



THE MADISON ENERGY GROUP

ENERGY EFFICIENCY SOLUTIONS

Case Study:



**AMERICAN
SCHOOL^{FOR}
DEAF^{THE}**

ALL ways able.



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Proof of Concept Protocol

Purpose: Demonstrate product performance on specified equipment at multiple pre-determined locations.

Measure Baseline Data:

- I. Identify equipment
- II. Ensure unit is operating properly (normal duty cycle, no visible ice, reaches set point)
- III. Ensure thermostat is accessible and compatible
- IV. Ensure compressor motor is accessible for data logger connection
- V. Record unit information: Type, Mfg, Model #

Compressor Power Source:

- I. At the compressor
 - i. Single phase (hot lead)
 - ii. 3 Phase (1 of 3 hot leads)
- II. Locate power rating (amperage/voltage) on compressor nameplate
- III. Record on datasheet; Phase, Volts and Amps
- IV. Record pilot start date/time on datasheet

Record Baseline Data:

- I. Install EKM Omni-meter V.3
- II. Record Baseline Data – 7 days
- III. Validate baseline data

Measure Performance Data:

- I. Install Madison technology
- II. Record install start date/time
- III. Record Performance Data – 7 days
- IV. Validate Performance Data
- V. Record pilot ending date/time
- VI. Analyze results

IntelliHVAC

INTELLIGENT SOLUTIONS FOR HEATING AND AIR

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 common-sense 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 helped 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
Owner / HVAC Engineer
Date: 3/18/2019



Report Date: 3/18/2019

Craig Andes
HVAC Engineering Contractor

On Behalf of: The Madison Energy Group
For Client: American School for the Deaf

Kwh Rate: 0.146

Location: West Hartford, CT

		Start Date	Install Date	Time	Baseline kWh Consumed	End Date	Time	Performance kWh Consumed
Area:	RTU 1	2/22/2019	3/1/2019	12:00PM	986.2	3/8/2019	12:00 PM	833.8
Meter #	27510							
				kWh/Month	4,226.57		kWh/Month	3,573.43
				kWh/Yr	51,423.29		kWh/Yr	43,476.71

RTU Summary	
kWh Diff./Period	152.4
kWh Diff./Yr	7,946.57
% Change	15%
Savings/Yr	\$ 1,160.20

Location: West Hartford, CT

		Start Date	Install Date	Time	Baseline kWh Consumed	End Date	Time	Performance kWh Consumed
Area:	RTU 2	2/22/2019	3/1/2019	12:00PM	888.8	3/8/2019	12:00 PM	739.3
Meter #	28290							
				kWh/Month	3,809.14		kWh/Month	3,168.43
				kWh/Year	46,344.57		kWh/Year	38,549.21

RTU Summary	
kWh Diff./Period	149.50
kWh Diff./Yr	7,795.36
% Change	17%
Savings/Yr	\$ 1,138.12

Project Summary	
Total kWh/Yr Reduced	15,741.93
Average Annual Savings	\$ 1,149.16
Normalized for Season	\$ 1,953.57
Projected ROI	6.14 Months

