storeconnect

StoreConnect's Energy Reduction Analysis Feature

Identifies Key Opportunities in Commercial Refrigeration Systems for Energy Savings and Efficient Operations

THE MARKET CHALLENGE

On average, **supermarkets spend between $200-400k annually** on energy costs for refrigeration, HVAC and lighting. Refrigeration and lighting alone account for more than 50% of the energy usage in an average supermarket, making it extremely important to be able to track energy usage, model changes and validate savings after implementing changes. Tracking and modeling energy behavior at the suction group level of a refrigeration system is a key activity for being able to establish an effective operation and program to identify issues before they become maintenance and energy problems.

The StoreConnect Energy Reduction feature can help retailers solve industry problems, such as:

Energy Usage and the Comparative Effort

- Understanding where total spend occurs in the categories of refrigeration, system performance and retailer performance is a very important benchmark. StoreConnect allows comparatives between retailer's stores, fleets and geographies to find, model, and sustain optimal energy operation for commercial refrigeration systems all the way down to the compressor level.

Lack of Time and Resources

- Retailers have tight schedules and operating hours, along with limited resources that do not leave room for tracking and model energy improvements. The StoreConnect solution offers tracking of real time energy usage, and on top of that, runs and reports algorithms based on power data to the devices to help predict failures and inefficient device operation.

Validation and Sustainment of Improvements

- Measuring total energy spend in a supermarket is relatively straight forward. Measuring, tracking, modeling and validating changes at the suction group level is a different and more rewarding strategy due to the benchmark and baseline models StoreConnect has across the continental USA.

THE STORECONNECT SOLUTION

StoreConnect is an intelligent, cloud-based system that drives retailers and service providers to optimize the Operational Equipment Health of retail supermarkets.

The energy feature of StoreConnect monitors the real time, overall state of a system's energy usage and compares the energy usage to other similar-sized systems using normalized baseline standards created from our data sets. Changes are made to the refrigeration systems, new baselines and models are set, and the automated tracking of real time energy compared to the original baseline is implemented. The key is real time measurements and ongoing suggested improvements based upon data models for right sized and well operating systems across the country.

ENERGY REDUCTION ANALYSIS EXAMPLE

The example presented below is a demonstration of energy savings achieved by reducing the head pressure. Savings are calculated using a weather-normalized model.

BASELINE PERIOD:

A major retailer was struggling to understand why their refrigeration system was using significantly more energy than other refrigeration systems of similar size. A StoreConnect analysis found that the head pressure was set unnecessarily high, especially for the cooler months. Therefore, it was important to create a weather-normalized model for calculating savings.
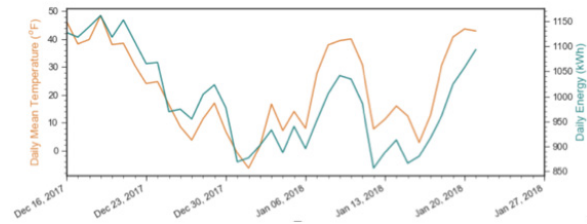
ANALYTICS FINDING:

Refrigeration systems of similar size were found to operate at much lower head pressures. This led to using compressor performance data to estimate energy savings if a head pressure reduction occurred.

SOLUTION:

After lowering the head pressure, the site saw **energy savings as high as 22%,** which at $.067/kWh is **saving over $450 per month.**

Figure 1

Using the 35-day window from Dec 16th, 2017 to January 20th, 2018 to compare Daily Mean Temperature and Daily Energy, it was found to be a highly correlated relationship and was then used as the baseline for the weather-normalized energy savings calculations.

Figure 2

Start of 30-day period	baseline predicted energy use (kWh)	actual energy use (kWh)	savings (kWh)	savings (%)
1/24/18	30567	23735	6832	22%
11/1/18	31740	29969	1771	6%
12/1/18	32596	30424	2172	7%
12/31/18	30457	26825	3632	12%
1/30/19	29500	24530	4970	17%

Using the theoretical savings, calculated by the baseline correlation of Daily Energy Usage and Daily Mean Temperature, and comparing the results to the actual energy usage at a site. There are savings for the first full month and the most recent four months at the time of this document's writing.

THE RESULTS

ESTIMATED **3 - 10%** ENERGY SAVINGS

The Energy Reduction Analysis feature of StoreConnect proved to identify critical issues pertaining to the nationwide issue of ever-increasing store operating costs. The feature identified key sources of energy wastage, allowing retailers to save dollars by implementing revised strategies for system operation. By quickly and accurately identifying the source of excessive energy usage, the Energy Reduction feature saved time for both technicians and retailers. Retailers that took advantage of this feature found significant return on investment through proactive monitoring of energy usage.

LEARN HOW WE CAN HELP YOU BOOST YOUR ENERGY SAVINGS!

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