



Business Case Study:
Arden Group/Gelson's Markets

Background

- Type of Business: Supermarket
- Location: Los Angeles County
- Size: 18 stores in Southern California
- Contact: Caryn Hofer
2020 South Central Ave., Compton, CA 90220
Phone: (310) 638-2842
E-mail: chofer@gelsons.com

Summary

Gelson's Markets owns and operates 18 retail grocery stores in Southern California. Beginning in 1998, Gelson's installed energy-management systems in most of its stores and in its distribution warehouse to control and monitor lighting, heating/air conditioning and case warmers. Gelson's saved roughly 500,000 kW annually by: controlling store lighting through time-of-day scheduling; controlling the store's environment with temperature set point strategies that did not interfere with case refrigeration processes; and by controlling case warmers based on the temperature and humidity in the store.

Referenced in Business Guides:

- #1, "Reduce Energy Use in Commercial Facilities Through Conservation Measures and Efficiency Improvements"

Plan

Outside consultant Energex performed computerized audits and conducted site visits in preparation for the installation of Door Miser anti-sweat controllers.

Gelson's Markets began energy efficiency upgrades in four trial stores in 1998 and plans to upgrade all 18 markets.

Programs: Conservation

✓ **Lighting controls:** Placed motion sensors in low-occupancy areas of stores, such as backroom areas to reduce lighting needs.

✓ **Energy management system:** Installed a building control system, the Einstein BX, in the markets. The control system acts as a power monitor and regulator with demand shedding features. Power usage logging is also available.

The Einstein BX controls two major areas of electric usage:

- Lighting controls for in-store and parking lot lighting, based on store operating hours and natural light conditions, were installed to minimize the on period for most lighting.
- Anti-Sweat Cycling: Frozen-food doors were equipped with heaters to prevent ice buildup on the frozen food doorframes and glass. The heaters were cycled off 30-50 percent to maintain a dew-point set.

✓ **Refrigeration**

- Installed Door Miser anti-sweat controllers in the frozen food cases of 12 Gelson's stores. The Door Miser controls each freezer case individually, thereby reducing the demand load because cases run in a rotating fashion.
- Cycled on and off as needed heaters in the glass frames, reducing energy consumption. The heaters are necessary to keep condensation from building on the glass.

Programs: Efficiency

✓ **Lighting:**

- Replaced old lighting fixtures in four stores with energy-efficient fixtures.
- Replaced T12 fluorescent lighting with T8 bulbs.

✓ **Other equipment:**

- Equipped open low- and medium-temperature cases, such as dairy and produce cases, with pull-down blinds in one store as a pilot project. The blinds were pulled down during non-operating hours to minimize escape of refrigerated air.
- Humico installed Humidity Control Systems – special paneling for walk-in refrigerators – in Gelson's storage refrigerators. The panels consist of the mineral Sorbite, which absorbs humidity and thus requires less work for the compressors.

Budget and Finance

The Arden Group took advantage of Southern California Edison (SCE) rebates for lighting retrofits.

Results

The compressors work an average of 1,000 minutes less per week with the use of Humico paneling. The Humico system generally reduces cooler temperatures by two to

four degrees, resulting in energy cost savings of 1.5 to 2 percent per degree. The Door Miser will last approximately 29 years, maintenance free.

Summary of Compressor Running Times

Before Installation of Humitech

Thursday, March 17
Compressor running time=821mm.
Cycling times - 22, 10, 20, 28, 60, 60, 18,
50,20,60,60, 60, 30,5,55,25,20,60,
20, 40, 40, 25, 25, 8 minutes

Friday, March 18
Compressor running time=845min.
Cycling times - 22, 60, 58, 40, 18, 40, 20,
0,55,60, 40, 44, 55,25,25,0,50,60, 20,
25, 38, 40, 40, 0, 10 minutes

Saturday, March 19
Compressor running time=818min.
Cycling times - 60, 60, 50, 30, 50, 5, 60,60,
0,40,60, 40, 35, 18, 28, 0,60,35,40, 22,
40, 25, 20, 0, 40 minutes

Sunday, March 20
Compressor running time=830min.
Cycling times - 60, 60, 60, 40, 55, 40, 40, 60,
35, 60, 30, 0, 25, 40,45,35,45,35,35,20, 0,
0, 10 minutes

Monday, March 21
Compressor running time=92 Imin.
Cycling times - 60, 40, 60, 50, 60, 30, 0, 35,
60, 60, 60, 45, 50, 40,0,35,60,60,20,45,
50, 0, 0 minutes

Tuesday, March 22
Compressor running time=815min.
Cycling times - 60, 60, 45, 35, 60, 40, 35, 55,
30,60, 25, 0, 25, 45, 50, 35,40,40, 35, 0, 5,
10, 20, 5 minutes

Wednesday, March 23
Compressor running time=835min.
Cycling times - 40, 60, 45, 50, 0, 35, 60, 50,
55,40, 30, 25, 0, 35, 60, 30,30,30,35, 15,
0, 30, 60, 20 minutes

Average minutes per day = 841
Total for the 7day trial period = 5885

After Installation of Humitech

Thursday, March 24
Compressor running time=765mm.
Cycling times - 50, 30, 20, 40, 30, 0,
55, 60, 35, 45, 45, 45, 35, 0, 50,40,30,
15, 35, 15, 25, 0, 45, 20 minutes

Friday, March 25
Compressor running time=610min.
Cycling times - 35, 0, 25, 20, 15, 25,30,
35, 40, 0, 20, 20, 35, 35, 30, 40, 40,
0, 25, 20, 30, 25, 35, 30 minutes

Saturday, March 26
Compressor running time=743min.
Cycling times - 60, 0, 15, 28, 25, 40,
35,35,60,0,20,45, 30, 45,40,30,60,
5, 10, 25, 30, 20, 30, 30, 25 minutes

Sunday, March 27
Compressor running time=720mm.
Cycling times - 40, 35, 30, 25, 35, 5,
10, 60,35,35,35, 30, 30, 5,5,60,35,
60, 30, 55, 20, 0, 5, 40, 0 minutes

Monday, March 28
Compressor running tLme=645mm.
Cycling times - 60, 0, 5, 25, 40, 20, 30,
50, 55, 15, 5,45, 35, 40, 35, 30,60,10,
0, 20, 25, 35, 10, 0 minutes

Tuesday, March 29
Compressor running time=669mm.
Cycling times - 30, 30, 35, 20, 35, 10,
10,60,35,50,35,35,30,10,10,60,
35, 40, 35, 20, 35, 0, 10, 40 minutes

Wednesday, March 30
Compressor running time=720mm.
Cycling times - 55, 0, 15, 30, 30, 35,
35, 40,55, 0,20,30, 40, 20,40,60,55,
0, 15, 25, 45, 35, 30, 10 minutes

Average minutes per day = 696
Total for the 7day trial period = 4872

TOTAL MINUTES COMPRESSOR RUNNING TIME SAVED

Per day - 145 Per Week - 1015

(cycle times reflect an accumulation of the compressor running time during a 1 hour time frame.)