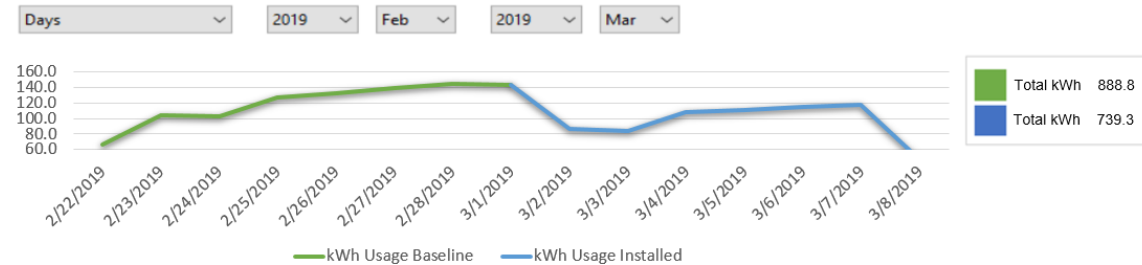
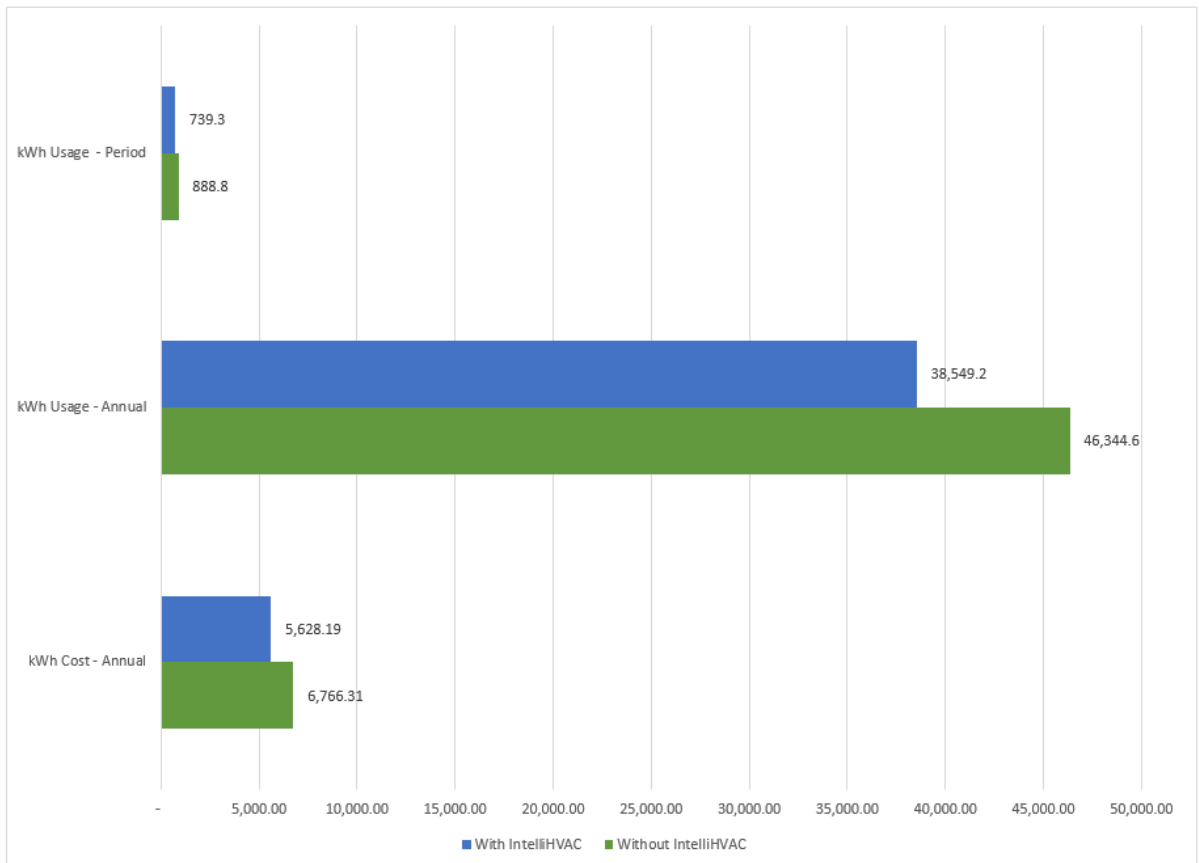


EKM-OmniMeter v.3
American School RTU 1 LogFile
Total kWh Usage for Period: 1820.0

Date	Kilowatt Hour	Avg. Voltage	Avg. Amps	Avg. Watts	Avg. Cos ² (Power Factor)
2/22/2019	87.6	126.6	22.6	2594	LO.87
2/23/2019	112.5	126.1	23.0	2588	LO.86
2/24/2019	110.7	126.8	22.8	2606	LO.87
2/25/2019	157.0	126.7	22.4	2572	LO.86
2/26/2019	142.3	127.3	22.6	2568	LO.87
2/27/2019	146.1	126.8	22.8	2610	LO.88
2/28/2019	150.9	126.7	23.0	2584	LO.87
3/1/2019	158.2	125.5	22.4	2550	LO.85
3/2/2019	95.6	125.2	22.6	2542	LO.85
3/3/2019	94.1	125.4	22.4	2516	LO.85
3/4/2019	133.1	126.2	22.2	2508	LO.87
3/5/2019	121.0	125.7	22.2	2496	LO.86
3/6/2019	124.1	125.5	22.2	2500	LO.86
3/7/2019	127.4	125.3	22.0	2498	LO.87
3/8/2019	59.4	124.2	22.0	2490	LO.85

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Edit

EKM METERING   



EKM-OmniMeter v.3
American School RTU 2 LogFile
Total kWh Usage for Period: 1628.0

