THE MADISON ENERGY GROUP ENERGY EFFICIENCY SOLUTIONS

Project Proposal:







EnerG² reduces energy consumption and compressor cycles in walk-in coolers and freezers by providing a more accurate means of temperature measurement through a specialized gel compound that simulates the food product temperature instead of the air temperature which fluctuates with more volatility. It retrofits to the existing thermostat air probe and requires no additional maintenance.



Guaranteed to Reduce Energy Costs 15 – 30% Reduces Compressor Cycles by 40 – 60% Prevents Wear and Tear Extends Life of Equipment 12 Month ROI Green Restaurant Associated Endorsed Reduced CO2 Emissions – Go Green! Lifetime Warranty



EnerG² is a device that was developed by The Madison Energy Group and contains a non-toxic, food safe gel compound that has similar thermal properties to that of food and beverage. It is therefore, not subject to the same wider and more volatile standard of deviation in temperature that air is. The technology of EnerG² is based on the fact that food and beverage products contain significantly differently thermal properties than air. This means that their temperatures rise and fall at different rates and at different intervals. This causes inefficiency in operation because typical measurement is of the environment (air) and not the actual food and beverage product. Air, having very little density, fluctuates with more volatility thereby causing the coolers to engage in cooling cycles unnecessarily, while EnerG² simulates the stable temperature curve of food product and allows the cooler to operate only when it needs to.

When applied, EnerG² easily retrofits over the external air probe in commercial coolers and freezers and converts the temperature measurement from the ambient air temperature to that of food and beverage temperature. We are now measuring the *intended target of measurement* of food and beverage temperature instead of the immediate environment surrounding the thermostat. This creates an inherently more efficient scenario and results in an average energy reduction of 15-30%. EnerG² is also effective at reducing carbon emissions by several thousand pounds annually. It also increases food safety by maintaining more stable temperature ranges and reduces maintenance costs on equipment by minimizing unnecessary compressor cycles.

HMS Engineering Ltd.

Phillip Stewart

Engineering Consultant

Background and Qualifications for Energy Analysis

Mr. Stewart joined the US Military in 1982 and became a marine engineer involved with mechanical, electrical and structural engineering. After completing his military tour in 1990, he was recruited by Walt Disney World as a Control Specialist and Engineer. During that period Mr. Stewart became extremely interested in energy management systems. After opening Pleasure Island, MGM Studios, Disney Vacation Club, he realized that it was time for new growth in my life and joined Florida's largest Service Company BGSI. Mr. Stewart became certified as a Master Engineer for Refrigeration and Food Equipment.

After years of international endeavours Mr. Stewart entered semi-retirement where he established his consulting company, HMS Engineering Ltd. (HMS), based in Montego Bay, Jamaica in 2007.

As a Chief Engineer, Renewable Energy Consultant and Food Equipment expert, he continues to educate and assist many large companies on ways to reduce their energy consumption and increase their bottom line profits. Companies he has supported over years include Sandals, Couples Resorts, Montego Bay Convention Centre, KFC, Wendy's, Burger King, Moes, Margaritaville, and many others.

The attached Baseline/Performance Test Report was prepared by Mr. Stewart and all findings are based on analysis of the raw data logger information collected onsite and provided to him. I certify that neither I nor my company (HMS Ltd.) ever receive any compensation which correlates in any manner whatsoever to test report results and that the referenced report findings are accurate and unbiased.

Phillip Stewart

Chief Engineer HMS Engineering Ltd.

