

# Optimized Inverter Technology The Top Choice of Rocket Scientists

- ▶ Alpha Associates
- ▶ Lakewood, NJ, USA
- ▶ 525kW



Amberjack Solar Energy LLC installed NJ facility. The project used 20 SE20k inverters and over 1000ea P600 power optimizers coupled with more than 2000ea 245W modules. The system is owned by Amberjack Renewable Energy Investments

**“We like the idea of knowing at the panel level, exactly what is going on with the system and being able to isolate any issues quickly to correct.”**

> Steve Littlewood - Director, Structured Finance and Procurement, Amberjack



For years, designers have turned to central inverters for larger commercial installations. But with the recent changes in the NEC code and the increasing complexity in commercial design, leading installation companies like Amberjack Solar Energy LLC are looking more at optimized inverters. SolarEdge offers an optimized inverter solution that simplifies commercial design by offsetting module mismatch losses and integrating the latest safety features.

## Simplicity, Safety and Savings

The original design for the 500kW array was created with a central inverter in order to keep AC costs down. However, because of the recent changes in the NEC code and the complexities of a multi-pitch structure, Amberjack pivoted towards string inverters. Other inverters had expensive add-on options to provide NEC code features like arc fault circuit interruption and rapid shutdown functionality; but, with SolarEdge, these advanced safety features were already integrated with the inverter.



**“With integrated arc fault circuit interruption and remote shutdown capabilities included in SolarEdge’s SafeDC technology, we could create a safer working environment and appeases site specific requirements.”**

> Steve Littlewood

In addition to the safety upgrades, SolarEdge’s overall cost structure was more competitive. First, SolarEdge utilizes voltage optimization to increase the number of PV modules that can be connected in a single string. The longer strings reduce the DC side electrical cost to around 33% of alternate solutions. Furthermore, by deploying the new P600 optimizer, a 2:1 configuration that connects 2 PV modules to 1 power optimizer, installers cut the rooftop part count in half. This resulted in a better overall cost structure for the SolarEdge system.



Alpha Associates began in 1968 as a manufacturer of specialty materials for the US Space Program- their technologies are frequently used to create new materials that improve energy conservation and safety

## More Energy per Rooftop

The multi-pitch roof at Alpha Associates created a design constraint making central inverters impractical to install. Typically, a designer would look to build up on a northern side with racking to match the southern pitch. But, with increased wind loads created by the buildup, matching was not an option. Additionally, designs with traditional string inverters need to match the panel count on all strings connected in parallel. So, if they can only fit 9 panels on a string, where other strings are 13, the designer must cut out the shorter string completely.

Amberjack was drawn to SolarEdge’s micro harvesting strategy that places MPP (Maximum Power Point) trackers at the module level. The MPP trackers allowed Amberjack to maximize the full area of the roof by eliminating design constraints resulting in an additional 12,000 watts of PV. With a higher overall inverter efficiency and the ability to offset module mismatch, the expected energy yield from SolarEdge proved greater than traditional solutions. With a better upfront cost and a higher energy yield, SolarEdge proved to be the best choice overall yielding the lowest cost of electricity.