

DIGITAL

Chemical manufacturer controls
expensive demand charges

United States

Chemical manufacturer controls demand and reduces penalties.



Chemical manufacturer controls demand; automated system helps reduce expensive demand penalties

A leading chemical manufacturer participates in a time-of-use / dispatch power rate schedule with its utility. The rate is dependent on the time of day and a dispatch level signal – representing power demand – that the utility sends them via a dedicated computer.

Previously, once a dispatch level was received, the plant would manually input the dispatch level signal through a P.A. system, hoping that each department manager would take appropriate actions to curtail power use to avoid expensive demand charges.

Only one person in the plant had the responsibility to understand the dispatch level signals, and they were not always available. To ensure that each department knew when they needed to reduce their usage, the plant needed an automatic way to notify them.

Demand control simplified

The plant invested in a power management system from Schneider Electric, consisting of software and power meters. One power meter was installed in the control room, while others were installed in each manufacturing department.

When the operators receive a dispatch level signal on the computer, they select one of five pre-set options, and the power meter is programmed to automatically download new setpoints to each power meter. The setpoint illuminates a red light when the departments need to go into the peak reduction mode. The priorities are pre-set and all personnel simply respond to the red light when required.

Their power management system provided a simple solution for avoiding expensive demand charges. Because of this capability, two new engine generators are being considered to use for peak shaving. Payback on the generators is estimated to be less than one year.

Cost allocation made easy

The accounting team is also using system data for departmental costing. Data from the power meter in each department makes the required information readily available to download into the accounting system for cost allocation.

Goal

An automated system that would allow the plant to avoid expensive demand charges.

Solution

Power management system that includes power meters and software, installed in each department. Pre-programmed options in the meter automatically notify when peak reduction mode is needed.

Story

A leading chemical manufacturer participates in a time-of use / demand dependent power rate with its utility. Once notice was received from the utility, the plant would rely on manual input and hope each department manager would curtail power use to avoid expensive demand charges.

Results

This simple solution avoids expensive demand charges, allowing the manufacturer to consider adding generators to further shave peak demand.

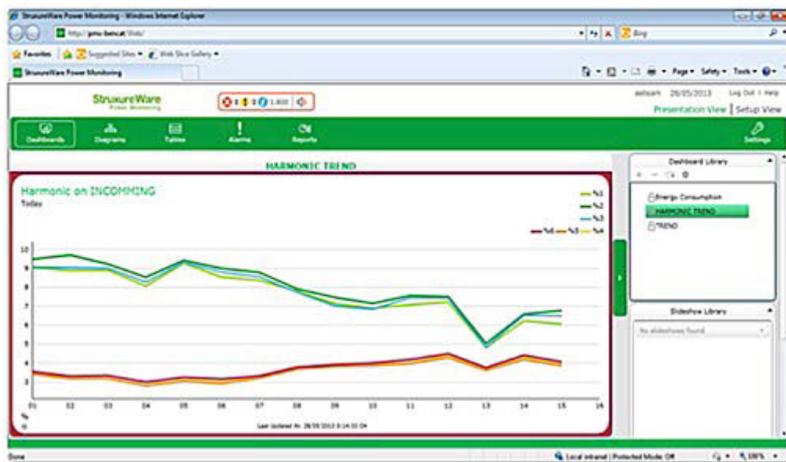
Source of disturbances confirmed

Soon, the meter detected multiple power quality events, such as voltage sags and transients. The patented Disturbance Direction Detection feature of the meter indicated a high likelihood that the events were actually being generated upstream of the facility electrical network. In other words, the disturbances were coming in from the utility grid.

Using the standard power quality reports from the software, the engineering manager shared his findings with the local utility operator.

The presentation of this data compelled the utility to investigate the issue. They found the source to be a heavy equipment operator that was located nearby. The utility promptly installed new lines and equipment to isolate the equipment operator from generating disturbances back onto the grid. This resolved the downtime issue for the manufacturing plant.