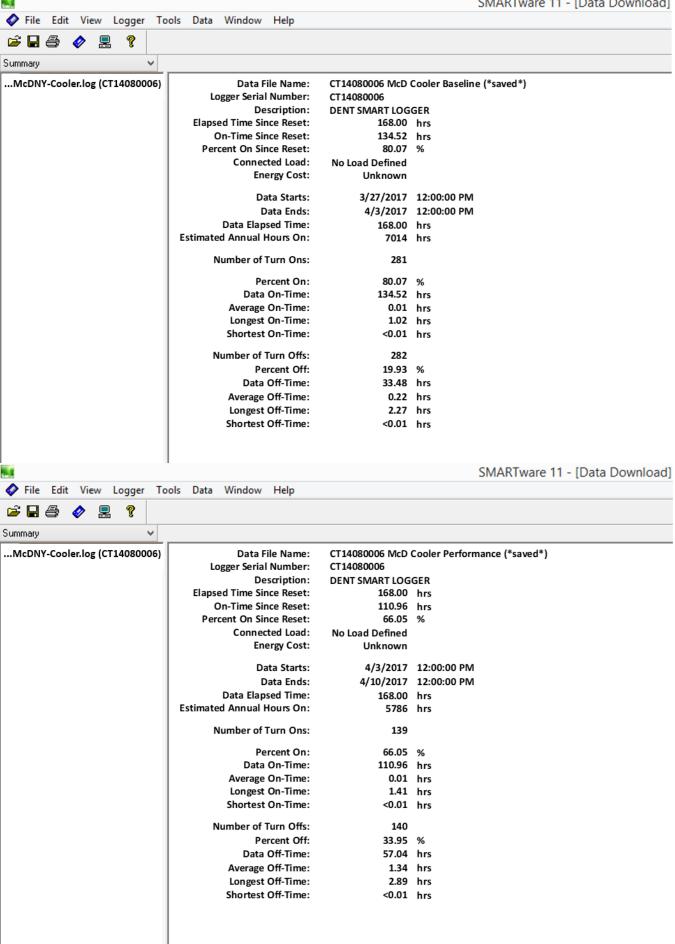
Referenced Report No. McNY5917

Dated 5/9/2017

HMS Engineering

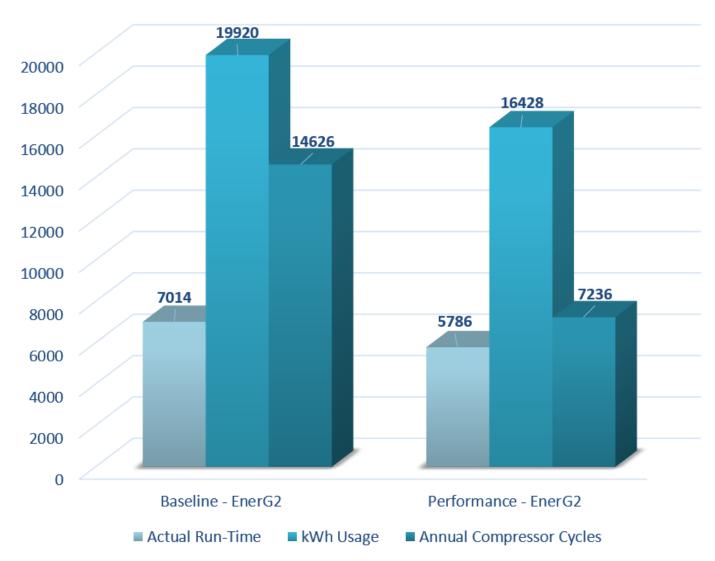
Months

Client : The Madison Energy Group Report Print Date: 9-May-17 5 Hargett St., 4th Floor Raleigh, North Carolina 27601 Report No.: McDNY5917 Facility / Location: McDonalds - New York Room/Equip. Tested: Walk-in Cooler Calculation Basis 0.3 Volts: 230 RLA: 8.0 Compressor Motor: HP: Phase: 2.84 Electricity Rate: \$0.13 Power Consumption: per kWh Operating Basis (Without EnerG2) With EnerG² Change % Change -1,225 Projected Run Hours / Yr: 7,014 5,789 -17.5% -50.5% Projected Cycles / Yr: 14,626 7,236 -7,390 Energy Use & Cost Savings per Month (Without EnerG2) With EnerG² Change % Change -17.5% Operating Hours / Month: 585 482 -102 -290 KWh / Month: 1,660 1,370 -17.5% Energy Cost / Month \$216 \$178 -\$38 -17.5% Mechanical Cost Savings per Month With EnerG² (Without EnerG2) Change % Change -50.5% Cycles / Month: 1,219 603 -616 Compressor Maintenance Cost/ Month: \$42 \$21 -\$21 -50.5% Combined Energy and Mechanical Cost Savings (Without EnerG2) With EnerG² Change % Change Energy & Mechanical Cost / \$199 -\$59 Month: \$257 -22.88 Energy & Mechanical Cost / Year: \$3,090 \$2,385 -\$705 -22.8% Energ² Return on Investment 10.20





