

**TECHNOLOGY SOLUTION FOR HELPING THE POOR ALL OVER THE WORLD  
DO COOKING WITH GAS GENERATED AT THEIR HOME**

**Tran Binh  
Truong Quang Loc  
And Truong Hong Ngoc  
(Vietnam)**

Now, over 1.5 billion poor persons all over the world do daily cooking by using biomass fuel (firewood, rice husk, straw, sawdust, shavings, trunk and bark of plants of all types, etc.), oil of all types and black coal, brown coal, peat coal in the backward stoves, which brings low cooking efficiency and specially emits lethal toxic gas (CO, SO<sub>2</sub>, NO<sub>2</sub>, black Carbon, etc.) (all over the world, every year not less than 1.6 million persons are killed by such gas generated due to cooking at home, meaning that one person is killed due to this reason in 20 seconds) and this way of cooking causes much difficulty and tiredness for the users, especially for the women and children.

After over 30 years of doing theoretical and experimental research, the authors of this document (Newtech Co., Ltd. in Quy Nhon city, Binh Dinh and Tan My Kim Co., Ltd. in Ho Chi Minh city, Vietnam), until now, have completed all not only modern but also cheap & user-friendly technology solutions which can help the poor all over the world do cooking by gas generated at their home without buying any drops of liquefied gas.

These technologies solutions can be developed in a country or in a big city or small town in any countries in the world, even it is in America, Europe, Australia and especially in Asia and Africa.

This technology solution includes the technologies of the authors and the following ones which have been provided with patents issued by the National Office of Intellectual Property of Vietnam:

1. Coal changed into arbitrary biomass available locally by applying modern but simple anoxic thermal degradation technology of the authors in order to change the biomass into BioCarbon which can be burnt to become gas easily.

2. Cleaning black coal, brown coal, peat coal and other harmful substance by applying the modern and simple technology of the authors and colleagues and coworkers in Vietnam.

3. Increasing heating value and quality of BioCarbon coal and the above mentioned black coal, brown coal, peat coal by modern but simple carbon accumulation technology of the authors and coworkers in Vietnam.

4. Determining the gas generating additives which can be mixed with BioCarbon and above mentioned black coal in order to make them become fuel which is easy to be burnt to become gas, and they are called “**clean coal to be burnt to become gas**”. The author calls such fire in gas “**Vietnam Magic Fire**”. This is a very important technology because it controls the entire gasification process at the desire of the persons producing the “**clean coal to be burnt to become gas**”.

5. Technology of forming the burnt coal in pellet (Figure 1), shaped biomass coal fuel (Figure 2) and an ant hill coal fuel (Figure 3)

6. Technology of producing stoves heating the burnt coal to become gas, with the structure which is simple but modern and cheap and can be produced anywhere in the world.



**Figure 1: Pellet BioCarbon coal based fuel is burnt to become gas, which is invented by Prof. Tran Binh.**



**Figure 2: Shaped Biomass coal fuel, which is invented by Prof. Tran Binh.**



**Figure 3: “An anthill coal fuel”, which is invented by Prof. Tran Binh.**

Thanks to the special structure of this gas cooker, thanks to the quality of the coal burnt to become gas and especially of the gas generating additives, where all types of cookers invented by the authors burn them to become gas after some minutes from fire lighting, such gas is likely liquefied gas and can cook during from 2 to 8-10 hours depending on additive coal and cooking volume. The cookers do not emit toxic gas, do not cause explosion, light a fire easily, without smoke, with long fire using period, can be used in house and user-friendly. The burner of the cooker can resist the heat of up to 1720<sup>0</sup>C.

The cookers have combustion correction device of gas which is easy-to-use and allows to keep with fire so that gas burning can be continued later until gas is out. The cooking efficiency of such cookers is very high, at the range of 25% to 28% (while the cooking efficiency of the firewood stove is 7-8%).

In the Figures 4,5,6,7, there are the pictures of the small gas cooker used for the household with 1-3 persons, medium gas cooker used for the household with 4-6 persons, big gas cooker used for the household with >7 persons, cookers for cooking noodle and cookers for the restaurants and those anthill coal fuel cookers with three above mentioned sizes.

The anthill coal based fuel cooker is used to burn BioCarbon coal or additive of many black coals with BioCarbon coal or 100% black coal (or brown coal) to become clean gas, without smoke, with long fire using period and they can be replaced for all beehive coal fuel cookers which are currently used all over the world with difficult fire lighting, much smoke and without generating gas as the anthill coal based fuel cooker.



Figure 4: Small gas cooker (for household with 1-3 persons) generates gas “**Vietnam Magic Fire**” with Pellet BioCarbon coal based fuel burnt to become gas, which is invented by Prof. Tran Binh.



Figure 5: Medium gas cooker (for household with 4-6 persons) generates gas “**Vietnam Magic Fire**” with Pellet BioCarbon coal based fuel burnt to become gas, which is invented by Prof. Tran Binh.



Figure 6: Medium gas cooker (for household with 4-6 persons) generates gas “**Vietnam Magic Fire**” with Pellet BioCarbon coal based fuel or **Shaped Biomass** burnt to become gas, which is invented by Prof. Tran Binh.



Figure 7: An anthill coal based fuel cooker generates gas “Vietnam Magic Fire”

The authors believe that the modern but simple technology solutions stated hereby will start an era of a great revolution in cooking for billions of the poor all over the world and they hope that such technology will satisfy all poor persons.

The authors are very willingly to transfer these technologies to the countries in accordance with the international law in order to be together with such countries to help the poor all over the world.

This sacred aspiration can become true only when the United Nations and the Governments and big financial groups in the world cooperate and combine efforts to develop such technology all over the world and the authors commit themselves to take best efforts to serve such big career.

Please send any queries to the E-mail of the authors: [gstranbinh1937@gmail.com](mailto:gstranbinh1937@gmail.com)

The authors are very willingly to receive, exchange, support and thankful.

The authors always thought that:

***“Doing act of charity for the poor is the noblest religion of each of us”***

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