



Commercial Air Conditioning Energy Conservation Pilot Program

Tests Conducted On
Underlying Technology For

PowerSenti™-CA

Date: 07/21/04

CONFIDENTIAL



EXECUTIVE SUMMARY

The attached report summarizes the Energy Saving Performance of the *PowerSentry™-CA* energy saving control applied to a Carrier 50 ton packaged commercial air conditioning system. The *PowerSentry™* control was installed on June 29th 2004 on a Carrier model 48EJE 054 Series 600E roof top package unit at the I Park Business Park, 1111 Marcus Ave in Lake Success, New York.

During the test period, data was collected on the following environmental factors: Solar (Lumens per square foot), Outside air temperature (converted to cooling degree days), and indoor air temperature within the space being conditioned. Additionally data was collected on the compressor run-time (in hours).

The test data was collected during the period beginning at mid-night (12:00:01 AM) on June 30 and ran through mid-night (11:59:59 PM) on July 13th. Using alternating days we have seven days of data with the *PowerSentry™* control in the circuit and seven days of data with the *PowerSentry™* control out of the circuit. The chart below reflects the "on" (in circuit) and "off" (out of circuit) days.

Date	On Day	Off Day
June 30 Wednesday		X
July 1 Thursday	X	
July 2 Friday		X
July 3 Saturday	X	
July 4 Sunday		X
July 5 Monday	X	
July 6 Tuesday		X
July 7 Wednesday	X	
July 8 Thursday		X
July 9 Friday	X	
July 10 Saturday		X
July 11 Sunday	X	
July 12 Monday		X
July 13 Tuesday	X	

The test data results are summarized below:

Solar Load was 8.55% greater for the on days: 237 L/sq ft (on days) 219 L/sq ft (off days)

Cooling Degree Days were 5.3% less for on days: 24 CDD (on days) 25 CDD (off Days)

Compressor run time for the system was reduced by 13.69% when the *PowerSentry™-CA* control was in the circuit.

Indoor temperature; Over all the temperature in the space was improved (cooler) on the days when the *PowerSentry™-CA* control was in the circuit.

In summary, based on the results from this test and using \$.08 per KWH for the cost of electricity, we have estimated the annual savings with the *PowerSentry™-CA* controls installed on both compressors, to be \$1367.00. These savings will provide a pay back period of just over 7 months and a recurring annual return on investment of over 160%.



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

Test Report

Report No. 12131
Date: 7/21/2004

Customer
Henick-Lane Service 44-22 Ninth Street Long Island City, NY 11101

Test Site Location
I Park 1111 Marcus Ave. Lake Success, NY 11042

Test Type:	<input type="checkbox"/> HEATING	<input checked="" type="checkbox"/> AIR CONDITIONING	<input type="checkbox"/> REFRIGERATION	<input type="checkbox"/> OTHER					
Product Tested:	<input type="checkbox"/> HWR	<input type="checkbox"/> LTH	<input type="checkbox"/> LTC	<input type="checkbox"/> CH2O	<input type="checkbox"/> CST	<input type="checkbox"/> RA	<input checked="" type="checkbox"/> CA	<input type="checkbox"/> REF	<input type="checkbox"/> OTHER

Type of Equipment
Manufacturer: Carrier Model: 48EJE 054 Series 600E Cooling Capacity: 50 Ton (30 Ton and 20 Ton Compressors) Volt, Amps, Ph Cmp 1: 476,38 A, 3 Phase Volt, Amps, Ph Cmp 1: 476,25 A, 3 Phase Setpoint: 70 Degrees F from 5 am - 7pm, 75 Degrees @ night Area Served: Common Hall

Test Dates
Start Date: 6/30/2004
End Date: 7/13/2004
===== No. of Days in Test: 14

COMPRESSOR RUN-TIME
PowerSentry™ ON-DAYS: 173:45:46 <input checked="" type="checkbox"/> in HRS.
PowerSentry™ OFF-DAYS: 201:19:45 <input type="checkbox"/> in MIN.
RUN-TIME was reduced by: 13.69%

USAGE FACTOR
PowerSentry™ ON-DAYS: 52%
PowerSentry™ OFF-DAYS: 60%

COOLING DEGREE DAYS (for test period)*
PowerSentry™ ON-DAYS: 24
PowerSentry™ OFF-DAYS: 25
TOTAL DEGREE-DAYS: 49
It was 5.30% Cooler on the ON-Days

SOLAR LOAD COMPENSATION
PowerSentry™ ON-DAYS: 237
PowerSentry™ OFF-DAYS: 219
It was 8.55% Sunnier on the ON-Days

Adj. Savings = 8.55%

Comments: The equipment tested contained two compressors, both of which had PowerSentry™ installed. As such, the consumption of both compressors are combined and treated as one for the purpose of this analysis. The actual run-time for comp. 1 was 102.3 hours on the "ON" days and 116.2 hours on the "OFF" days. Comp. 2 ran for 71.5 hours on the "ON" days and 85.2 on the "OFF" days. The solar load (greater on the ON days) negated the impact of the cooling degree days and thus neither was used to normalize the compressor run-time data. Thermostat settings indicated setpoints of 70 degrees day/75 degrees night, testing revealed 72 degrees day/76 degrees night.