CT14080006 Data Graph Series | McD Cooler





Serial Number: CT14080006

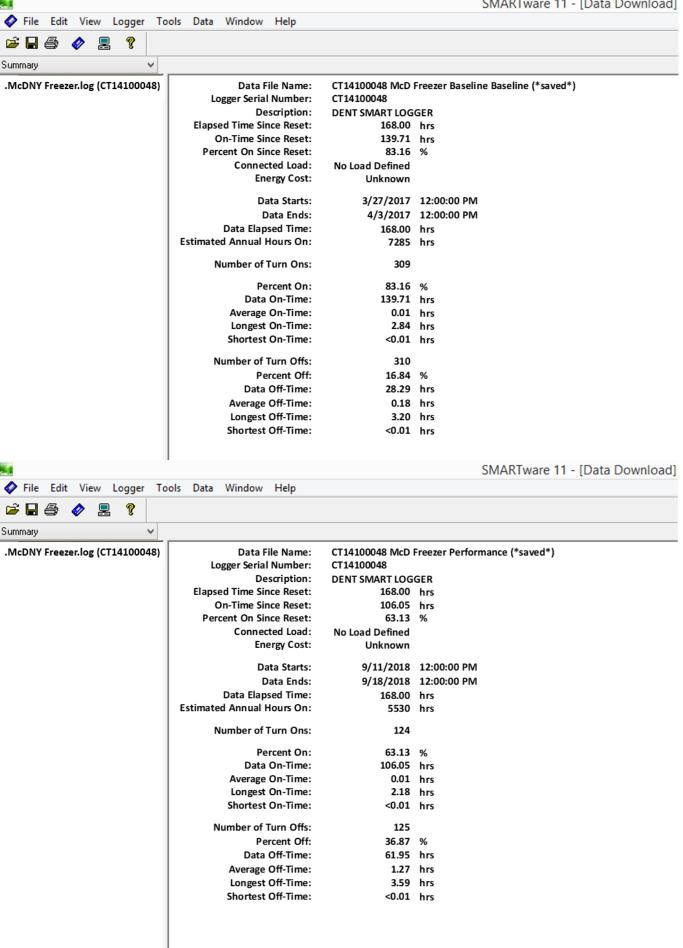
Description: DENT SMART LOGGER On-Time Since Reset: 245.48 hrs Off-Time Since Reset: 90.52 hrs

Date	TOU/Day (hrs)
Monday, March 27, 2017	8.87
Tuesday, March 28, 2017	18.57
Wednesday, March 29, 2017	18.02
Thursday, March 30, 2017	19.29
Friday, March 31, 2017	20.30
Saturday, April 1, 2017	20.88
Sunday, April 2, 2017	18.79
Monday, April 3, 2017	19.60
Tuesday, April 4, 2017	14.33
Wednesday, April 5, 2017	14.84
Thursday, April 6, 2017	15.75
Friday, April 7, 2017	17.12
Saturday, April 8, 2017	16.65
Sunday, April 9, 2017	15.45
Monday, April 10, 2017	7.02

