Wood-Gas Stove – Operating Instructions

By Stefan Doege. October 8, 2007

Caution: Stove may heat to very high temperatures during operation. Risk of serious skin burns and potential fire hazard. Always place on an incombustible surface. I assume no liability, whatsoever, for any damage caused by the stove or the use thereof.

i.) Stove Set Up

The wood-gas stove needs to be placed on an incombustible surface. Then fully open the primary air inlet at the bottom and close the secondary air inlet at the top of the stove.
Fill stove to half full with wood chips.

ii.) Ignition

Ignite wood chips from the top. Use safe ignition aid, e.g. ethanol jelly or a traditional method. Wait until the top wood has caught fire and turned black. Add some more wood chips. Open the top air control fully. If the stove starts to smoke, immediately stop adding wood chips and wait for the fire to get stronger.

iii.) Gasification Phase

Now close the bottom air control half or three-quarters. Soon the wood-gas will burn in a mixture with secondary air. At the beginning of the gasification phase, smoke may come off the stove, which is a sign for wood-gas being produced but not ignited. Allow for the flames to reach as high as the secondary air inlet holes to ignite the gas mixture. If you now add ignition aid, **beware of darting flames !!!**
Once the gas is burning, you can permit more or less secondary air to be drafted into the stove by setting the top air control accordingly. Keep the gasification running by adding wood chips piece by piece as needed. When no wood chips are added any more, the last remaining volatile substances in the wood will gasify and charcoal combustion without wood-gas production will resume. The charcoal will burn faster the more air is supplied through the bottom air inlet.

iv.) Turn Down

When you want to turn down the stove, stop adding wood chips and close the top air control. It is safest to allow all fuel to burn down before shutting down. However, it is possible to extinguish the fire directly by covering the top of the stove and closing both air inlets. Beware that, in this case, combustible gases may form inside the wood chamber and cause an explosion when ignited. After covering the top, the stove will continue to be hot for a while. Cooling will happen more quickly if you take both cylinders of the stove apart.