Ignition-Based Framework Powers SCADA for Urban Microgrid Project

Renewable Energy Company Gains Monitoring & Control With Contel Smart Energy's Energynie

The electrical grid has existed for just shy of a century and a half, but as continual access to power has become increasingly crucial for work, education, and daily life, energy companies must find sustainable solutions to provide for their customers, especially in highly populated urban areas.

One such innovative company is EDF Power Solutions. The French-owned company has been active in Israel since 2009, with a focus on large-scale photovoltaic (PV) and battery energy storage system (BESS) projects. Supporting more than 600 MW PV and 100 MWh of BESS, EDF is still expanding rapidly with 2 GW of projects in various stages of development.

In October 2023, EDF began construction on their first urban microgrid. "This is a unique microgrid project for a school campus inside the Tel Aviv metropolitan area. It can provide one or two days of electricity without a grid connection. The microgrid consists of 20 megawatt hours of battery energy storage and in the future will also include PV installations on the school's rooftops," said Ilan Kotlovski, Sr. Project Engineer at EDF Power Solutions.

"We hope that these types of projects are going to be more popular and that we're really starting a trend here," said Mika Reichel, Storage and Optimization Engineer at EDF Power Solutions.

Contel Smart Energy manages hundreds of energy sites across Israel and beyond, with more than 2 GW of power installed or under construction, and close to 2 GWh of storage.

Ignition-Powered Energynie

EDF chose to work with Contel Smart Energy, a division of the Contel Technologies Group, who specializes in advanced SCADA and EMS (Energy Management System) solutions tailored specifically for the renewable energy sector. Contel Smart Energy manages hundreds of energy sites across Israel and beyond, with more than 2 GW of power installed or under construction, and close to 2 GWh of storage.

The microgrid project utilizes Energynie, a comprehensive EMS for optimizing renewable energy from different sources,

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such as solar PV, traditional generators, or battery storage across different site configurations. Contel Smart Energy built the framework for Energynie using Ignition — the enterprise industrial integration platform for SCADA, IIoT, HMI, and more — to provide the kind of flexibility required for real-time control and data visualization of decentralized grid assets, integration with dual-use PV site needs, sensors, and localized environmental monitoring.

“We chose Ignition because it gave us a clear path to scale, a reliable industrial-grade core with the flexibility to build our own product layer on top,” said Nir Shadmi, CEO at Contel Smart Energy. Ignition’s licensing model supports a multi-tenant software-as-a-service environment with unlimited tags, sites, and clients. On top of that, because Ignition is built on open standards, it integrates seamlessly with a wide range of hardware, protocols, and databases.

“Energynie brings together ground mounts, storage systems, and hybrid sites equipped with diverse hardware from multiple vendors and unifies them under a common operational logic,” said Daniel Wainberg, Product Manager at Contel Smart Energy. “This approach ensures consistent control logic, analytics, and alerting across the entire development, regardless of vendor or site topology.”

Physical & Digital Requirements

While establishing a microgrid is always complex, placing one in a densely populated urban area creates even more obstacles. “There were many challenges as it was our first project of this kind,” said Kotlovski. Beyond practical considerations like selecting a location, changing its legal designation, and clearing it of existing functioning infrastructures, EDF was inserting a large battery capacity into a relatively small area, and needed to construct an appropriate storage building that met the associated standards. Kotlovski added that for the project to be successful, “It is important to have synchronization between the different experts and parts of the project since they are interdependent. This is especially true for SCADA, HVAC, noise, and fire safety.”

“So started a delicate dance where every minor design change has to go through a firefighting consultant, an HVAC consultant, an acoustic consultant, and also it has to be aesthetic and go through the architect,” said Reichel. “We had a lot of iterations, but we’re very happy about the results.”

With the physical aspects of the project completed, EDF and Contel Smart Energy turned their focus to more digital concerns, such as the microgrid’s ability to completely disconnect from the main grid on demand or in the case of a grid failure. Additionally, the

microgrid needed the capability to charge and discharge the battery according to a preplanned schedule. Extending past basic control and monitoring, EDF required a high-availability SCADA solution that could adapt to the exacting project specifications.

A Feature-Rich Solution

More than simply providing the solution, Contel Smart Energy worked alongside EDF to ensure the project was successfully implemented. “What we got from Contel was not just an off-the-shelf product. It was a commitment to the project, a commitment to be flexible and to find solutions whenever there is a problem to be solved,” said Reichel.

