Gmail

Norbert Senf <norbert.senf@gmail.com>

[MHAtech] Ultra-low emissions stove featured on BBC [2 Attachments]

4 messages

Crispin Pemberton-Pigott crispinpigott@outlook.com [MHAtech] <MHAtech@yahoogroups.com> Thu, Mar 30, 2017 at 7:35 PM
Reply-To: MHAtech@yahoogroups.com
To: MHA <MHAtech@yahoogroups.com>

Dear MHA

I didn't get a chance to build an all-brick version of anything in Bishkek, just way too busy. I concentrated on ge ng the bricks worked for the small low pressure boiler. See pics a ached. I managed to reduce the number of cuts a great deal by having almost no tongue and groove joints.

The all brick version, aka masonry heater, would have the same empty box with the fire bricks inserted in the same way. The big hole is for fuel and small one is where the flame comes up. It will run for about 24 hrs on low power, constant, that is. It might be a big plus. It is 10 kw.

On the le is the low pressure boiler heat exchanger - a 'hanging tube heat exchanger'. I'll explain later if someone wants to know about it.

The brickwork in the popular Model 4 is iden cal. I will get the brick maker to produce 230x115x45mm bricks with the bevel already on them. The width of the box is 300mm inside.

The Kyrgyz service of the BBC posted a video on their website today featuring an interview with one of the stove pilot par cipants. She lives in the village of AK Jul which is between Bishkek and Manas, the airport.

http://www.bbc.com/kyrgyz/media-39377945

She reported she is saving considerable fuel and that the house is significantly warmer. She is recording the fuel mass loaded for each refueling, and the temperatures indoor and out several mes per day. She no longer has to put on the electric heater for her baby si ng business for which she uses her livingroom, now that the heat delivery has increased so much.

All smoke has disappeared from the home. The country's chief cardiologist reports preliminary results from their winter-long IAQ measurements show PM2.5 has been reduced to the range of 10-40 micrograms per cubic metre, from levels as high as 7000.

He noted a drama c reduc on in CO from concentra ons frequently above 100 ppm to barely detectable levels.

The ques ons put to the interviewees were about outdoor air pollu on and the contribu on from domes c hea ng and cooking stoves. Inves ga ons by Altanzul at CAU in Beijing show a drop of well over 90%, with addi onal research and compara sons to be available in mid-April. The stoves are being compared using contextual test sequences developed from field observa ons in rural and urban areas. The di□erent fuels are used (mostly) in di□erent types of stoves and using di□erent pa erns.

Something interes ng coming out of the current study is that the use pa erns change significantly when the new products are used. These new pa erns have been incorporated into the lab tests in order to get a realis c comparison as to the economic and social impacts.

A presenta on will be made at the 25th Domes c Use of Energy conference (DUE) in Cape Town next week describing some of the social impacts including a collec on of stories emerging from the impacted villages.

Following three weeks of addi onal product development a new low pressure boiler that looks a great deal like a great tradi onal stove is being tested. Drawings are available in the Kyrgyzstan sec on of the Newdawnengineering.com website (in the library/stoves). The fuel capacity has been doubled with this Model 5.2 with the possibility of 24 hour una ended hea ng and water warming (on the stove top).

Altanzul reports the PM emissions are about 1% (o en less) of the tradi onal stoves in Ulaanbaatar and we expect the baseline to be similar in the Naryn, Chui and Osh region villages.

Training of producers will now be expanded, as well as training of installers using materials prepared by CAMP Alatoo, an NGO working in the high mountains. (Central Asia Mountain Project) Field tes ng and user feedback con nues for another few weeks. We expect the air quality report momentarily.

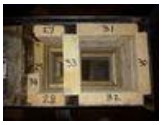
Regards
Crispin

View attachments on the web

Posted by: Crispin Pemberton-Pigott <crispinpigott@outlook.com>

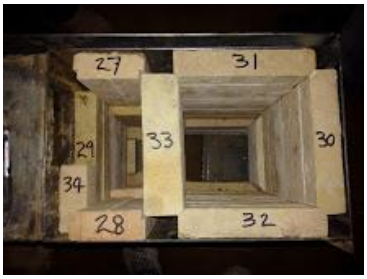
Reply via web post • Reply to sender • Reply to group • Start a New Topic • Messages in this topic (1)

Check out the automatic photo album with 2 photo(s) from this topic.