HMS Engineering

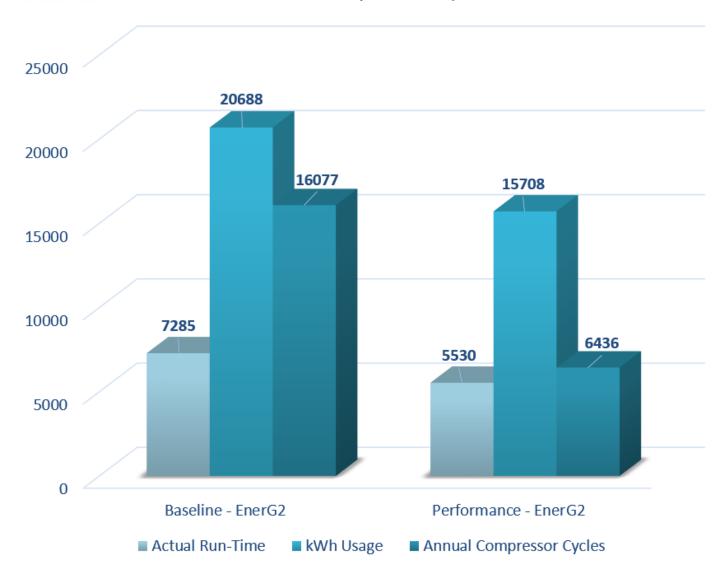
Months

Client : The Madison Energy Group Report Print Date: 9-May-17 5 Hargett St., 4th Floor Raleigh, North Carolina 27601 Report No.: McDNY5917 Facility / Location: McDonalds - New York Room/Equip. Tested: Walk-in Freezer Calculation Basis 0.3 Volts: 230 RLA: 8.0 Compressor Motor: HP: Phase: 2.84 Electricity Rate: \$0.13 per kWh Power Consumption: Operating Basis (Without EnerG2) With EnerG² Change % Change 5,530 Projected Run Hours / Yr: 7,285 -1,755 -24.1% -60.0% Projected Cycles / Yr: 16,077 6,436 -9,641 Energy Use & Cost Savings per Month With EnerG² (Without EnerG2) Change % Change Operating Hours / Month: 607 461 -146 -24.1% -415 KWh / Month: 1,724 1,309 -24.1% Energy Cost / Month \$224 \$170 -\$54 -24.1% Mechanical Cost Savings per Month With EnerG² (Without EnerG2) Change % Change -803 -60.0% Cycles / Month: 1,340 536 Compressor Maintenance Cost/ Month: \$42 \$17 -\$25 -60.0% Combined Energy and Mechanical Cost Savings (Without EnerG2) With EnerG² Change % Change Energy & Mechanical Cost / -\$79 -29.78 Month: \$266 \$187 Energy & Mechanical Cost / Year: \$3,190 \$2,242 -\$948 -29.78 Energ² Return on Investment 7.58





CT14040059 Data Graph Series | McD Freezer





Serial Number: CT14040059

Description: DENT SMART LOGGER On-Time Since Reset: 245.76 hrs Off-Time Since Reset: 90.24 hrs

Date	TOU/Day (hrs)
Monday, March 27, 2017	11.33
Tuesday, March 28, 2017	17.79
Wednesday, March 29, 2017	18.05
Thursday, March 30, 2017	19.22
Friday, March 31, 2017	21.41
Saturday, April 1, 2017	22.06
Sunday, April 2, 2017	20.10
Monday, April 3, 2017	19.50
Tuesday, April 4, 2017	13.23
Wednesday, April 5, 2017	13.34
Thursday, April 6, 2017	13.66
Friday, April 7, 2017	14.16
Saturday, April 8, 2017	15.83
Sunday, April 9, 2017	17.01
Monday, April 10, 2017	9.07



IntelliHVAC reduces energy consumption in HVAC units through efficient fan control and compressor cycling. The combination of these two technologies optimizes performance by allowing the fans, which use 8 to 15 times less energy than the compressors to capture latent energy that would otherwise be lost. It is retrofitted at the 24 volt terminal and requires no additional maintenance.



Guaranteed to Reduce Energy Costs 10 – 30%
Reduces Compressor Cycles by 20%
Prevents Wear and Tear
Extends Life of Equipment
12 - 18 Month ROI
Reduced CO2 Emissions – Go Green!
Lifetime Warranty



IntelliHVAC is a dual microprocessor technology that easily retrofits to any existing central air HVAC system. It contains both a *post-purge* and *compressor cycle functions* that work together to create a significantly more efficient environment within the system. The inefficiency and therefore *opportunity* is that there is still latent cold energy on the coil or heat energy in the exchanger and this energy is wasted as it dissipates within the system. IntelliHVAC captures this excess energy through its *post-purge function*. This process is known as latent recovery and has been verified by numerous utility companies.

When the HVAC system reaches set point, IntelliHVAC will extend and optimize the fan run-time based on the previous compressor cycle to ensure that the latent hot or cold energy has been captured and that all of that air is circulated all the way through the duct system so that it is not wasted. IntelliHVAC continues to monitor the system and adjust the post purge cycle based on its proven algorithm.

IntelliHVAC also has a *compressor cycle function* that increases the overall energy savings cycling the compressor off for 5 minutes for every 25 minutes of continuous run-time. This allows the fan, which uses 8 to 15 less energy than the compressor to capture the latent energy from the coil or heat exchanger. IntelliHVAC will run the fan for the equivalent amount of time that the compressor is off to ensure that air continues to circulate and there are no negative effects to the indoor air temperature quality.

