CPower energyiQ

Winning with Demand Response: How Manufacturers Make Money with Their Energy

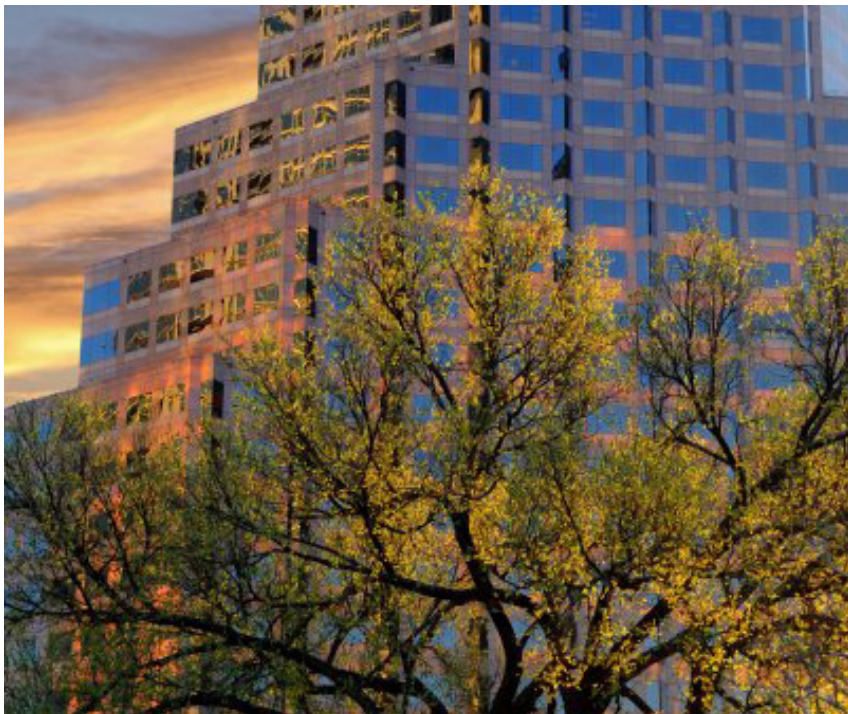
Case Study

Increasing Revenue While Reducing Costs: Precision Controls Automate Industrial Curtailment, Earning and Saving Participants Millions

For large industrials, energy has always been a significant operating cost. However, manufacturers that are agile enough to partner with a virtual power plant (VPP) provider and leverage grid signals can turn energy into a strategic asset worth millions of dollars through demand response.

The need to treat energy strategically is growing in importance as energy costs and pricing volatility increase due to a once-in-a-generation surge in energy demand spurred by the AI data center boom and electrification. In the 13-state plus the District of Columbia PJM service territory, for example, a rate-setting auction resulted in an 800% increase in capacity charges.

Large industrials have a choice: they can passively accept these increases or leverage something in their possession that they may have taken for granted – flexible power load that they can use to help stabilize the grid. Managing flexible load correctly can dramatically reduce overall energy costs.



Demand Response: Shedding Load while Meeting Production Goals

Demand response, a lucrative category of programs offered by wholesale energy markets and electric utilities to better balance power supply and demand and maintain grid integrity, has emerged as a staple of modern energy management for large C&I customers and utilities alike. And CPower is a leader in this field, with a large portfolio of manufacturers actively enrolled in a variety of revenue-generating demand response programs across the country.

These demand response programs, which provide financial incentives to customers who can curtail their energy consumption – i.e. "shed load" – when requested by the utility, vary in complexity. While a grocery store or office building might comply with a demand response event by simply adjusting thermostats or lighting, manufacturing plants and other industrial sites have more advanced measures at their disposal.

To help such customers participate in the kinds of high-reward demand response programs available to them, CPower has teamed with Energy IQ on an elegant, intelligent, and highly automated solution that simplifies successful demand response participation and payment.

