



Transforming SEC with Advanced Analytics

What This Is About? A Holistic Approach to Utility Transformation

A large electricity distribution company in Middle East is on a mission to transform its utility operations through advanced analytics and AI-powered platforms. Several strategic projects ranging from peak load tracking and personalized energy tools to outage management have been implemented using SEC's robust data platform, Impresa Insights. This paper explores three key initiatives Peak Load Tracking, Consumer Consumption Tool, and Guarantee Standard Process (GSP) each designed to enhance operational efficiency, improve customer satisfaction, and uphold regulatory standards.

How Was It Done? Enhancing Grid Insights: The Implementation Journey

Peak load tracking is an essential component of the company's grid management strategy. The initiative focuses on identifying and analyzing consumer demand peaks, both monthly and annually, to support grid stability and capacity planning. The implementation involved integrating load profile data from Head-End Systems (HES) into the Impresa Insights platform. Advanced machine learning models were used to identify consumption patterns, seasonal demand shifts, and outliers across residential, commercial, and industrial segments. The aggregated data provided the company with a comprehensive view of peak demand trends.

The Consumer Consumption Tool represents the company's commitment to fostering energy awareness among its customers. This innovative feature enables consumers to estimate appliance-level energy usage, helping them make informed decisions about their consumption patterns. The consumption tool was developed by creating a customer specific survey to understand the demographics

combined with appliance-specific benchmarks and weather data for added precision. The Impresa Insights platform processes user inputs such as appliance type, wattage, and daily usage hours and generates real-time consumption estimates. Accessible via mobile apps and websites, the tool makes energy insights easily available to consumers. The GSP initiative focuses on monitoring and managing outage incidents while ensuring compliance with the company's service standards. This project identifies outages exceeding predefined thresholds, determines justifiable causes, and tracks manual reconnection timelines. The GSP leverages outage data from OMS, HES, and field operations, integrating it with Impresa Insights for analysis. The system identifies incidents breaching time standards, categorizes outages based on their root causes, and monitors manual reconnection activities. These insights are shared with operational teams to streamline processes and enhance accountability.

How It Benefitted the company? Delivering Value: Transforming Smart Metering Operations

By understanding peak demand periods, the company optimized resource allocation, minimized grid stress, and planned infrastructure upgrades proactively. This initiative also laid the foundation for demand-side management programs, encouraging consumers to participate in energy-saving measures during peak hours.

For consumers, the tool promotes energy efficiency and cost savings, empowering them to align their usage with their budgets. For the company, the initiative supports demand-side management, reduces grid strain, and enhances customer satisfaction by providing transparency and actionable insights.

Impresa Solutions:

- Impresa Insights Platform
- Grid Insights

The GSP initiative improved the company's outage management by identifying inefficiencies and prioritizing critical interventions. It also ensured regulatory compliance by providing detailed reports on service disruptions. Enhanced transparency and accountability fostered greater trust among consumers and stakeholders.

Conclusion: Driving a Smarter Energy Ecosystem

The projects explored in this paper represent the company's commitment to leveraging data and AI to enhance utility operations and customer engagement. From tracking peak loads to offering consumer-centric energy tools and ensuring efficient outage management, these initiatives underscore the company's leadership in modernizing the energy sector. As the company continues its digital transformation, the integration of advanced technologies like Impresa Insights will play a pivotal role in shaping a smarter, more efficient, and sustainable energy future.