Building SeaChar.org's Estufa Finca 5 Gallon BioChar Farm Stove

Alpha 0.4 Release for Antioch BioChar Stove Building Workshop

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Estufa Finca Farm Stove Design by Art Donnelly SeaChar.org

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Alpha 0.4 Release (for Antioch University Seattle)

a special thanks to Art Donnelly at SeaChar.org for development of the Estufa Finca 5 Gallon Farm Stove design.

this photo instruction manual is for SeaChar.org's Estufa Finca 5 Gallon Farm Stove.

Please visit SeaChar.org and make a charitable donation for their efforts in developing and deploying this stove worldwide. I personally recommend a minimum of 10% or $10 per stove (whichever is greater) to SeaChar.org organization directly on their website at http://seachar.org.

as for me... I'm doing an experiment in "crowd funding" my outreach work in providing instruction and support in building these and similar stoves as well as others wanting to put on their own workshops.

if you have found this photo instruction manual useful please send $1 CASH per stove to the address on my blog page. http://wulfdesign.blogspot.com/2012/11/biocharstovebuild.html

You can use these instructions to teach a class, workshop, etc. please send $1 per stove built or kit provided.

You may print up a physical copy of this document please support the effort it took to get it into a printable form with a $5 donation per printed book.

Regards,

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As with all things fire...

use cation when dealing with it.
have a way to put it out with either a large bucket of water, a charged hose, or better yet both.

we hold no responsibility if you end up burning your house and/or neighborhood down.

provide plenty of clearance around your stove clear free from flammable material. (as well as no trees/structure above)

it should go without saying, but only use OUTDOORS.

there are other operational and stove build safety tips that will be addressed during the workshop.

other than that, this is a great way to make biochar as well as replacing your backyard BBQ and having a virtually smokeless fire pit.

this is a evolving document that is currently in Alpha 0.4 release so please forgive typos, a few missing pictures, and instructions.

however you should still find it a extremely useful resource especially if you haven't built a stove yet or are trying to teach in a group setting.

there will be additional resources links available on my blog page. (workshop outline and setup, instructions for instructors, tools and materials lists and spreadsheets, etc.)

Check out the Estufa Finca BioChar Farm Stove Users Group at http://groups.google.com/group/biochar-farm-stove-users-group to hook up with others whom have built the stove.
5 Gallon Metal Bucket

with Lid

Wear Gloves

Ouch!
Remove Gasket

Scribed Lid Cutout Pattern

Stove Lid Cutout Template

More lid cutting picts here

Cutout Lid to look as follows
Pre-Prepped Lid - Cut along Lines

Lid Cut out - Done

More Lid Cutting Picts here
1/2 #10 Tin

Lid with #10 Tin for size

Use Lid tab tool (or Linesman Pliers)

Bend Tab to a little more than 90 deg.
Lid Rivets Complete - inside view

Stove Lid w/half #10 Attached

Lid Handle Length 14in.

Bend to Match 3 Tabs Across
Lid Handle Bend Length

Lid Handle Bend

Use Needle Nose to Gap

Bend Both Sides to Wrap w/Thinner wire
Wrong Side!

Use Right Angle to Scribe hole pattern.
This is also a good time to remove any labeling on the outside of the bucket.
Secondary Air Holes Scribed

Drilling Stove Secondary Air Holes

Sharp Burrs on Back of Holes

De-Burring Tool Set - Full goggles are better
Evenly Space 32x - 34x - Primary Air Done

Stove Handle Jig - not needed but handy

Stove Handle Jig Too

Stove Handle finished in Jig
Stove Handle w/Jig

Stove Handle

Test 4 size 1st!- lap ~1in w/new shrouds

Use Vice Grips to clamp ends (not shown)
Drill & Rivet ends & center in turn

Make sure at least 1 side is aligned even

w/o vice grips you can hold w/2 people

Just Make sure the holes stay aligned
Align large and small shroud pieces

Vice Grip together, Drill, and Rivet

Lap Shoud around Bucket and mark

Use Wires to hold - better yet use Vice Grips
Use 2nd Wire (or Vice Grip)
Mark w/sharpie for alignment
Remove Bucket and Spacer from Shroud

Position to drill through center of both shrouds

Use Vice Grips - Drill & Rivet in Turn
TIP! - Test to make sure your handles L bracket holes will not interfere with the shoud holes you are about to drill.

Align to Line and Drill Shroud End Should center adjoining pieces and be flush on one side.
Drill Center

Rivet Center

Install Handle as shown
Drill and Rivit Ends of L Bracket first
Then Center. Should go through center
of both joined shroud pieces.
Roof Flashing on stove body
3/4in Jig for Correct Height
1/4in nuts and bolts 1-3/4in up
Better Yet - Clamp Shroud to Stove Body
Clamp Shroud to Stove body then Drill

Fasten on back side - should be centered in rim

3x Bolts Equidistant ~ 5 Valleys Apart

Ready to Light - Pallets on End w/kindling on Top
Lighted - I put lid on early to help funnel flames

Gout of Flame - Maybe Too Much Wood

First Burnout Paint Smoke - Really BAD for you!

Keep up Wind - Smells Until Burns Paint Off
Biochar Stove Works!

Nice First Burn!
Workshop Built Biochar Stove

Art Explaining the finer points...
Handle Spot Weld Removal

Second Spot Weld Removal

Stove and Cook Top 16x Hole Pattern

Use Right Angle to Scribe hole pattern
De-Burred Holes

Inside Edges Still Sharp - Use Round Rasp

Measure 4in down

Mark Cut line (Scribe works best)
Should be a level 4in all way around

Prep just like the stove body before you cut

AirBase and Chickens

Measure for re-bar install
Drill centered re-bar pilot hole - use smaller bit

Notice gloves that should be worn

5in across and Centered

Should be centered between top and ridge
Finish up with Step Drill
(make hole only as big as needed)

Measure for size (too big a hole is no good)
CookTop Holes same as Stove body (+re-bar)

Re-bar holes sized, centered, and installed

CookTop Pattern Closeup - rebar holes to be 3/8in

Drilling Cook Top handle holes
Drilling 2nd Cook Top Handle Holes

Stove Handle Sizing - (cook top as well)

More AirBase Build picts here