

April 5, 2012

Alternative Technology Advisory Committee

Attendees: Ed Vranizan, Terry Whitehill, Ben Howell, Kathy Bash, Joshua Klyber, Samir Mokashi

Meeting Notes:

The committee met in person to discuss Joshua Klyber's recent submittal of additional information for the Rocket Mass Heater Application #09-002. The original applicants seem to have dropped out, and Joshua has volunteered to take on that role, recusing himself from the committee decisions for this application.

Three concerns from Plan Reviewers from the City:

- 1) Please terminate flue more than 2 ft above anything within 10ft per 2113.9.
- 2) Please provide combustion air system per IBC 2113.13.
- 3) Please provide damper for when system is not in use per the energy code.

Notes of the discussion follow:

- 1) The code requirement for terminating flue more than 2 ft above anything within 10 feet arises from the concern of high temperature exhaust gases and sparks. The exhaust gas temperature for rocket mass heaters is generally low (because the mass has absorbed the heat) and is mostly made up of CO₂ and water (because the combustion temperature is higher and therefore more complete than in wood stoves and fireplaces). The exhaust from a rocket mass heater is therefore more like the exhaust from a high efficiency gas furnace than from a fireplace. The requirement for that exhaust is that the flue project at least 4 inches from wall or roof and not be closer than 3 ft below a window. ATAC members suggest this is a more appropriate requirement for a rocket mass heater.
- 2) The follow-on question then is how the rocket mass heater installation gets inspected to assure the low exhaust gas temperature. One suggestion is that inspection happens when the rocket mass heater is complete enough to hold a burn but the flue has not been covered with mass. A fire should be started and brought up to the expected maximum temperature for the stove, and exhaust gas temperature be measured and is not to exceed 160°F. When mass covers the flue, the exhaust temperature would be expected to be less than that measured without the mass covering to the point where the mass is saturated (losing heat as fast as it is absorbing it), at which point it would mimic the flue not covered by mass.
- 3) The combustion air for a rocket mass heater is drawn from ambient space around the feed tube. Per recommendations for wood stoves, a combustion air passageway should be connected directly to outside air or a ventilated crawl space and should open near the feed tube of the rocket mass heater (within 24"?). Committee members agree it would be desirable to have a cover for the outside air delivery port that could be closed off when

the rocket mass heater is not in use. For wood stoves this port / combustion air tube is often 3" dia PVC.

- 4) The feed tube lid is essentially a damper for the rocket mass heater. However, the concept of dampers opened the discussion of how to assure proper drafting of the rocket mass heater. As with old fireplaces, a large amount of cold mass in the chimney can discourage drafting. The discussion on how to accomplish this draft was wide-ranging, and in the end the committee agreed to leave the design of insuring that draft to the rocket mass heater designer/builder, but the inspector should verify that there is indeed a means of creating that initial draft. This could be demonstrated at the same time the inspector is there to confirm exhaust temperature.

Committee members agree it would be desirable to have only one inspection point in the construction of a rocket mass heater. The logical time seems to be, as described in discussion point 2, when the assembly can hold a fire and before it is covered with mass. It would be obvious at this point whether the construction is smoke tight, and the exhaust temperature could be measured. The adequacy of combustion air could be verified, as could the effectiveness of the feed tube cover (aka damper).

Action Items:

Action Item – Joshua Klyber: References to ‘found by experience’ and ‘supervision of a skilled and experienced rocket mass heater builder’ be re-written in more specific language and that the diagrams include references to applicable code/specification sections.

Action Item -Terry Whitehill: Since these rocket mass heaters end up being quite heavy, Terry was going to check with structural reviewers to get their comments. Terry will provide an update at the May 10 ATAC meeting.

Action Item – Joshua Kyber: Joshua will take the discussion from this meeting and re-write portions of his draft code/specifications.