

CUSTOMER SPOTLIGHT:

Establishment Labs Deploys Microgrid to Maintain Manufacturing Operations During Grid Outages

Establishment Labs S.A. deploys first-of-its-kind microgrid, integrating lithium-ion battery storage and solar PV controlled by Enel X's Distributed Energy Network Optimization System (DEN.OS™), an intelligent software platform that optimizes how these distributed energy assets interact and perform. With the largest microgrid in Central America at the time it was installed, Establishment Labs improves power quality, energy savings, and renewables integration. It also keeps power flowing when it matters most.

Costa Rica has established a national goal to be completely carbon-neutral by 2021. A lofty aspiration to be sure—but as it stands, 98 percent of Costa Rica's electricity already comes from renewables. In fact, in 2016, the entire country ran solely on renewable energy power—a mix of

hydropower, wind, solar, geothermal, and biomass—for a total of 250 consecutive days. Now with various incentives and measures in place to ensure rapid movement toward this 2021 benchmark, Costa Rican businesses are more energy-focused than ever before.



There are, however, some obstacles that remain. Chief among them are frequent power outages, such as the massive Central American blackout that occurred in July 2017, affecting 1.4 million homes and businesses. For a medical manufacturing facility such as Establishment Labs, any disruption in power leads to costly production losses. As the company considered an energy system upgrade as part of a business expansion, Establishment Labs wanted to move beyond reliance on diesel generators in favor of cleaner renewable power plus energy storage. If they could also save on energy costs, improve power quality and reduce or eliminate diesel use, those were additional benefits that would improve the overall business case.

Storage-Plus-Solar Solution

In partnership with Enel X and energy systems developer Rio Grande Renewables, Establishment Labs opted to deploy a first-of-its-kind microgrid, integrating lithium-ion battery storage and solar PV. The system is controlled by Enel X's Distributed Energy Network Optimization System (DEN.OS™), an intelligent software platform that optimizes how these distributed energy assets interact and perform.

Under normal conditions, the system smoothly integrates intermittent solar PV for on-site self-consumption, enabling continuation of critical cleanroom operations. When a grid outage occurs, the microgrid "islands" itself off from the grid and operates in standalone mode, allowing Establishment Labs to continue with normal operations. In fact, the company was unaffected by the countrywide blackout in July; when it occurred, DEN.OS seamlessly switched to backup mode and supported critical loads with storage and solar PV until the grid returned—automatically without intervention.

In addition to proven performance benefits, from a financial standpoint the microgrid also delivers value beyond simple backup power. Because its normal operation generates revenue and cost savings that help pay for itself, the system is not a stranded cost. Further, not only does it provide backup support during an outage, it also delivers essential load relief, lowers operational costs, and helps reduce greenhouse gas emissions.

Establishment Labs S.A. Alajuela, Costa Rica

Start of Operations: 2016

Energy Storage: 500 kW / 1 MWh lithium-ion batteries

Renewables: 276 kW solar PV

Grid Services: daily load reduction, resilient back-up power, solar self-consumption

Rio Grande Renewables

Our partner in the Establishment Labs microgrid project is Rio Grande Renewables (RGR). RGR is a privately held renewable energy developer that designs, engineers, finances and constructs both utility-scale and behind-the-meter solar power plants, standalone energy storage systems and microgrids. Since its founding in 2007, RGR has become one of the largest solar and microgrid developers in Latin America and the Caribbean. For more information, visit www.riogranderenewables.com.

DEN.OS™ Intelligent Software

Enel X's Distributed Energy Network Optimization System (DEN.OS™), based on patent-pending control and economic optimization technology, maximizes the economic returns of behind-the-meter storage systems alone, or in combination with distributed energy assets. The DEN.OS platform was architected to facilitate the design, integration and operation of energy assets/services, providing users with the greatest financial returns across the broadest range of energy storage applications, utility rate structures and economic use cases. The platform is a scalable end-to-end solution that can cover any market segment, including grid-side (utility) storage, microgrids, and traditional generation and distribution networks.

Enel X provides a complete turnkey solution that ensures clear accountability by tying together upfront modeling, design and simulation, with the installation and operational monitoring, control, and financial optimization required to deploy storage-plus-DER solutions at speed and scale on either side of the utility meter.