LOPEZ LABS

WOODBURNING PERFORMANCE

The Masonry Heater Association Research Laboratory

Data Analysis - 185 Masonry Heater Tests from 2006 - 2019

Mon, Feb 25, 2019 at 11:36

On Sun, Feb 24, 2019 at 1:24 PM Norbert Senf <norbert.senf@gmail.com> wrote:

Hi all:

Here's another run at a summary based on the 185 masonry heater runs at the MHA lab that we are compiling for NESCAUM. These are all the cordwood runs, no cribs.

There were 2 masonry heaters, a Heatkit and the MHA Research Heater. The MHA heater used the Austrian eco-labelled firebox air system.
The Heatkit had various air systems over the years, but the last 13 runs (2014 series) were done with the eco air system.

HK -- Heatkit

HK -- Heatkit w. eco-air

MHA -- MHA w. eco-air

The eco air runs are indicated by a dark green bar in the "eco" column

Cold firebox runs are indicated in blue type.

The table below is sorted by PM, and shows the 20 cleanest runs (green) followed by the 20 dirtiest runs (brown).

PM and CO are in g/kg. "Sizing" is average piece weight, lb.

Run	eco	PM	CO	Eff	Moisture	Sizing	Load	Kindl.	Net	Pieces	Fbox T	Ignit		
HK-M33		0.41	14.0	75.4	16.4	6.9	60.7	5.5	55.2	8	128	S	Oak	
MHA-1637		0.45	4.0	71.9	15.4	6.0	63.0	3.0	60.0	10	199	S	Wbirch	
HK-M25		0.46	13.4	73.6	22.4	6.3	61.7	5.2	56.5	9	130	S	Wbirch	
HK-M26		0.46	16.8	74.4	18.7	6.9	60.1	5.2	54.9	8	180	S	Oak	
HK-M32		0.47	13.9	75.4	19.0	4.5	59.5	5.0	54.5	12	128	S	Maple	
HK-K03		0.48	16.2	73.2	20.0	9.6	62.3	4.5	57.8	6	W	S	Wbirch	grate clos
MHA-1632		0.50	3.9	72.6	16.2	6.0	63.0	3.0	60.0	10	210	S	Wbirch	
MHA-1613		0.51	7.0	68.1	15.6	6.0	63.8	3.8	60.1	10	48	S	Hardwood mix	
MHA-1622		0.51	4.9	70.3	17.1	6.0	63.0	3.0	60.0	10	186	S	Hardwood mix	
HK-J08		0.52	27.2	74.8	16.0	6.2	65.0	3.5	61.5	10	50	S	Maple	
MHA-1617		0.52	5.5	70.5	16.2	6.0	63.0	3.0	60.0	10	171	T	Hardwood mix	
MHA-1629		0.52	9.6	73.0	20.6	3.0	63.0	3.0	60.0	20	198	S	Oak	
HK-K08		0.53	12.4	70.1	20.0	8.2	62.1	4.5	57.6	7	W	S	Wbirch	
HK-M27		0.53	13.6	74.8	22.9	5.2	67.8	6.0	61.8	12	W	S	Oak	
HK-K18		0.54	13.7	73.3	20.0	7.1	61.6	4.5	57.1	8	W	S	Wbirch	Front/Ba
MHA-1605		0.54	26.8	81.1	16.6	6.0	61.3	1.3	60.0	10	284	V	Hardwood mix	
MHA-1714		0.54	8.6	69.5	19.6	4.3	62.0	2.0	60.0	14	107	T	Oak	
HK-M31		0.55	14.3	74.5	18.3	5.7	68.2	5.5	62.7	11	119	S	Maple	
MHA-1611		0.55	9.3	67.3	15.8	6.0	61.3	1.3	60.0	10	119	V	Hardwood mix	
HK-J22		1.56	36.3	73.0	20.0	5.6	59.0	3.0	56.0	10	160	S	Wbirch	
MHA-1826		1.67	16.2	77.1	30.8	4.3	62.0	2.0	60.0	14	187	T	Maple	
MHA-1823		1.68	14.6	76.8	30.9	4.3	62.0	2.0	60.0	14	184	T	Maple	
HK-J28		1.69	43.7	71.3	16.0	4.2	50.0	4.0	46.0	11	144	S	Maple	
MHA-1819		1.70	29.7	75.3	23.1	6.4	61.5	4.0	57.5	9	**63**	T	Oak	
MHA-1811		1.77	22.6	73.2	21.3	2.1	32.0	2.0	30.0	14	118	T	Oak	
HK-J16		1.85	41.4	71.9	35.0	6.0	84.0	12.0	72.0	12	66	S	Maple/Oak	
HK-K28		1.93	40.2	75.3	20.0	8.4	63.4	4.5	58.9	7	W	S	Wbirch	
MHA-1814		1.95	18.6	74.3	21.6	4.3	60.0	0.0	60.0	14	772	T	Oak	
HK-J01		2.01	23.4	77.5	20.0	6.1	51.0	2.1	48.9	8	cold	S	Wbirch	
MHA-1912		2.01	12.1	77.2	15.0	4.5	60.3	2.0	58.3	13	66	T	wh birch	
HK-K15		2.09	18.3	73.0	20.0	7.0	60.6	4.5	56.1	8	W	S	Wbirch	
MHA-1810		2.15	20.9	75.4	21.2	2.1	32.0	2.0	30.0	14	70	T	Oak	
HK-J20		2.27	27.6	74.2	17.0	6.7	58.0	4.2	53.8	8	50	S	Maple	
HK-K05		2.29	45.5	71.9	20.0	8.4	63.4	4.5	58.9	7	W	S	Wbirch	grate clos
MHA-1824		2.30	19.6	77.7	33.6	4.3	62.0	2.0	60.0	14	64	T	Maple	
HK-J03		2.34	38.8	76.5	20.0	3.2	51.0	2.8	48.2	15	cold	S	Wbirch	
HK-J18		3.25	39.7	73.8	19.0	4.1	55.0	1.5	53.5	13	W	B	Wbirch	
MHA-1601		4.13	38.3	73.3	17.7	6.0	61.3	1.3	60.0	10	152	V	Wbirch	
HK-L01		4.61	48.9	69.1	18.0	6.1	59.0	4.5	54.5	9	60	S		

Some initial observations:

- more eco-box runs in the clean group

- the clean group had 10% cold firebox starts. The dirty group had 45% cold firebox starts. (48 hours minimum between firings).

- out of 11 runs total with wood moisture higher than 30%, 4 runs are in the dirty group, none in the clean group

- 15 of the clean runs are side ignition, and only 2 are top ignition.
- 8 of the dirty runs are top ignition, 10 are side ignition

- if we exclude cold start runs and wet wood, there are 8 eco box runs in the clean group and 3 in the dirty group.

You can look at any of the runs in detail by clicking on the summary, on this page:
http://heatkit.com/research/2006/lopezm02.htm

Norbert