

Empowering Iowa's First Commercial Peak Shaving Plant

Agri-Industrial Plastics reduces operating costs by 10%, with co-optimized SolarEdge PV system and storage

"Iowa is very up-to-date on the electrical code—an early adopter of NEC 2017, and SolarEdge's Rapid Shutdown solution provides the best combination of technology and cost. Our client, Agri-Industrial Plastics preferred SolarEdge's module-level monitoring capabilities."— Amy Van Beek, CMO, Ideal Energy

In Context

Demand Charges on the Rise

For large manufacturers and agricultural facilities, demand charges can be a major utility bill line item that is difficult to control.

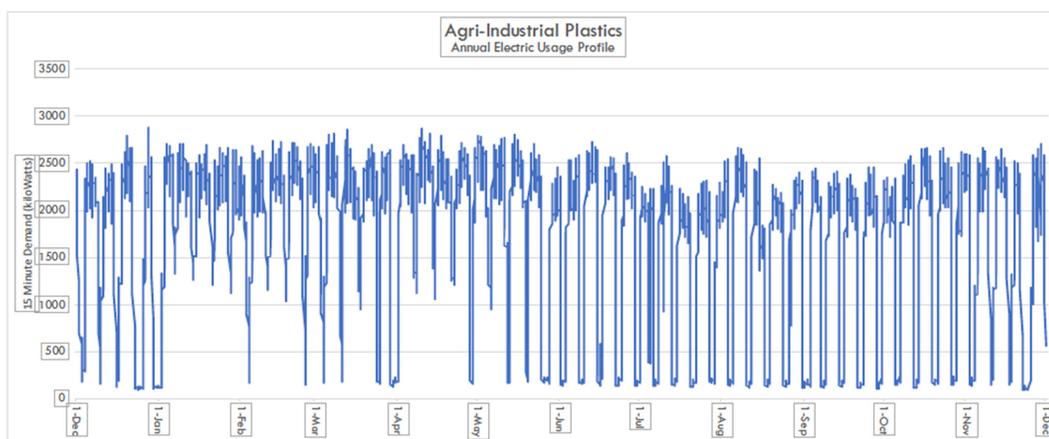
"Demand charges often account for 30% to 70% of a customer's utility bill." – NREL

Demand charges are determined by the highest 15-minute average usage recorded during a given billing period. For example, if a customer hits a peak load of 150 kW when the demand fee is \$10/kW, the demand charge for that month will be \$1,500. Iowa is one of 10 states with the most customers paying high-demand charge rates: \$20 per kW or more*.

Therefore, peak shaving is a technique used to lower and smooth peak loads, reducing or eliminating spikes in demand charges. Installing solar along with energy storage is the best way to achieve this: PV-generated energy is captured by the battery, then discharged to offset electricity needs during periods of high demand.

The Challenge

Energy-Intensive Operations



Agri-Industrial Plastics (AIP) is one of the largest manufacturing companies in Iowa. Its extrusion blow molding machines consume a substantial amount of electricity and cannot easily be powered down. So they have to inevitably run 27 production lines, 24 hours a day, five days a week—incurring extremely high demand charges.

As a result, the demand portion of their bill was high while the energy charges were relatively low. Based on Ideal Energy's energy analysis, AIP knew that a solar+storage system was the way to go. However, they realized it was not feasible to offset 100% of their electric costs considering how energy intensive their operations were. Instead, AIP's goal was to shave the most expensive part of its peak demand consistently throughout the year.

The Solution

To Offset Energy Consumption with Solar + Storage

Ideal Energy, a leading SolarEdge installer in Iowa, determined that installing solar in tandem with energy storage would be the ideal solution for their client. With the goal of peak shaving, they proposed a fully integrated rooftop solution with the SolarEdge 100kW inverters with Synergy technology, SolarEdge dual-input power optimizers, and Tesla Powerpacks.

Since the state of Iowa had already adopted NEC 2017, they automatically chose SolarEdge -- one of the few systems in the market that has built-in capabilities to comply with the latest requirements in addition to its ability to generate more energy. The PV array was designed to offset 4-5% of AIP's annual energy usage, with the combined PV + battery solution planned to reduce yearly peak load by an average of 6%.

Added peace of mind comes with safety compliance that surpasses NEC requirements –SolarEdge solutions are designed to rapidly reduce the voltage inside and outside of the array during a shutdown, and provide protection for Ideal Energy's installation team and to first responders in emergency situations.

Benefits

Leading By Example – A Commitment to Sustainability Opens the Door to New Talent

With this system, AIP anticipates an average utility savings of \$55,000 per year. The project will earn a high rate of return of 16% and offset about 6% of peak loads. Further, the savings made on operating costs (~\$55,000) allows AIP to redirect those financial resources towards their bottom-line, employees, and expanding production lines. Executives at AIP view the project as a strategic investment in the company's future that will have an outsized impact beyond energy bills.

"We hope to attract the next generation of forward-thinking employees by demonstrating that AIP has invested in sustainable solutions. The state-of-the-art solar project fits in with AIP's high-tech robotic automation, sophisticated engineering techniques, and community-oriented culture." Lori Schaefer-Weaton, President, Agri-Industrial Plastics Company

Installer Insight

Ideal Energy's Major Takeaway

As a true lifetime energy partner; Ideal Energy helps their customers gain freedom from rising utility costs and empowers them to take control over their energy usage. They continue to push the envelope on solar-plus-energy storage as a winning solution for both business and customer.

For Ideal, SolarEdge's advanced module-level monitoring capability is key to optimizing energy production for their customers. Further, the power optimizers helped avoid module mismatch losses and increased energy production by almost 3% in year 1. SolarEdge's strength in exceeding NEC and additional grid requirements helps them know that their business can evolve with SolarEdge and gives them the confidence to standardize on SolarEdge solutions.

Installation Details



- Fairfield, Iowa
- 517 kW PV System
- SE100K X 4 SolarEdge Inverters with Synergy Technology
- 670 SolarEdge Dual-input Power Optimizers
- 212 kW/424 kWh Tesla Powerpack X 2
- Hanwa Solar modules [380W] X 1345
- Expected Year-1 Utility Savings: \$55,000
- Payback Period: 6 years
- Projected Year-1 Energy Production: 633,995 kWh



24,519,048 miles driven
in a passenger car



1,417 homes energy
use for 1 year



264,051 trees planted
and grown for 10 years



11,061,224 pounds
of coal burned

* <https://www.nrel.gov/docs/fy17osti/68963.pdf>