Date	Kilowatt Hour	Avg. Voltage	Avg. Amps	Avg. Watts	Avg. Cos ϕ (Power Factor)
2/22/2019	66.0	124.7	27.8	2664	LO.87
2/23/2019	104.7	124.5	28.2	2688	LO.86
2/24/2019	102.5	124.6	27.6	2666	LO.85
2/25/2019	126.9	124.0	27.8	2688	LO.87
2/26/2019	133.0	124.7	27.4	2648	LO.87
2/27/2019	139.4	124.6	27.8	2626	LO.86
2/28/2019	144.8	123.9	27.2	2618	LO.87
3/1/2019	142.9	123.9	27.4	2662	LO.87
3/2/2019	86.2	123.8	27.8	2538	LO.86
3/3/2019	83.4	123.5	27.6	2554	LO.86
3/4/2019	107.6	123.3	27.8	2556	LO.85
3/5/2019	110.2	122.9	27.8	2514	LO.86
3/6/2019	115.1	123.5	27.2	2512	LO.85
3/7/2019	117.5	123.8	27.0	2538	LO.86
3/8/2019	47.8	122.7	27.0	2542	LO.85



THE MADISON ENERGY GROUP

ENERGY EFFICIENCY SOLUTIONS

Proof of Concept Performance Summary

Program Duration - 2/22/2019 - 3/8/2019

EnerG² Summary

Annual Savings - Cooler 1	\$	-		
Annual Savings - Freezer 1	\$	-		
Average Annual Savings per Unit	\$	-		
Projected Annual Savings for		0	units	\$ -
Projected Savings Over 10 Years				\$ -
Return on Investment @ \$599 / unit	-----	####		Months

IntelliHVAC Summary

Annual Savings - RTU 1	\$	1,160.20		
Annual Savings - RTU 2	\$	1,138.12		
Average Annual Savings per Unit	\$	1,149.16		
Annual Savings Normalized for Season	\$	1,953.57		
Projected Annual Savings for		20	units	\$ 39,071.40
Projected Savings Over 10 Years				\$ 390,714.00
Return on Investment @ \$999 / unit	-----	6.14		Months

Overall Summary of Performance

Combined Monthly Energy Savings	\$	3,255.95
Combined Annual Energy Savings	\$	39,071.40
Combined Energy Savings Over 10 Years	\$	390,714.00
Cumulative Return on Investment/Months		7.26



MADISON ENERGY GROUP
ENERGY EFFICIENCY SOLUTIONS

Limited Lifetime Replacement Warranty

Guarantor: The Madison Energy Group, located at 5 West Hargett St. 4th Floor Raleigh, NC 27601 will fulfill and administer the obligations of this performance guarantee.

This performance guarantee certifies that The Madison Energy Group's (manufacturer) EnerG² will perform satisfactorily during the guarantee period in accordance with its original energy saving standards. If the unit is defective when received or becomes defective, it will be replaced in accordance with this Limited Lifetime Warranty/Performance Guarantee. Please call The Madison Energy Group at 919-443-2404 Option 2 if this occurs.

The performance guarantee does not cover negligent, fraudulent and/or intentional damage. If the EnerG² unit is damaged, another EnerG² unit will be sent immediately as a replacement. For coverage to be valid, the client must register with The Madison Energy Group and provide proof of purchase in the form of a paid invoice from either The Madison Energy Group or one of its qualified, contracted distributors. The unit must also be installed properly along with manufacturer specifications.

This performance guarantee is effective from the date of purchase, provided that adequate proof of purchase is maintained, the product is properly registered (see below) and the product is installed properly. The Madison Energy Group must be notified immediately of any defects in the unit with all records being made available for inspection. Defects will be verified. This guarantee is exclusive and in lieu of any other performance guarantee or warranty of merchantability or fitness for a particular purpose.

In no event shall The Madison Energy Group be liable for any special, indirect, incidental or consequential damages. This guarantee, covering the replacement of the EnerG² unit is void if the product covered by the guarantee has been subject to: intentional damage, alteration, tampering, acts of God and other insurance perils, faulty installation or claims covered by insurance or service contract. The coverage applies only to EnerG² and no other product. Claims not submitted in accordance with the terms and conditions of this guarantee are void. Damage by unreasonable or unintended use, neglect, improper service or other causes not arising of defects in material or workmanship are not covered.

To Make a Claim: For service please contact The Madison Energy Group support line at 919-443-2404

To Register: In order for coverage to be valid, you must register your EnerG² within 30 days of purchase at www.themadisonenergygroup.com. Coverage is non-transferable.



PHONE: 919-443-2404
FAX: 919-800-3700
INFO@THEMADISONENERGYGROUP.COM

5 WEST HARGETT ST. • 4TH FLOOR
RALEIGH, NC 27601
WWW.THEMADISONENERGYGROUP.COM



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