Tower Engineering Craig Andes Owner / HVAC Engineer

J. Craig Andes, MBA

With close to 40 years of experience, Mr. Andes has been an industry veteran since 1977 and has a keen eye toward efficiency for his customers. Mr. Andes has owned and operated numerous businesses including several mechanical companies, an insulating company, has built numerous structures, and has directed large service oriented companies. Mr. Andes has also been hired as a consultant by several companies to assist them in their growth and process management.

Currently Mr. Andes owns and operates Tower Engineering in the Raleigh, NC metro market.

After earning his MBA at Union University in Jackson, TN, Mr. Andes is able to merge the real-world practical side of HVAC with financial feasibility and ROI making for good commonsense guidance.

With regard to Madison Energy Group, Mr. Andes serves as an independent, 3rd party consultant and assists the company specifically with the IntelliHVAC technology. Mr. Andes has help Madison Energy consult with companies such as Starbucks, Darden Restaurants, CBL Properties, and others in helping them to understand the mechanics of their systems as well as the benefits of the IntelliHVAC technology. Mr. Andes also manages the pilot program process, analysis and reporting on behalf of Madison.

The attached reporting is hereby approved and certified by Mr. Andes as accurate in its entirety. Mr. Andes is not compensated in any manner that is based on test results.

J. Craig Andes

Tower Engineering

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Owner / HVAC Engineer

Date: 5/10/2017



Craig Andes HVAC Engineering Contractor

On Behalf of: The Madison Energy Group For Client: McDonalds NY

Location: New York

Report Date: 5/10/2017

Kwh Rate: 0.13

		Start Date	Install Date	Time	Baseline kWh Consumed	End Date	Time	Performance kWh Consumed
Area:	RTU 1	3/27/2017	4/3/2017	12:00PM	860.2	4/10/2017	12:00 PM	704.4
Meter #	15543							
				kWh/Month	3,686.57		kWh/Month	3,018.86
				kWh/Yr	44,853.29		kWh/Yr	36,729.43

