SkyCool Systems

CASE STUDY
Super Market Refrigeration

Using Sky Cooling to Increase Efficiency of Super Market Refrigeration Systems

The Customer

Grocery Outlet is an extreme value retailer of quality, name-brand consumables and fresh products. The majority of Grocery Outlet stores are independently operated by entrepreneurial small business owners. In order to provide the best value to customers, one of Grocery Outlet's stores in Stockton, CA engaged SkyCool Systems to accelerate its energy efficiency and cost savings initiatives.

Store Size: 25,000 ft^2

Parallel rack refrigeration system

- 10 ton low temp rack
- 10 ton medium temp rack

Refrigerant: R507A

Condenser: Air cooled

Customer Challenge

Refrigeration systems in supermarkets run 24/7/365, which results in high electricity bills. The high electricity consumption, together with refrigerant charge leakage, result in major negative environmental impact. To add to the problem, as air temperatures get hotter, refrigeration systems require more electricity to operate. The Grocery Outlet store in Stockton was spending $40k per year to run its refrigeration system. During summer months, the store's refrigeration system was running at peak capacity.

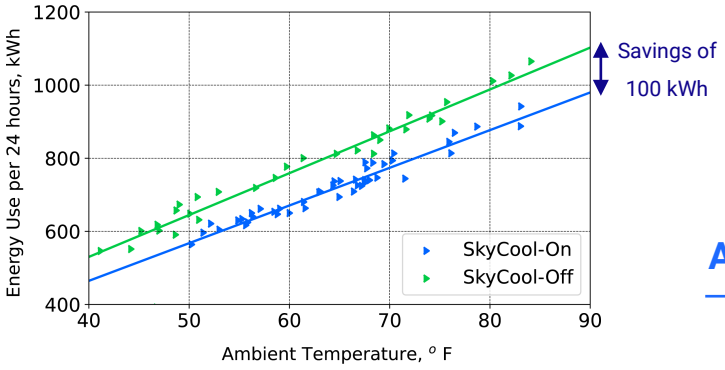
SkyCool Systems' Solution

SkyCool Systems was able to address Grocery Outlet's energy efficiency and capacity needs by providing a simple, passive cooling solution that integrates seamlessly with the Stockton store's existing refrigeration system. Together with Lime Energy, SkyCool installed its cooling panel system on the roof of the Grocery Outlet store to provide cooling to the condenser 24 hours a day, 7 days a week. The installed system consists of an array of 32 panels, arranged in a layout of 8 rows with 4 panels per row.

Most technologies that reduce electricity usage within commercial refrigeration systems also result in significant water usage or require the complete replacement of compressors and condenser equipment. SkyCool's panels cool without evaporating water and only require the electricity to run a small circulating pump.

Results and Customer Benefits

As a result of the radiative cooling panel installation, the Grocery Outlet in Stockton is seeing electricity savings of 100 kWh per day, or an estimated 36 MWh per year. This translates to roughly $5,800 in annual savings.



Energy consumed by the central refrigeration system at the Grocery Outlet in Stockton, CA. Energy consumption is summed every 12 hours and plotted versus the average ambient temperature during that time period. Skycool's panel system is saving 100 kWh/day.

Results

Electricity Savings:

100 kWh / day;

36 MWH per / year;

$5,800 in annual savings

Annualized Energy savings of 15%

"Skycool provided a seamless integration with our existing equipment. The cost savings from the system has had a positive effect."

- Ismael Villalba, **Stockton Store Owner**

As a comparison, using the NREL solar PV Watts calculator, a solar array at the same location with the same area would nominally generate 14 MWh per year, or about **2.5x less energy** that what is saved with SkyCool's panels.

In Partnership with:

lime A Willdan Company

ROCKET FUND