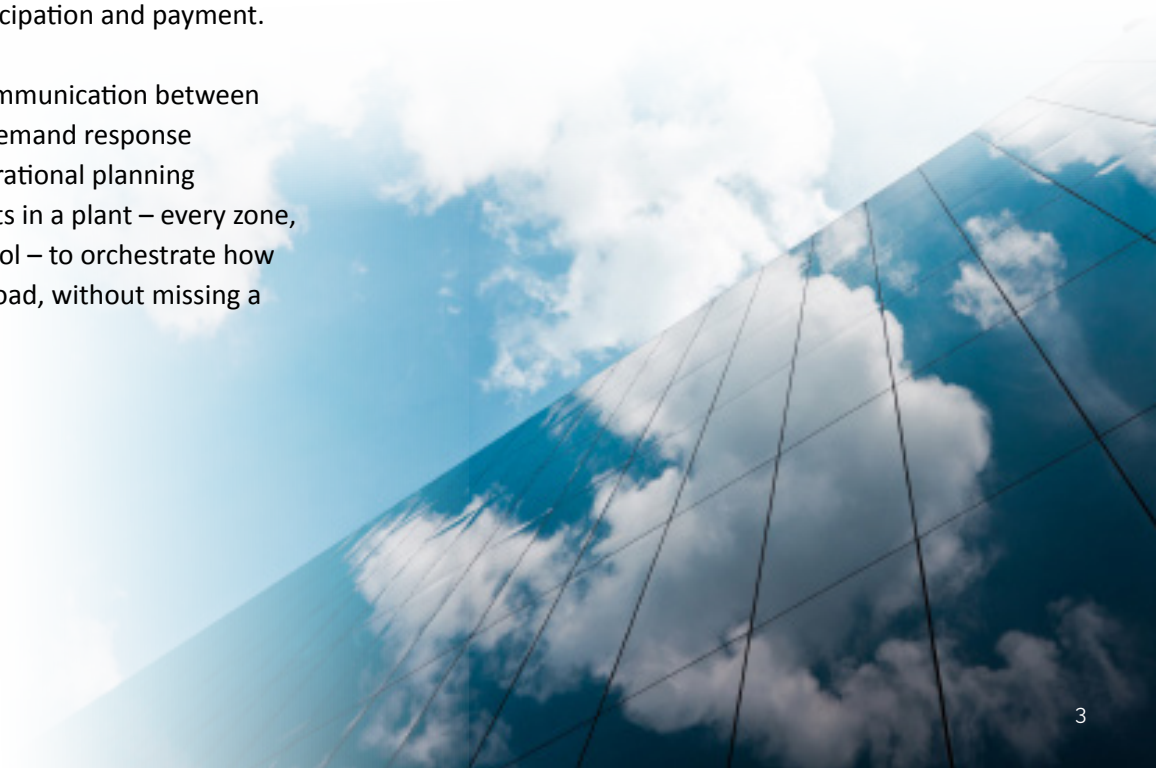
The solution delivers seamless communication between and among the utility, CPower's demand response software, the manufacturer's operational planning function, and all the physical assets in a plant – every zone, machine and environmental control – to orchestrate how and when a manufacturer sheds load, without missing a beat on production goals.

Getting in Sync for Synchronized Reserves

CPower has a long and successful history enrolling manufacturers in a lucrative PJM demand response program known as **Synchronous Reserves.** Unlike "capacity programs," where grid operators foresee stress on the grid and give advance notice to demand response participants to curtail load, Synchronous Reserve programs supply electricity to the grid when it experiences *unplanned* needs for more power.

Participating in Synchronous Reserves (or "Spinning Reserves" as they are often called outside of PJM) requires shedding load, often in large amounts, on short notice – sometimes in as little as 8 minutes. This combination of speed and scale requires automation, an ability not only to receive the grid operator's notice promptly, but to translate that signal into load-shedding actions across a facility quickly and with precision.