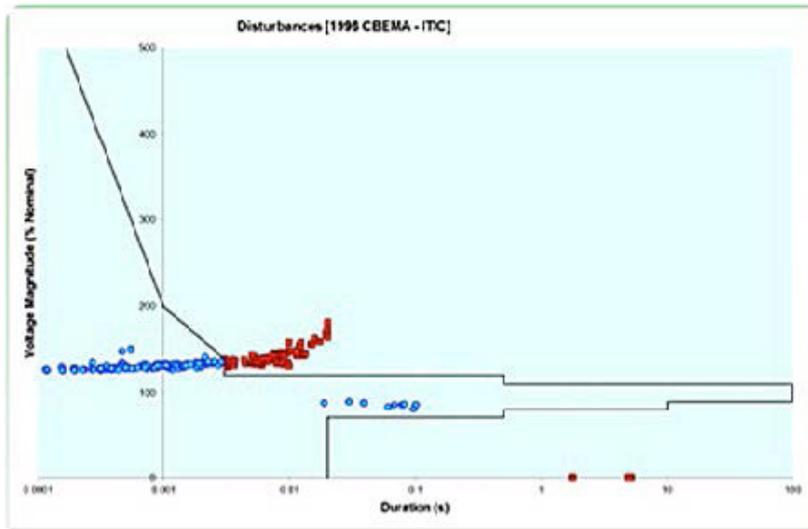
The investment in their power monitoring system had generated an immediate return on their investment many times over. They now rely on the system to ensure that reliability is maintained. “The PQ reports are a key element in our working process to ensure reliability of power supply,” confirms the engineering manager.



Harmonics trending in the dashboard of the power management software.

\$20K

The power management system saved the customer \$20,000 USD for every hour of gained uptime.



CBEMA disturbance tolerance curve report from the power management software.

Sub-metering supports energy conservation efforts

Impressed with the results they were able to achieve, the plant decided to invest in additional meters to monitor each of their production lines, allowing them to extend their existing system to monitor power and energy across their whole plant. They installed 25 additional power meters and connected them back into the power management software.

They also implemented an energy management program in the plant, using the system to create a baseline of their energy use per unit of goods produced - allowing them to track the benefit of energy conservation measures implemented throughout the plant.

One of those measures was an initiative to drive behavioral change through energy cost accounting. The built-in reporting capabilities of the software allow the plant to generate energy cost allocation reports for each of the sub-units within the manufacturing area.

“We appreciate the capability of the system, including its measurement accuracy, flexibility, and the ease-of-use of the software interface.”

Tracing the source of harmonics

Another benefit of the additional metering was to help pinpoint the source of the harmonics that were detected in the first installation. If left alone, the harmonics can cause premature aging of equipment, which could result in further unplanned downtime.

The engineering manager plans to install equipment to help mitigate the harmonics issues.

Extending best practices to other plants

Subsequently, the company decided to implement the same power management system in all of their plants in Vietnam.

“We are fully satisfied with the system delivered. Using the system we have been able to resolve the power quality issue which was causing production stoppage and hence loss of revenue. Our collaboration with Schneider Electric was very successful and we are looking for new opportunities to work together.”

“The system alerts departments when to go into peak reduction mode and specifies how much reduction is needed.”

EcoStruxure™

Innovation At Every Level

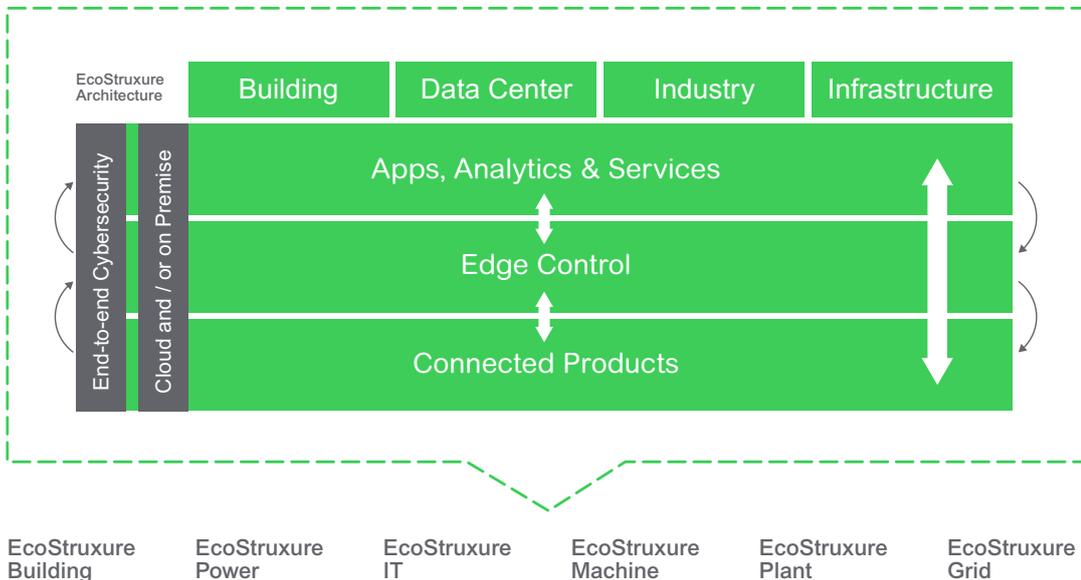
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Schneider Electric

Boston ONE Campus
800 Federal Street
Andover, MA 01810 USA
Phone: + 1 978 794 0800

www.schneider-electric.com

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