 RTU 1 Summary

 kWh Diff./Period
 155.8

 kWh Diff./Yr
 8,123.86

 % Change
 18%

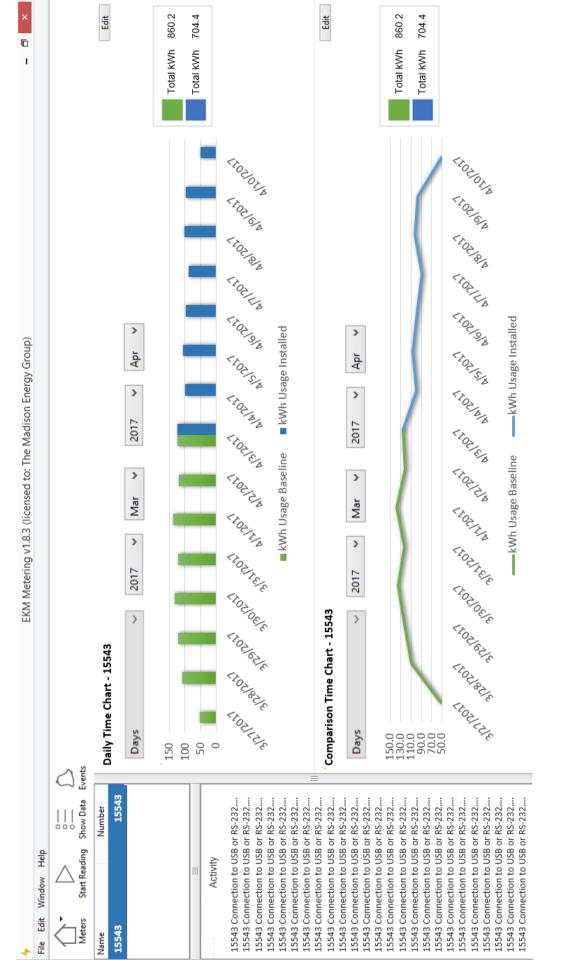
 Savings/Yr
 \$ 1,056.10

Location: New York

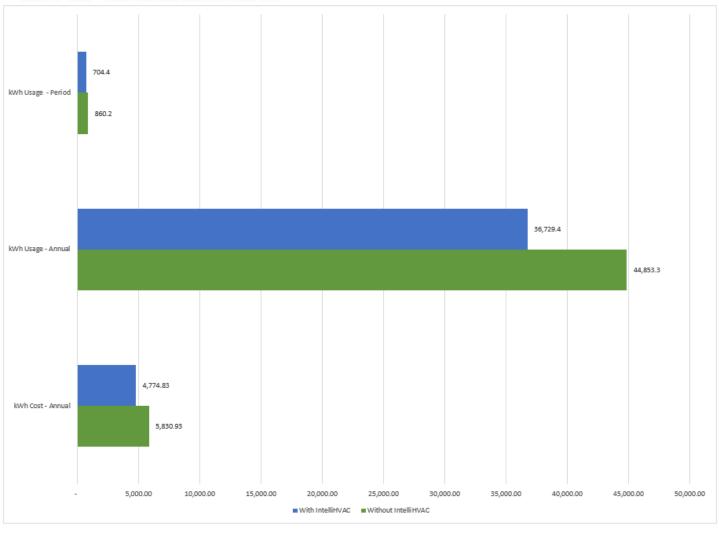
					Baseline			Performance
		Start Date	Install Date	Time	kWh Consumed	End Date	Time	kWh Consumed
Area:	RTU 2	3/27/2017	4/3/2017	12:00PM	653.7	4/10/2017	12:00PM	536.6
Meter #	15563							
				kWh/Month	2,801.57		kWh/Month	2,299.71
				kWh/Year	34,085.79		kWh/Year	27,979.86
			•	•	<u> </u>	•	•	

RTU 2	Summar	у
kWh Diff./Period		117.10
kWh Diff./Yr		6,105.93
% Change		18%
Savings/Yr	\$	793.77

P	roject Sun	nmary	
Total kWh/Yr Reduced		14,229.79	
Average Annual Savings	\$	924.94	
Normalized for Season	\$	1,030.05	
Projected ROI		11.64	Months



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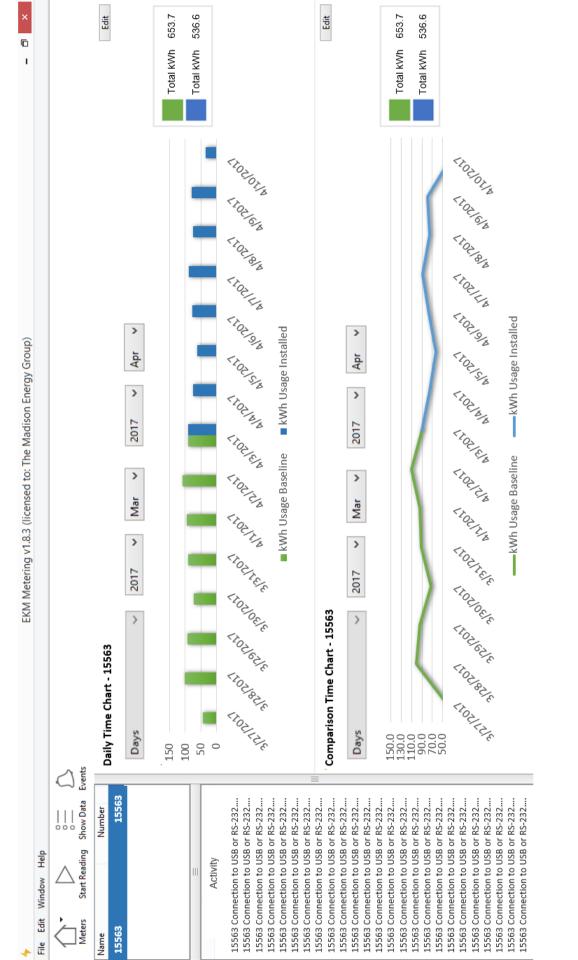




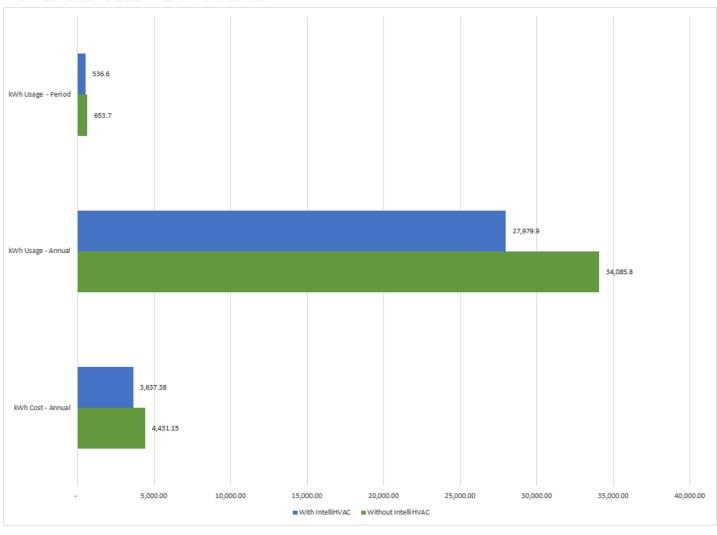
EKM-OmniMeter v.3 McDonalds RTU 1 LogFile

