

FABRICATION AND CONSTRUCTION OF GAS POWERED BARBECUE SYSTEM

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ABSTRACT

The study is based on the construction of gas powered barbecue system. Three research questions were used in the study. The study is limited to the fabrication of gas powered barbecue system. Mild steel plate, square pipe and wheels were used as materials. The researchers adopted simple fabrication and construction technique in designing the gas powered barbecue system. The gas powered barbecue system consists of burner, stand frame, drying chamber, top side balance, storing unit and cover. The gas powered barbecue system was constructed in order to solve the problem of excessive smoke generated through the firewood system. The result of the construction/ fabrication revealed that the modified gas powered barbecue system yielded faster burning process, less smoke and neat roasting. Based on the result obtained, it is recommended that users of barbecue system should adopt the gas powered barbecue system for easy roasting.

KEYWORDS: Construction, Gas Powered Barbecue System.

INTRODUCTION

Barbecuing is usually done out-doors by smoking the meat over wood or charcoal. Restaurant barbecue may be cooked in large brick or metal ovens designed for that purpose [Mcelhiney, 2005]. There are numerous regional variations of barbecuing, and it is practiced in many areas of the world. The English word Barbecue and cognates in other language come from the Spanish word BABACOA. Arabs were known to skewer their meat on swords before roasting and Middle Eastern nomads would barbecue their meat on metal skewers known as kebabs or sharwarma (GHAAZALI, NOV.,2008).

Traditional Baracoa involves digging a hole in the ground and placing some meat - usually a whole lamb, above a pot so the juices can be used to make a broth. It is then covered with maguey leaves and coal, and set alight [Goldwyn, 2015]. The cooking process takes a few hours. An African abolitionist, describe this method of roasting alligators among the Mosquito people.

In southern United States, barbecues initially involve the cooking of pork. During the 19th century, pigs were a low-maintenance food source that could be released to forage in woodlands [Hale, 2000]. Barbecuing encompasses four or five distinct types of cooking techniques. The original technique is cooking using smoke at low temperatures usually around 240-280°F or

115–145°C and significantly longer cooking times [several hours], known as smoking [Mathew, 2013]. Another technique, known as baking, used a masonry oven or baking oven that uses convection to cook meats and starches with moderate temperatures for an average cooking time of about an hour. Braising combines direct, dry heat charbroiling on a ribbed surface with a broth-filled pot for moist heat. Using this technique, cooking occurs at various speeds, starting fast, slowing down, then speeding up again, lasting for a few hours.

In Nigeria, traditional Barbecuing involve the use of local firewood as source of fuel. A netlike metal pan is placed on a drum where the firewood is placed under the drum. The meat or fish will be placed on the netlike metal pan for roasting. This method is mostly used for roasting in Nigeria and such meats roasted are popularly called SUYAR. However, this technology adopted in barbecuing in Nigeria is crude and has some disadvantages. The system is exposed with a lot of smoke from the fire wood, the meat in most cases is burnt and the environment is polluted with charcoal.

The gas barbecuing technology is a model design expected to tackle the problem of excess smoke and create a uniform burning system on items to be roasted. Therefore this research discussed on procedures and techniques adopted in the fabrication and construction of gas powered barbecue system.

PURPOSE OF THE STUDY

The study looks into the fabrication and construction of gas powered barbecue system. Specifically the study seeks to:

1. Find out the steps to the design of gas powered barbecue system
2. Find out the assembly technique of the gas powered barbecue system
3. Find out the modification made when compared to old firewood barbecue system.

RESEARCH QUESTIONS

The following research questions guides the study:

1. What are the steps taken to the design of gas powered barbecue system?
2. What is the assembly technique used in construction of the gas powered barbecue system?
3. What is the modification made in the construction of gas powered barbecue system when compared to old firewood technique?

SCOPE OF THE STUDY

The study is limited to the fabrication of gas powered barbecue system. Mild steel plate, square pipe and wheels were used as materials.

METHODS

The researchers adopted simple fabrication and construction technique in designing the gas powered barbecue system.

FABRICATION OF GAS POWERED BARBECUE

Steps to the Fabrication of Gas Powered Barbecue System

MATERIAL: Materials used in the construction of the gas powered barbecue system are:

1. 2mm mild steel plates
2. 25.4mm square pipes
3. 75mm wheels

PARTS AND UNITS: The gas powered barbecue system consists of six parts:

- a) Burner
- b) Stand Frame
- c) Drying Chamber
- d) Top Side Balance
- d) Storing Unit
- e) Cover

FABRICATION/ PRODUCTION DETAILS

The 2mm mild steel plate was marked according to dimensions to form the cover, drying chamber, storing unit and top side balance. The 25.4mm square pipe was used to form the stand frame and the burner by means of an electric arc welding. The burner has perforated holes of 1mm which allow the gas to flow through for continuous burning.

Behind the cover, there are grid which allows the supply of atmospheric oxygen and escape of carbon gas formed as a result of the burning.

ASSEMBLY OF THE VARIOUS PARTS

The drying chamber was welded to the stand frame, after which the top sides balance was welded to the side of the drying chamber while the cover hinged to the drying chamber also.

MODIFICATION MADE ON THE GAS POWERED BARBECUE

Statistically, from our feasibility study, about 75% of Nigerians use barbecue powered by firewood (Digitemie, 2016). Economically, it is satisfactory but health wise, it is not because of the excessive smoke from it. Based on this fact, modification was made on the barbecue such that gas system was connected to produce heat needed for roasting. This modification produce less smoke, burns faster and neat roasting. See appendix 1 for modified gas powered barbecue system.

SUMMARY OF FINDINGS

Based on the findings of the study, it showed that the modified gas powered barbecue system was modified to produce less smoke as compared to the firewood powered barbecue system. Also the modification process yielded faster burning process and neat roasting.

CONCLUSION AND RECOMMENDATION

The research work was based on the fabrication and construction of gas powered barbecue system. The gas powered barbecue system was constructed in order to solve the problem of excessive smoke generated through the firewood system. The result of the construction/fabrication revealed that the modified gas powered barbecue system yielded faster burning

process, less smoke and neat roasting. Based on the result obtained, it is recommended that users of barbecue system should adopt the gas powered barbecue system for easy roasting.

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APPENDIX 1
PICTURE OF GAS POWERDE BARBECUE SYSTEM

