

Case Study

Roche Bioscience implements Vykon energy management system; receives rebates by shedding 1.5 MW Peak Load



Roche Biosciences
Campus, Palo Alto CA

Roche Bioscience: As part of a Swiss-based health care company, Roche Bioscience is focused on the discovery and early clinical development of innovative new medicines to treat diseases affecting people worldwide. Located in the Stanford Research Park in Palo Alto, Calif., it employs approximately 1,000 men and women on its 105-acre, multi-building campus. The site has over 760,000 square feet of lab and administrative space. Roche maintains its campus with a view towards energy and environmental conservation.

California Energy Crisis: Faced with the California energy crisis, the California Energy Commission (CEC) identified strategies to reduce electricity peaks to avoid rolling blackouts and excessive energy prices. Among these strategies was the creation a \$4 million program targeted at commercial facilities in California that had high peaks and the flexibility to adjust operations to reduce peak demand. The program stipulated that customers be capable of lowering weekday summer energy use by a minimum of 10 percent, with reductions achievable within 30 minutes of an Independent System Operator (ISO) request. The program also required that reductions be sustained from 2-6 p.m. and available for curtailment June through September.

As a large commercial customer, Roche was eligible to sign up for the CEC program but needed to demonstrate that it could achieve a 1.5 MW reduction within 30 minutes, which could not be achieved with its existing controls. Roche required a system that would consolidate predetermined control commands on a single platform accessible from any computer.

In addition to the CEC grant, Roche's local

energy provider, the City of Palo Alto Utilities (CPAU) offered rebates to commercial and industrial customers able to shed peak demand. Roche applied for and received rebates for equipment upgrades including the installation of variable frequency drives and chillers. These in turn, were systems that the Tridium energy management system could be used to control.

About Roche Bioscience

- One of five global Roche research sites
- 1000 people employed in Palo Alto
- Discovery and early clinical development of innovative medicines to treat diseases affecting people worldwide

Roche Bioscience requirements

- System enabling instantaneous response to Independent System Operator (ISO) load reduction requests
- Mechanism to measure and verify energy usage and reductions
- Internet access to critical energy information
- Integration of multiple metering and automation systems including Invensys and Trane via BACnet

Vykon energy solutions

- Integration platform to integrate legacy systems, BACnet, and meters
- Real-time control from any onsite web browser
- Automated demand response sequences

Benefits to Roche

- System assists Roche in ability to shed 1.5 MW load within 30 minutes notice
- Sophisticated measurement and verification tools to use in financial settlement
- Possibility of project expansion due to flexibility of Niagara Framework

Roche Bioscience uses Tridium to exceed load response commitment to the California Energy Commission

“By integrating the Invensys and Trane control systems with meters and linking to the Internet, Roche was able to automatically reduce its peak demand by 1.5MW within 30 minutes”.

Jerry Meek- Roche Biosciences



The Challenge

Roche had several criteria to meet in order to secure the CEC grant. Among its tasks was identifying strategies to reduce peak demand by 10 percent or 1.5 MW. After strategies were identified, Roche sought to implement a system that could respond with automatic closed-loop control. The system needed to be capable of responding automatically to meet an ISO request within 30 minutes. Given the large size of the Roche campus, a system requiring manual intervention would not have been able to meet the stipulated response time. Roche sought pre-programmable control features that would enable it to save steps in regulating its systems. Roche also needed a mechanism to measure and verify that 10 percent load reductions were being achieved. Interval readings and data normalization were also required to satisfy settlement requirements.

The Solution

Roche contracted Yamas Controls to help identify, prioritize, and implement strategies to help meet its needs.

Using data obtained from internal studies, Roche identified energy-reducing strategies including replacing an obsolete analog automation system, optimizing variable frequency drives (VFD), and adjusting space temperatures. As a leading integrator in the San Francisco Bay area, Yamas Controls suggested using Vykon by Tridium as the tool to achieve these goals.

Roche's obsolete analog automation system was replaced with direct digital controls (DDC), which gave it

more flexibility and improved control of the facility. Yamas also optimized the VFDs with a preset minimum level. In addition, Yamas was able to integrate an Invensys system with Trane chillers by using Vykon. “The ability to utilize existing control systems, VFDs, and metering technologies allowed us to provide a cost effective solution for Roche,” said Janey Kaster of Yamas Controls. “We were able to integrate the different systems and program demand limiting logic between systems because of the Tridium solution.”

Although the new system was equipped with automatic sequences for lowering demand, Roche also wanted the ability to manually change setpoints, adjust schedules, and manipulate equipment. In addition, due to the large size of its campus, Roche stipulated that the system be accessible from multiple locations. Yamas provided a web-based solution using Vykon. In addition to automatic load shedding of up to 1.5 MW, Roche facilities operators can now log on to the Internet to monitor and control buildings from any onsite location.

The Benefits

Roche exceeded the required 10 percent peak load reduction stipulated in the CEC rebate program, enabling it to receive a grant from the CEC. Its load response capabilities also allowed it to obtain rebates from its local energy provider. Overall, Roche achieved energy reductions beyond expectations, and is well positioned to capitalize on future energy savings.