Total kWh Usage for Period: 1564.6

Date	Kilowatt Hour	Avg. Voltage	Avg. Amps	Avg. Watts	Avg. Cosî, (Power Factor)
3/27/2017	52.8	121.5	25.6	2574	LO.87
3/28/2017	108.5	120.9	24.8	2576	LO.87
3/29/2017	122.0	122.2	25.2	2524	LO.86
3/30/2017	134.6	122.6	25.4	2498	LO.86
3/31/2017	122.2	121.8	26.0	2494	LO.87
4/1/2017	137.4	121.4	24.6	2486	LO.88
4/2/2017	120.4	122.5	24.6	2488	LO.86
4/3/2017	124.6	122.6	24.2	2498	LO.86
4/4/2017	99.2	123.4	25.0	2664	LO.87
4/5/2017	105.7	122.0	25.8	2640	LO.87
4/6/2017	98.4	121.7	26.0	2560	LO.86
4/7/2017	88.2	121.6	25.4	2474	LO.86
4/8/2017	102.1	123.5	24.6	2524	LO.86
4/9/2017	97.4	122.8	25.8	2486	LO.86
4/10/2017	51.1	123.3	25.0	2544	LO.86



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EKM-OmniMeter v.3 McDonalds RTU 2 LogFile

Total kWh Usage for Period: 1190.3

Date	Kilowatt Hour	Avg. Voltage	Avg. Amps	Avg. Watts	Avg. Cosî, (Power Factor)
3/27/2017	43.8	118.2	25.4	2624	LO.87
3/28/2017	101.4	118.8	25.4	2536	LO.87
3/29/2017	93.8	120.6	25.4	2548	LO.87
3/30/2017	72.5	120.4	25.4	2644	LO.86
3/31/2017	92.1	120.4	25.6	2522	LO.86
4/1/2017	94.8	120.6	25.8	2568	LO.87
4/2/2017	110.0	120.4	25.8	2584	LO.86
4/3/2017	90.6	119.2	24.6	2420	LO.86
4/4/2017	75.5	121.4	24.4	2400	LO.85
4/5/2017	62.7	120.6	24.4	2408	LO.86
4/6/2017	76.8	120.8	24.2	2412	LO.86
4/7/2017	88.2	120.4	24.0	2406	LO.85
4/8/2017	75.2	119.6	24.0	2366	LO.86
4/9/2017	79.0	119.4	24.2	2352	LO.85
4/10/2017	33.9	120.4	24.0	2340	LO.85

Proof of Concept Performance Summary

Program Duration - 3/27/2017 - 4/10/2017

EnerG ² Summary				
Annual Savings - Cooler 1	\$	705.00		
Annual Savings - Freezer 1		948.00		
Average Annual Savings per Unit	\$	826.50		
Projected Annual Savings for		32	units	\$ 26,448.00
Projected Savings Over 10 Years				\$ 264,480.00
Return on Investment @ \$599 / unit			8.70	Months
IntelliHVAC Summary				
Annual Savings - RTU 1	\$	1,056.10		
Annual Savings - RTU 2		793.77		
Average Annual Savings per Unit	\$	924.94		
Annual Savings Normalized for Season	\$	1,030.05		
Projected Annual Savings for		48	units	\$ 49,442.40
Projected Savings Over 10 Years				\$ 494,424.00
Return on Investment @ \$999 / unit			11.64	Months
Overall Summary of Perform	ance	e		
Annual Per Store Energy Savings	\$	3,198.08		
.				
Combined Monthly Energy Savings	\$	6,324.20		
Combined Annual Energy Savings	\$	75,890.40		
Combined Energy Savings Over 10 Years -	\$	758,904.00		
Cumulative Return on Investment/Months		8.37		







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