

Designing and Manufacturing Energy-Efficient Technologies



Demonstration Sites Performance Review

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12-3-11******* Demo Sites******* 18 sites were developed over a 3.5 vr. period							Fuel	Fuel	Stack	Actual	% more
these sites are more throughly manifered***	<u></u>	CO	02	80	NOV	CEM	acl/dov		tomn	roto anh	run time
these sites are more throughly monitored.""	CO		302	50	NUX	CFIM	gai/day	savings	temp.	rate gpn	Irun time
	PPM	%	PPM	PPM	PPM		-				
Corona Films											_
Orig	38	11.6	47	340	90	790	17.8		460	4.17	
BB	1	13.6	68	21	82	380	12.6	29.21%	325	2.2	
Raw % reduction of emissions	97%	-17%	-45%	94%	9%	52%					
% reduction applying CFM reduction	99%	39%	25%	97%	53%			21.20%]
Total % reduction/day /same BTU output	81%	29%	19%	73%	40%						23%
Paint Project (season1)											
Orig	51	10.9	37	107	57	580	16.5		590	1.25	
BB w/#4	8	12.5	12	14	48	210	12.8	22.42%	420	0.94	
Raw % reduction of emissions	84%	-15%	68%	87%	16%	64%					
% reduction applying CFM reduction	90%	27%	79%	92%	46%			22.40%			1
Total % reduction/day/same BTU output	87%	26%	77%	88%	43%						1.5
Orig	51	10.9	37	107	57	580	16.5		590	1.25	
season 2 BB w/#3	1	12.9	2	10	54	190	10.9	33.94%	445	0.82	
Raw % reduction of emissions	98%	-18%	95%	91%	5%	67%]
% reduction applying CFM reduction	99%	20%	96%	94%	36%			28.70%]
Total % reduction/day/ same BTU output	99%	20%	96%	94%	36%						0.13
Brooks Home-season 1.											
Orig	28	10.6	19	106	57	540	8.4		400	1.35	
BB (a)	3	12.9	22	35	83	290	5.8	31%	325	1.1	
Raw % reduction of emissions	89%	-22%	-16%	67%	-46%	46%]
% reduction applying CFM reduction	95%	44%	46%	85%	33%			31%			
Total % reduction/ day/same BTU output	97%	45%	47%	88%	38%						-10%
season 3 Orig	28	10.6	19	106	57	540	8.4		400	1.35]
BB (b)	2	12.3	23	21	108	290	5.6		322	1.08]
Raw % reduction of emissions	93%	-16%	-21%	80%	-89%	46%]
% reduction applying CFM reduction	97%	46%	44%	91%	12%			28.50%			
Total % reduction/ day/same BTU output	96%	47%	48%	93%	14%						10%

Boiler sooted up above normal levels, sulfur soot being burned as well.

% redution of gases and fuel /degree day tested/aggrement of parties

Total % reductions in lbs/day{CFD} of flue gasses.taken at base of stack; before regulator.

Total % reductions in lbs/day EPA test of flue gasses.taken after air regulator.40%air dilution.

* All sites have had a repeated testing on a regular basis to evaluate consistent value.

