

Magens Junction Development

Microgrid

The Challenge

As one of the U.S. Virgin Island's leading project developers, Jackson Development Company, LLC, prides itself on designing and constructing affordable housing developments that deliver reliable, low-cost power with minimal environmental and societal impacts. As a fundamental principle, Jackson Development builds projects to a hurricane hardened standard and one that is committed to stylish design, tenant amenities and secure power. Their commitment to a more sustainable future does not just target what they build, but how they build it.

As part of their process in providing hurricane resilient power; Jackson Development is not only committed to doing it with the lowest carbon footprint but also the lowest cost to operate. When the opportunity arose to re-develop the defunct St Thomas Dairy site with 108 affordable rental apartments, the company turned to E-Finity Distributed Generation, Capstone's distributor for the Caribbean, mid-Atlantic and southeastern U.S. to deliver such a solution.

Beyond meeting goals for reduced energy costs, increased efficiency, and reliability, E-Finity designed its' ultra-low emission distributed-generation microgrid around a microturbine-based combined heat and power (CHP) solution paired with solar and batteries that was a natural fit for this primer developers overall corporate sustainability initiatives.



E-Finity has provided Jackson Development Co. with a dependable and cost effective means to generate off grid power for our multi-family rental development in the USVI. Without E-Finity's expertise in power generation and microgrid technology, it would be impossible for us to provide safe, affordable and hurricane hardened housing for Virgin Islanders."

— Bob Jackson Principal,
Jackson Development, LLC

Power Profile

Customer

Magens Junction by Jackson Development

Location

St. Thomas, U.S. Virgin Islands

Commissioned

January 2021

Fuel

Liquefied petroleum gas (LPG)

Technologies

- (7) C65 Microturbines
- 820 kWh Battery Energy Storage System
- 150 kW Solar Array
- Redundant m-TIM

Capstone Green Energy Distributor

E-Finity Distributed Generation



**Smarter Energy
for a Cleaner Future**



Seven propane-fueled microturbines produce 1-million kWh of electricity annually and over a billion BTUs in hot water for Magens Junction, an affordable housing development in St. Thomas.

The Solution

To meet the apartment complex's sophisticated electric and hot water needs for both tenant and common areas operations, the system was engineered by E-Finity with 455 kW of power from seven Capstone Green Energy propane-fueled C65 microturbines and complemented with a 150 kW solar array and a 820 kWh Battery Energy Storage System (BESS). This microgrid installation not only provides 100% of the complex's electrical power and hot water requirements, but it does it with the least amount of propane needed. In this system, the waste heat created by the microturbines is directed into on board heat exchangers for generating domestic hot water while the electricity generated by the microturbines charges the BESS. E-Finity's m-TIM Controller is programmed to authorize the microgrid to select solar generation, microturbine generation, or both simultaneously to load follow and automatically adjust the amount of power needed to match and keep the BESS at the optimal "state of charge", meeting the apartment complex load, achieving maximum energy efficiency, and achieving the lowest possible carbon emissions available.

The Results

The E-Finity microgrid system installed at Magens Junction is the Islands single largest combined heat and power (CHP) microgrid and the first of its kind in the USVI's. The microgrid produces around 1-million-kWh of electricity annually along with over a billion btu's in free hot water. The system is designed with an 18,000-gallon propane tank that can fuel the system for 8-10 weeks before needing to be refilled. In addition, the system saves more than \$250,000 USD a year in energy costs and delivers un-interruptible UPS

quality power to the entire site. The energy produced by the microgrid is extremely clean and eliminates over 700,000 pounds per year of CO2 carbon emissions that would have been generated by using grid power. That is the equivalent of removing over 100 cars from the road and planting 400 acres of forest each year in St. Thomas.

With a 15-year Capstone Factory Protection Plan (FPP) in place, Jackson Development receives comprehensive service coverage on all components including engine overhauls as well as all scheduled and unscheduled maintenance at a fixed cost for the entire term. Using connectivity through the companies robust m-TIM Controller, the E-Finity Customer Service Team provides power plant operations with a remote monitoring system to supervise, service and optimize all microgrid components resulting in peak performance.

Capstone C65 ICHP Microturbine



A C65 provides up to 65kW of electrical power while the UL-Certified C65 ICHP provides up to an additional 150kW of thermal power for CHP and CCHP applications.