With the help of CPower and Energy IQ, a large steel plant with an electric load exceeding 100 MW has turned its participation in PJM's Synchronous Reserve program into a reliable revenue generator that has reduced its energy costs by **millions of dollars** over the last decade.



How It Works

CPower's software is designed to receive signals from the grid operator and automatically dispatch assets at the client's site to meet program requirements. But large-load, complex manufacturing environments require a more extensive integration among various systems, like one enabled by advanced software from Energy IQ.

"Broadly speaking, Energy IQ control solutions are fluent in the languages spoken by the systems of the utility, customer, and VPP provider, providing a 'universal translator' that enables seamless integration between the utility and the plant environment," said Jay Snyder, Manager of Technology Alliances for CPower. "That translation is the key to automating curtailment across a large manufacturing facility, informing the SCADA (Supervisory Control and Data Acquisition) and BMS (Building Management System) on which machines, zones, and environmental controls to adjust or turn off – and when – to shed large amounts of power, in this case as much as 20-30 MW, on demand."

Without the CPower/Energy IQ demand response solution, the steel plant could not have participated in the Synchronous Reserve program. Shedding that kind of load, which includes turning off blast furnaces and shutting down manufacturing lines, in a tight time window, can't be accomplished manually with the precision and reliability required. Instead, a software system is needed to overlay the plant's control systems and orchestrate the event – and, just as importantly, get production back to normal immediately afterwards.

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Taking the Next Step

Gaining the control necessary to curtail load on demand has led the plant to even deeper involvement with its utility and an evolution in its thinking about how it balances its energy and production needs. The end-to-end demand response system provided by CPower and Energy IQ provides the visibility and responsiveness needed for the plant operators to proactively bid load into the grid daily at prices that make it worthwhile to shift production.

Not every bid is accepted. But those that are awarded get fed back into the plant's SCADA system automatically via the CPower/Energy IQ solution, so that the execution of that day's production can be adjusted to factor in the plant's energy commitments down to the minute.

"Our work together with CPower at this steel plant and across their portfolio of industrial manufacturers demonstrates what's possible when advanced control systems are combined with demand response software in large-scale manufacturing operations," said Karl Zimmerman, CEO and Co-Founder of Energy IQ. "As global demand for electricity increases, the need to treat power strategically will also grow. The integration of demand response software and control systems to create and automate a two-way information and action flow between utilities and their largest users will benefit all parties, supporting the smooth operation of the grid while helping customers reduce their energy costs."

The Solution

The CPower and Energy IQ solution offers industrial-scale manufacturers a proven, turnkey solution for participating in advanced demand response programs, including Synchronous Reserves. The solution provides:

- **Automated Demand Response Notifications:** Leveraging the CPower Link Adapter, Energy IQ enables real-time notifications directly into a manufacturer's SCADA system.
- **Award Notification and Bid Coordination:** Energy IQ streamlines award data and bidding goals by integrating hourly updates from CPower's software, ensuring customers can automatically adjust their load to align with demand response commitments.
- **SCADA Integration via Open Protocols:** Energy IQ utilizes Open protocols to seamlessly transmit data between a manufacturer's SCADA systems and the CPower demand response platform, enabling automatic load adjustments.
- **Centralized Power-Meter Monitoring:** Centralized monitoring ensures accurate measurement and visibility into load adjustments and overall energy usage.

The Results

- **Transformational Cost Savings:** The solution has reliably delivered six- and seven-figure demand-response payments to industrial participants, dramatically lowering energy costs. The steel mill featured in this case study has earned several million dollars through its participation in demand response via CPower.
- **Efficient Demand Response Program Participation:** From award notification to final payment, the CPower + Energy IQ solution facilitates participation in lucrative demand response programs and automates the entire information and execution flow to maximize the benefits of program participation.
- **Easy On-Boarding and Program Management:** CPower's vast experience managing demand response programs translates into the industry's leading on-boarding process, rapid implementation, and responsive customer service and program management.

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