as Power BI and Energy Management Systems. By replacing rigid legacy systems with an open, scalable architecture, the power generation provider has established a reliable digital backbone capable of supporting advanced predictive modeling and long-term asset optimization.

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