Energynie’s dashboard acts as a central hub for EDF, allowing them to monitor the microgrid’s overall health and performance. “In terms of dashboards and analytics, we use Energynie to provide monitoring and control,” said Reichel. “It can be used both for real-time control and also a schedule function that allows us to plan ahead for optimal charging and discharging. And we can also use it to gather historical data to check trends and to analyze to get the optimal performance of our projects.”

“Ignition supports the advanced user experience and high degree of customization that energy management practices demand,” Shadmi said. Due to Energynie’s framework, the platform delivers an extensive amount of granularity. This allowed Contel Smart Energy to design intuitive role-based interfaces and individually tailored dashboards, adapting to the unique operational needs of each site and user, all while maintaining a consistent look and feel.

EDF’s microgrid features a lightweight edge unit that connects locally to inverters, batteries, grid meters, and other sensors. “It streams data securely to a centralized Ignition-based cloud via one-way MQTT over IPsec, where each site gets isolated access to its data without having to manage designated servers or IT,” said Wainberg.

This microgrid project integrates services like a third-party optimization service for determining charging and discharging as well as an astronomical clock monitored by Energynie that can provide the exact date and time to disconnect from the grid. “The system is monitored remotely by an external O&M contractor and can also be accessed by our internal O&M team. The use is done mainly with Contel’s platform, which includes all the necessary gauges, controls, and functionality,” said Kotlovski.

“Whether a customer operates one site or 50, they get a unified real-time view of performance, receive alerts for critical issues, and can take action directly from desktop or mobile,” said Wainberg. Ignition’s unlimited licensing allows EDF to leverage Energynie across several of their sites, giving them a consolidated platform where they can monitor several projects. “That enables faster issue detection, shorter intervention times, and overall improved operational continuity.”

Value Stacking

By implementing this project, EDF accomplished what they call “value

stacking," which allows them to solve three problems at once:

1. Energy Shifting

   EDF charges the battery in the morning or during the day when electricity demand is low, so it can be used in the afternoon when the demand is high and the price of electricity rises to match.

2. Reducing Grid Congestion

   The Tel Aviv metropolitan area encompasses more than one million people, but has no electricity-producing facilities; EDF's facility provides an important resource.

3. Disconnecting From the Grid

   The microgrid provides all the electricity needed for the school for one to two days, allowing it to operate independently from the surrounding area.

In the future, EDF plans to add PV to this project, in addition to more ancillary services if the grid provider requires it. "A battery project will be alive for maybe 15, 20, 25 years, and throughout the lifetime of the project, it will provide different services. And therefore, you need a SCADA system that will be able to be flexible and provide different services as the requirements change throughout the lifetime of the project," said Reichel.

As the project evolves over time, Energynie's structure will allow EDF to implement changes quickly and without disruption. "Built as a SaaS platform from day one, improvements are continuous," said Wainberg. "We can roll out updates to all customers at once, whether it's a new model for battery optimization or a market-specific integration. Every new site can be onboarded quickly with no need to redeploy infrastructure. No downtime, no local development, just immediate value."

Shadmi echoes the sentiment, explaining that Energynie's Ignition framework frees them to accommodate the energy space's ever-changing demands. "Whether it's large solar PV sites, hybrid sites, or complex site configuration, Ignition adapts to every scenario and challenge," said Shadmi.

AI & Future Integrations

Contel Smart Energy is planning a number of initiatives that will take full advantage of Ignition's flexibility and scalability to add AI, as well as predictive and prescriptive maintenance to Energynie, further distancing its capabilities from a traditional SCADA or EMS. "We recently developed an integration between Ignition and a large language model vendor in order to create an AI assistant that actually sits on top of our text data," said Wainberg.

"We are also building data science models to perform advanced analytics and extract deeper insights from our operations data. Not just for optimization, but also to inform smarter decision-making across the board," said Shadmi.

"As in every field, AI will play an important role also for storage. It can be used for

analyzing data, for optimization, and also for predictive maintenance," said Reichel. "We're seeing more and more complex energy storage projects, storage with PV, microgrid, more and more complex ancillary services."

With Ignition as its base, Energynie enables energy providers like EDF Power Solutions to scale without concerns about vendor lock-in or evolving regulatory compliance standards, providing a strong foundation that's ready for the future.

EDF Renewables and EDF's International Division are now EDF Power Solutions. As a responsible and innovative industrial company, EDF Power Solutions develops, builds and operates renewable and low-carbon powerplants as well as flexibility solutions and transmission assets. Leveraging all of their expertise for tailor-made offers to their clients, EDF Power Solutions drives the decarbonization and global performance of electrical systems. In all geographies, EDF's teams are engaged each day to accelerate the energy transition. Learn more: https://edf-powersolutions.com/

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