** All site have a wide range of boiler size, methods of heating, that represent real life conditions.

*** Instrumentation used were EPA rated and non-EPA rated, some sites by 3ed party with simular results.

continued on the next page

12-3-11******* Demo Sites****** 18 sites were developed over a 3.5 yr. period							Fuel used	Fuel	Stack	Actual firing	% more
these sites are more throughly monitored***	1CO	.CO ₂	SO2	ISO	NOx	CFM	gal/dav	savinos	temp.	rate gph	run time
	PPM	%	PPM	PPM	PPM	-	1 3	1 3. 1		515 51	10%
Town of Needham, MA											10/0
Orig	85	7.9	41	265	67	990	42.8		655	4.97	1
BB	6	10.9	25	23	87	475	28.18	34.16%	322	3.86	1
Raw % reduction of emissions	93%	-38%	39%	91%	-30%	52%					1
% reduction applying CFM reduction	96%	28%	68%	95%	32%			34.10%			1
Total % reduction/day/ same BTU output	98%	30%	70%	96%	35%						-2%
Mass. MCI - Dorm C Space heating - Boiler 1											1
Orig	32	11	45	153	86	875	20.6		575	2.18	1
BB	6	12.4	38	65	95	620	13.7	33.50%	438	1.43	1
Raw % reduction of emissions	81%	-13%	16%	58%	-10%	29%]
% reduction applying CFM reduction	95%	23%	75%	88%	68%			32.50%			3%
Total % reduction/day/same BTU output	94%	21%	73%	86%	64%						
NH - Wastewater treatment plant											
Orig	48	9.8	26	650	46	1690	55.6		470	4.1	
BB	9	11.2	65	55	76	590	35.8	35.61%	320	2.6?	
Raw % reduction of emissions	81%	-14%	-150%	92%	-65%	65%		31.70%			
% reduction applying CFM reduction	88%	21%	-63%	94%	-8%			31.70%			
Total % reduction/day/same BTU output	87%	20%		93%	-7%						2%
Villa Augustina School											
Boiler 1 retest after cleaning Orig	89	10.9	189	499	175	9600	185		628	14.5	
BB (b)	8	12.7	185	28	163	3280	139	31%	565	9.5	
Raw % reduction of emissions	91%	-17%	2%	94%	7%	66%					
% reduction applying CFM reduction	94%	23%	36%	96%	39%			31%			
Total % reduction/day / BTU outputf	78%	21%	13%	91%	41%						24%
Easter Seals											
Orig	32	10.5	22	187	110	2,750	62		516	7.8	
BB	5	11.7	6	5	85	970	48.3	28.70%	284	5.3	
Raw % reduction of emissions	84%	-11%	73%	97%	23%	65%					
% reduction applying CFM reduction	90%	28%	82%	98%	50%			28.70%			
Total % reduction/day / BTU outputf	88%	27%	81%	96%	48%						2%
TOTAL~ AVERAGE Reductions-Demo sites.	87%	21%	58%	89%	35%			28.20%			
Jan 17-18 2012 testing]
CK Lab results of EPA Total Reductions]
NO.2 fuel oil	65%	15%	36%	1	18%			28.00%	23%		1
NO. 4 fuel oil/ BRB-57	65%	11%	28%	1	16%			30.00%	32%		1
B-100 100% bio fuel	60%	9%	35%	1	5%			26%	21%]

Boiler sooted up above normal levels, sulfur soot being burned as well. % redution of gases and fuel /degree day tested/aggrement of parties

Total % reductions in lbs/day{CFD} of flue gasses taken at base of stack; before regulator.

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Emission Test Results





Brooks Home	100.00% 80.00% 60.00% 40.00% 20.00%		
Ray	0.00%	Emissions	
		Reduction	
	Stk Temp	18.75%	
	CO	80.82%	
	CO2	34.64%	
	SO2	94.35%	
	SO	82.27%	
	NOx	50.06%	
	CFM	46.30%	







Emission Test Results





ng	100.00%	
ati	80.00%	
He	60.00%	
<u> </u>	40.00%	
Ĕ ー	20.00%	
2 #	0.00%	
Ū Đ		Emissions
		Reduction
B	Stk Temp	23.83%
μ	CO	86.71%
	CO 2	26.17%
	SO2	40.17%
ž	SO	69.90%
	NOx	21.73%
	CFM	29.14%







Emission Test Results





outh Services	100.00% 80.00% 60.00% 40.00% 20.00%	
ent of Y	Stk Temp	Emissions Reduction 46.88%
ţ	CO	82.93%
bar	CO 2	55.63%
Del	SO2	39.32%
Ā	SO	94.75%
Σ	NOx	44.61%
	CFM	65.87%

