

# TWO-BURNER RICE HUSK GAS STOVE FOR DOMESTIC OR INSTITUTIONAL COOKING OPERATION

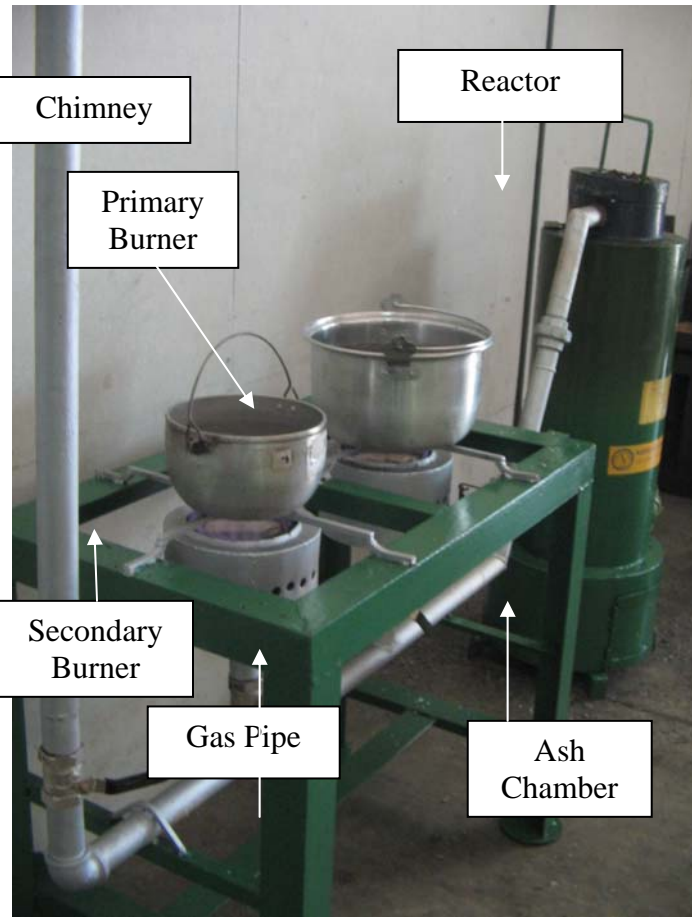
*Engr. Alexis Belonio  
Project Director  
Appropriate Technology Center  
Central Philippine University  
Iloilo City, Philippines*

Good news to everybody!

The two-burner rice husk gas stove technology is already available for domestic household or for institutional use such as restaurant, school canteen, and small hotels. Instead of spending fuel for LPG, a rice hull fuel gas stove is a good alternative to reduce fuel cost. Rice husk is gasified inside the reactor and the gas generated is ignited in the burner to produce luminous bluish flame for cooking.

The two-burner rice husk gas stove technology is another development in line with rice husk gasification project of the Department of Agricultural Engineering and Environmental Management of the College of Agriculture, Central Philippine University in Iloilo City, Philippines. This technology was developed with the assistance from the group of undergraduate agricultural engineering students Norman Apote, Daniel Belonio, and Lucio Larano.

The two-burner rice husk gas stove as shown consists of (1) Primary and Secondary Gas Burners - where the gas is burned to produce luminous blue flame color, (2) Fuel Reactor - where rice husk is gasified during operation by burning the fuel with limited amount of air, (3) Char Chamber - where burned fuel is discharge from the reactor after gasification, (4) Blower - which supplies the needed amount of air for gasification, (5) Char Lever - which discharge burned rice hull after gasification, (6) Control Switch - which increase or decrease the flame intensity, (7) Gas Pipe - which convey the gas generated from the reactor to the burner, and (8) Chimney - which discharges unwanted gases .



The fuel reactor can be placed outside the kitchen while the burner can be placed inside for much cleaner operation. Unwanted gases can be discharged outside the kitchen through a chimney that can be extended through the wall or roof.

Flammable gas, primarily of carbon monoxide, hydrogen, and methane are produced during operation as the burning fuel moves down the reactor. Both burners can be used at the same time and can be finely controlled using a ball valve as well as a rotary switch.



The stove consumes 2.5 kilogram of rice husk per load at 40 to 45 minutes continuous operation. The energy input for the blower is 44 watts at 220 volt line. The specific gasification rate is 126.2 kg/hr-m<sup>2</sup> while the fire zone rate is 1.75 cm/min. Ignition of fuel and gas will only took about 2 minutes. The advantage features of the stove are as follows: (1) Easy to start with almost no smoke at all, (2) Convenient to operate by using ball valves and switch knob to control the flame, (3) Clean to operate with no fly ashes, (4) Low operating cost since it uses rice husk as fuel and minimal amount of electricity, and (5) Affordable.

The investment cost for the stove is P8,500.00 per unit and a savings of P4,887.91 on fuel cost can be derived within one year of operation as compared with the use of LPG stove.

The technology is now being commercialized in the Philippines. Interested organizations to adopt this technology may contact the Project Director, Appropriate Technology Center, Department of Agricultural Engineering and Environmental Management, College of Agriculture Central Philippine University, Iloilo City, Philippines.

Telephone number 063-33-3291971 loc 1071, email ad [atbelonio@yahoo.com](mailto:atbelonio@yahoo.com), and mobile phone 063-0916-7115222

Or Approtech Asia, G/F, Philippine Social Development Center Building, Magallanes corner Real Stret, Intramuros, Manila 1002, Philippines; Tel. Nos.: +63-3-5276514, 5284082, 5273744, Fax No.: +63-2-5273744, E-mail address: [info@approtech.org](mailto:info@approtech.org), [fglumampao@approtech.org](mailto:fglumampao@approtech.org)