2 attachments

IMG_20170330_150645.jpg
152K



IMG_20170330_151127.jpg
143K

Crispin Pemberton-Pigott crispinpigott@outlook.com [MHAtech] <MHAtech@yahoogroups.com> Fri, Mar 31, 2017 at 1:46 AM
Reply-To: MHAtech@yahoogroups.com
To: "Boris Kukolj kukoljboris@gmail.com [MHAtech]" <MHAtech@yahoogroups.com>

Dear Boris

Good to hear from you. I say the chances are high because that is now my primary task. We are applying for a five year project for technical assistance star ng in January.

I a ach a picture of a typical workshop. They have a primi ve CNC plasma cu er run by NC file generated using Artgrave 2002 running on a Pen um 4 desktop.

They claim to be able to make boilers by no one I worked with was in that category. They are supposed to be 300 producing

workshops, mostly o the grid (no taxes). They have certain skills and designs. The one I used mostly last year has been helpful in explaining what they like to have, meaning how easy the product is for tes ng leaks and so on. They didn't like the tube boiler because it was hard to inspect or fix. It was about 90% e cient. Oh well....

We will produce a manufacturers training manual for each model, an inspec on guide and checklist for installers, and installers instruc ons.

The idea is that all product will be made and installed by local businesses. This year coming we hope to do 4000, meaning s mulate 4000.

You will see in the video there is a huge Kontramarka in that house. Many of the old homes have one. Terrible combus on e ciency.

A couple of things have surprised me so far. One is the leakage from locally made thin sheet metal stoves, o en placed in a wall separa ng two rooms. That is the source of the indoor smoke. They have really poor cooking performance especially with dung. The users of the Model 2.5 (a ached) were shocked by the 500 degree cooking surface. That was burning dung only. Outside it was -30 and they said the hea ng power was adequate so we accept their opinion. It is not too much.

Upper deck cooking was an unexpected bonus for users. The top le corner gets so hot I put in 4mm sacrificial plates to make he outer shell survive longer. The present plan is to have cast iron on that deck, but I didn't get the quote from the foundry yet.

It will boil 10 litres of water so people are using it as a second cooking sta on.

CAMP Alatoo is really specialized in masonry heaters so my expecta on is they will work out how to fit the 10 kW burner into their house stoves and heaters. They use cast iron cooking surfaces and doors mounted in conven onal brickwork. Plus a hea ng wall with at least some downdra ing por on.

I could really have used you here! My Russian amounts to petchki and nyet. I guess da is a work I know.

I have been direc ng a Korean welder who only speaks Russian how to make a low pressure boiler. Then instruc ng the o ce lady using Corel Draw 7 how to create cut lines that will fix the problem they have with the plasma cu er. The cuts are significantly skewed backwards depending on the feed speed. Perhaps 30-45 degrees trailing. When it makes a 90 degree change of direc on it maintains the slope! This gives rectangular parts the shape of a parallelogram when viewed edge-on.

The cure is to make the head follow a small loop on 270 degrees instead of 90, and crea ng that in Corel Draw is a significant challenge for someone who doesn't know that mul ple parts can be copy-pasted at a me. She can now do 'several things' including saving a standard shape and scaling it. All without either of us having a clue what the other was saying.

She exports the files in CD7 and another guy uses CD5 to place the parts on a virtual sheet. Then it is opened in Artgrave 2002 which sets the feed direc on. That guy is not aware that it can cut with an o set so all parts are small by 1mm on each side. Artgrave creates a simple NC command list taken to the machine on a USB s ck. The feed speed is set manually and can't change in real me.

A er I taught the lady how to import DWG files and use the 'convert 1mm= 1mm func on, they have for the first me the ability to receive drawings and not to have to redraw them from scratch. This is typical of the local situa on. People have machines but not much understanding of their capabili es. Welders only have three of four tools. Usually no vise or clamps or proper rod holder or ground clamp. No drills or drill bits. All hole are burned with a welding rod. Literally all.

That's enough for now. I am in Dubai heading for Cape Town. Domes c use of energy Conference. DUE. I will send the stories I will tall about the social impact of the stoves. People are now assumed not to be home because there is no smoke from the chimney. Or stealing electricity! Or abusing their kids by not hea ng the house at all. Some are hilarious.

Best regards
Crispin