



Commercial Air Conditioning
& Refrigeration
Energy Conservation Analysis

Tests Conducted On
Underlying Technology For

PowerSentry™-CA &
PowerSentry™-REF

Date: 07/30/03

CONFIDENTIAL

EXECUTIVE SUMMARY

The attached report summarizes the Energy Saving Performance of the PowerSentry™ "RE" and "CA" energy saving controls installed on one Walk-in commercial freezer and one five ton Trane commercial Air Conditioning system. The PowerSentry™ units were installed on July 2nd, at the Circle K mini market located at 921 Route 73, Mount Laurel, NJ. These systems are operating on a 24 hours per day, 7 days per week basis. In the 2 separate tests that were performed at this particular store the PowerSentry™ Units delivered electric **consumption reductions which ranged from 10.6% to 19.2%** with no significant temperature excursions.

The individual reports contain the documentation that supports the summary results and further defines the length of each test as well as documenting the overall temperature performance and predictability of the temperature range of the units after the PowerSentry™ affect.

The statistical analysis concludes that the PowerSentry™ units deliver above the minimum guaranteed savings, and should provide the additional benefit of extending the life expectancy of the compressor on those units. This reduced operating cost was achieved while providing more consistent and predictable temperature performance.

These results present a compelling financial benefit resulting from the implementation of the PowerSentry™ Energy Saving Controls. When both PowerSentry™ technologies are applied in a single store application, the owner should expect a pay-back on the installation investment in less than 12 months. (Assumes electricity costs in the \$.10 per KWH range and no benefit from reduced "Peak Demand Charges" or reduced maintenance costs).

A detailed savings estimate and ROI calculation has been provided as part of this report.

The PowerSentry™ "REF" and "CA" controls will deliver the following benefits and come with a 15 year product failure warranty.

**Guaranteed Energy Consumption Reductions Improved Temperature Performance
Reduced Wear and Tear from excessive on/off cycling Low upfront costs and High ROI**



ESTIMATED ENERGY SAVINGS WITH *Power Senti™* "REF" & "CA"

Instructions: Fill in the Yellow Boxes		Walk-in Freezer Glass front Merchandiser		Trane Package Unit 5 Ton Single Stage	
1	Actual Compressor Running Amps.	(A)	10.2	8.2	
2	KW per Hour @ 219 VAC, 3 Phase, Actual Runtime Factor (x) using actual amps:	(B)	3.439	2.019	89.00% 65.00%
3	Months of Operation	(C)	12	12	
4	Monthly Hours of Operation Daily Hrs: 24	(D)	720	720	
5	Monthly KWH Cost:	(E)	\$ 0.10	\$ 0.10	
6	Monthly Operating Costs: (B) x (D) x (E)	(F)	\$ 247.64	\$ 145.40	
7	PowerSenti™ Reduction Per Month: (B) x (D) x (actual RT Savings) x (E) Actual Runtime Reduction	(G)	\$ 26.25	\$ 27.77	10.60% 19.10%
8	PowerSenti™ Annual Savings: (G) x (C)	(H)	\$ 314.99	\$ 333.25	
9	PowerSenti™ Unit Cost	(I)	\$ 575.00	\$ 575.00	
10	1st Year Return on Investment (H) / (I)		54.78%	57.96%	
11	5 Year Return on Investment		273.91%	289.78%	
12	Payback Period Operating Mo. (I) / (G)		21.9	20.7	
Number of units this size			3	3	
Total Cost			\$ 1,725.00	\$ 1,725.00	
Average Monthly Operating Costs			\$ 742.91	\$ 436.19	
Monthly Savings Estimated			\$ 78.75	\$ 83.31	
Total Annual Savings			\$ 944.98	\$ 999.74	
Projected Annual Savings			\$ 1,944.71		
Project Total Cost			\$ 3,450.00		
Annual ROI			\$ 0.56		
Payback Period			\$ 21.30 mos. Of operation		



712 US Hwy One
Suite 200
North Palm Beach, FL 33408

Test Report

Report No. 12119-1

Date: 7/28/2003

Customer:

Circle-K

Test Site Location:

SAME
Ice-Cream Freezer

Test Type: HEATING AIR CONDITIONING REFRIGERATION OTHER
Product Tested: HW LCH LCS CHW CHS RA CA REF OTHER

Type of Equipment:

Ice-Cream Freezer
Setpoint: -10 F.
Copeland Compressor 220VAC @ 10.2A 3-phase
Approx. 4KW per Hour @ 89% Usage Factor

Test Start Date: 7/8/2003
Test End Date: 7/13/2003
=====
No. of Days in Test: 6

COMPRESSOR RUN-TIME

in HRS. in MIN.

PowerSenti™ ON-DAYS: 3402.5
PowerSenti™ OFF-DAYS: 3805.8

RUN-TIME was reduced by: 10.60%

SAVINGS = 10.60%

Comments: Compressor usage was reduced from approx. 89% to 78%. Actual Freezer Set-Point was between -3 to -5 Degrees.



712 US Hwy One
 Suite 200
 North Palm Beach, FL 33408

Test Report

Report No. 12119-2

Date: 7/28/2003

Customer:

Circle-K

Test Site Location:

SAME

Test Type: HEATING AIR CONDITIONING REFRIGERATION OTHER
 Product Tested: HW LCH LCS CHW CHS RA CA REF OTHER

Type of Equipment:

Trane 5 Ton Split System w ACCU
 220V @ 8.2A (actual) 3-phase

 Approx. 3KW per Hour @ 65% Usage Factor

Test Start Date: 7/2/2003
 Test End Date: 7/13/2003
 =====
 No. of Days in Test: 12

COMPRESSOR RUN-TIME

in HRS. in MIN.

PowerSenti™ ON-DAYS: 4488.3
 PowerSenti™ OFF-DAYS: 5546.4

RUN-TIME was reduced by: 19.08%

SAVINGS = 19.08%

Comments: Compressor usage was reduced from approx. 65% to 52%. Actual Space Set-Point was between 67 to 69 Degrees.