

SIERRA NEVADA BREWING COMPANY

How one of the largest craft breweries stays green with energy storage

Location: Chico, CA

Production Output: 600,000 barrels of beer per year

Customer Challenge

Reduce energy demand charges while improving sustainability

GridSynergy® Solution

1 MWh of software-controlled energy storage

Benefits

- Reduces demand charges on utility bill up to 85%
- Minimizes dependency on California's power grid
- Allows brewery to operate with a 50% smaller co-generation plant
- Increases customer loyalty in the green-minded craft beer industry

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– Brandon Smith, Engineering Manager,
Sierra Nevada Brewing Company

Decades ago, Sierra Nevada Brewing Company fired one of the first shots in America's microbrew revolution with its now world-famous bottle-conditioned Pale Ale. As the familiar green label depicting a bucolic setting might suggest, environmental sustainability has been a priority for the company since day one. The company has a long history of investing in on-site energy generation. It was the first and only brewery in the U.S. to operate hydrogen fuel cells, which it used to create electricity for 10 years, and has the largest solar installation of any craft brewery. In 2010, the brewery was named “Green Business of the Year” by the United States Environmental Protection Agency.

“Sustainability is just part of the way our founder, Ken Grossman, has always done business,” says Mandi McKay, sustainability program coordinator at Sierra Nevada. “We were one of the first companies to have a sustainability department, and we had electric vehicle charging stations 10 years ago—before any employees had electric cars!”

GENERATING 90 PERCENT OF POWER ON SITE

Now the third largest craft brewery and tenth largest brewery in the United States, Sierra Nevada is no longer “micro” in any sense of the word, despite the high quality of its ingredients and products. To meet its power needs without increasing dependence on the grid, Sierra Nevada installed a new co-generation plant with Capstone microturbines fueled by natural gas that generates electricity, steam, and hot water. Biogas from the brewery's wastewater treatment system feeds into process boilers to further improve efficiency.

“We generate over 90 percent of our power here on site, reducing our dependency on California's power grid, which tends to get stressed in the summer months,” says Brandon Smith, engineering manager for Sierra Nevada.

As Sierra Nevada worked with a local integrator to design and size the co-generation plant, it decided to use energy storage to keep the size of the plant manageable. It also saw energy storage as a promising way to reduce demand charges, which accounted for more than half of the brewery's electric bill. The integrator recommended using GridSynergy® software from ENGIE Storage to monitor power usage and automatically discharge power from a Tesla battery storage bank during periods of high demand. ENGIE Storage installed the system, giving the brewery on-site expertise and fast time to value.

“One of the huge advantages of energy storage is that it's a great way to get demand charges down without making a much larger investment in co-generation,” says Smith. “If we had not used energy storage, we would have had to increase the generation capacity of our microturbine plant by 50 percent, which would have been a substantial cost.”

REDUCING DEMAND CHARGES UP TO 85 PERCENT

Previously, Sierra Nevada experienced periods of high power demand in the early morning and evening, before and after solar power was available. Now, power is stored in the batteries and discharged during those periods, resulting in less power drawn from the grid. It's also good insurance against other component failures—for example, if a microturbine goes down, GridSynergy will notify the batteries to pick up the slack.

“Automated energy storage with the GridSynergy software has been the high point of our new system,” says Smith. “We're paying far less in demand charges, and we're confident that we will be able to get to an 85 percent reduction once the entire system is optimized.”

MANAGING A VARIABLE POWER LOAD

With energy storage standing by, Sierra Nevada can confidently brew a batch of beer every two to three hours without worrying about fluctuations in power usage. Beer can travel from thermal processes such as boiling and hopping to the electrical-intensive cooling needed for fermentation and finally to packaging, where heavy machinery and compressed air are used, without disruptions caused by demand charge avoidance through altered operations.

“Overall, our challenge is the same as any other midsize manufacturer: to try to arrange loads as well as we can to minimize peaks,” says Smith. “ENGIE Storage GridSynergy software makes it easy. We don't have to think about it.”

INCREASING CUSTOMER LOYALTY

Perhaps the greatest impact of Sierra Nevada's ongoing commitment to sustainability is to its brand reputation. Craft beer drinkers tend to care about the environment, and spend their dollars accordingly. Sierra Nevada gives regular brewery tours, and its pioneering use of clean energy has received extensive media coverage, gradually increasing awareness among consumers.

“When people learn about our energy storage solution and our sustainability efforts, it completely changes their relationship with Sierra Nevada,” says McKay. “I constantly get feedback such as, ‘I had no idea you were doing these things, and now I'm going to drink your beer all the time!’”



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The GridSynergy cloud-based software draws on historical energy usage data as well as real-time input from the batteries on site, to calculate optimal charge and discharge cycles.

About ENGIE Storage

ENGIE Storage helps power the world more efficiently and sustainably. As the nation's number one distributed energy storage company, we serve energy producers, distributors, and consumers, including utilities, network operators, and energy consumers in business and government.