reVision heat

Tech:	Matt			Appointment Time:	

Boiler Optimization Checklist

Date: 2/3/2011

Customer Name:	First:			Last:			
Address:							
City:	Falmouth			State:	ME	Zip:	04105
Phone:							
e-mail:							

System Information

System Type/DHW Source:	indirect
Boiler/furnace make, Model:	New Yorker
Burner make, model:	Beckett
Nozzle size before/after:	.85 /.50
Fuel used/filter type:	#2
Distribution type:	Forced Hot Water
# zone valves:	4
# circ pumps:	1

Baseline Efficiency Test	
Draft over fire:	-0.02
Draft at stack:	-0.04
Smoke #:	0-2
CO2 %:	12.6%
Net stack temp:	750
Net Firing Rate:	0.85
overall efficiency:	78.0%

After Optimization	
Draft over fire:	-0.02
Draft at stack:	-0.04
Smoke #:	0-1
CO2 %:	10.0%
Net stack temp:	520
Net Firing Rate:	0.50
overall efficiency:	87.0%

Work performed:

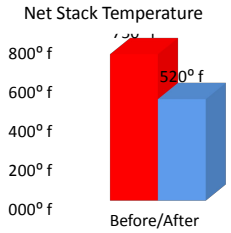
Changed filter, pump strainer, and nozzle. Checked overall operations of systems. Checked pre and post purge of power venter. Proving switch working properly.

Notes:

On Demand Hot Water	
Propane on site?	yes
Venting Location?	
Client Interest?	
Service Amperage?	100
Solar Hot Water	
Roof Orrientation	
Pipe Run?	
Shading on the Roof?	very shaded
Pellet Stove	Rika
Client Interest in Wood or pellets?	
Stove Location?	living room
How many flues?	1
What is on them?	boiler
Insulation	
Are the rim joists insulated?	yes
How much insulation in the attic?	
Boiler Upgrades	
Aquastat Type	digital
Inteledyen?	no
Indirect Tank?	yes
Is there a dehumidifier running?	no

0
Falmouth **ME**

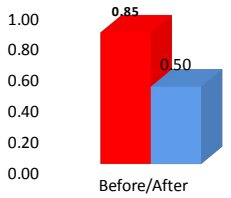
Optimization Report 2/3/2011



Net Stack Temperature
Net Stack Temperature is the temperature of the flue gasses as they exit the boiler minus the ambient temperature. The lower the temperature, the more heat is being transferred to the water in the boiler instead of being wasted up the chimney. This is one of the key indicators we look at when determining whether we will be able to down fire a boiler. The target stack temp is somewhere between 300 and 400 degrees. Why so high? That's because if the flue gas temp is too low the gases will condensate in the chimney and cause damage to the tile.
The chart to the left indicates the change in your boiler's net stack temperature.

Your Net Stack Temperature Before Optimization:	750° f
Your Net Stack Temperature After Optimization:	520° f
A Difference of:	230° f

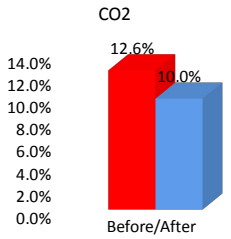
We Lowered Your Stack Temperature by: **31%**



Net Firing Rate
Net firing rate is simply the rate that fuel is delivered, and fired, by your oil burner. Obviously, the trick is to get this as low as possible while still allowing your oil burner to function correctly and deliver the heat needed. Any more than this results in wasted oil. Finding the smallest nozzle with the correct spray pattern combined with the optimal pressure setting is a bit more complicated, and is the stuff we leave to the technicians.
The before and after firing rate for your oil burner is indicated in the chart on the left. The result is given in gallons per hour of fuel used when your burner is running.

Your Firing Rate Before Optimization:	0.85
Your Firing Rate After Optimization:	0.50
A Difference of:	0.35

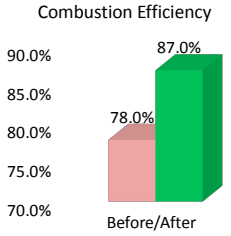
We Reduced Your Firing Rate (down-fired) by: **41%**



CO2
We measure the percentage of carbon dioxide in the flue gas to determine how completely the oil is being combusted. Generally, the higher the percentage the higher the quality of the flame, up to a point. Too much CO2 can also be a problem resulting in too little oxygen in the mix. Therefore, the objective is the optimal point within a range. Fuel air mixture, fuel atomization and combustion chamber design all play a part in flame quality. The result of your system's flue gas analysis is indicated on the chart on the left.

Your CO2 Before Optimization:	12.6%
Your CO2 After Optimization:	10.0%
A Difference of:	2.6%

The Net Change in CO2 in Your Flue Gas was: **20%**



Combustion Efficiency
Combustion efficiency is a calculation of how well your equipment is burning fuel, shown in percent. Complete (100%) combustion efficiency would extract all the energy from the fuel, but is unrealistic. Combustion efficiency is calculated by comparing the net stack temperature with the percentage of CO2 in the flue gas. Increasing this is the ultimate goal of optimizing your boiler. The chart to the left shows the success we were able to acheive with your boiler.

Combustion Efficiency Before Optimization:	78.0%
Combustion Efficiency After Optimization:	87.0%
A Difference of:	9.0%

The Net Change in Your Boiler's Efficiency Was **10%**

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