

Air Carbon Fuel Cell Gas-of-Fire 2000 series

version: Beta 4-14-13

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BETA VERSION





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Good luck,

Jeff



Abstract: In search of an affordable and easy to build Air-Carbon Fuel Cell.

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The alpha model was a Pederick clone Gas-Producer, see Photos 1, 2, 3 and 4. This design worked well but it was challenging to manufacture from common recycled containers for example a 55 gallon drum. This design is better suited to be built in a fabrication shop.

As I was building this Gas-Producer the thought of laying the fire plate horizontally, at the bottom, occurred to me also making it from a refractory material. Thus it becomes much easier to produce an air tight Gas-Producer from a light weigh container. The down side is the difficulty of removing the ashes without a clean out port. Since the Pederick clone was started I finished construction and some test runs.



Photo 1



Photo 2



Photo 3



Photo 4



Photo 5

Photo 5 is the start of the second version. This was originally meant to be a stationary unit. So the gas outlet, puff-off valve and some cooling was performed through the flat surfaced lid.



Photo 6



Photo 7



Photo 8



Photo 9

As can be seen in Photo 7 the design intent quickly became mobile owing to the next design change.



Photo 10



Photo 11



Photo 12



Photo 13

A stand was fabricated, photo 11 and 12.



Photo 14



Photo 15



Photo 16



Photo 17

With any Gas-Producer there is piping. In order to reduce cost, time and materials I've tried different union schemes. The goal is to eliminate or at least reduce welding, increase reuse-ability and simplicity. I was able to shrink the end of tubing with the use of a ball peen hammer and an anvil so that two pieces of pipe could be joined but the time and effort is too great. See Photos 15 and 16.

I found it much easier to expand the pipe, in this case 2" OD, with the aid of a 2" trailer ball.



Photo 18



Photo 19



Photo 20



Photo 21

I drill the pipe for a 1/4" bolt and seal use silicone cocking.



Photo 22



Photo 23



Photo 24



Photo 25

This concept also works for joining pipe to container. Tooling can be seen in Photo 23.



Photo 26



Photo 27



Photo 28



Photo 29



Photo 30



Photo 31



Photo 32



Photo 33

Exhaust flapper used as a puff-off valve as seen in photos 33, 34 & 35.



Photo 34



Photo 35



Photo 36



Photo 37

Migrating to a grate regime as can be seen in Photos 37 & 38. The theory is that a nozzle regime has a higher gas velocity thus more of a tendency to carry the ashes with it, elevated temperatures and requiring a clean out port. Where as the grate regime allows the some of the ash to stay put and protect the grate area and less ash to be trapped in the filter. Also a larger hole to effect repairs and a clean out port thus a multitasking feature.



Photo 38

To be continued....