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DESIGN, CONSTRUCTION AND PERFORMANCE EVALUATION OF A TWO SELF-IGNITED GAS COOKER

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ABSTRACT

The gas cooker is a cooking appliance available in several forms: the single face burner, the multi-face burner, the manually ignited cooker and the self-ignited cooker. The gas used is natural gas, propane, butane, liquefied petroleum gas or other flammable gas as a fuel source. The objective of this work is to design and construct a two self-ignited gas cooker with good working efficiency using available materials.

The design, construction and performance evaluation of a two self-ignited gas cooker requires using locally available materials such as a stainless steel plate (for the cooking surface), regulator, gas cylinder, hose, clips, burners, hobs, gas etc. The gas cooker is with gas rings and a cook top for cooking with gas. The gas cooker also contains a heating element that transforms fuel or electricity into heat. For the design of this project, Auto-cad 3D drawing was use.

For this study, four different observations were taken for two different types of gas cooker burners. A reading was taken for each type of burners in a single burning condition Cold Start Test and the other is to observe the time taken to boil a certain amount of rice. However, the method adopted on obtaining this condition is subjective (i.e. visual inspection on flame was carried out when the knob was tuned). Optimum burning condition can also be obtained by objective methodology and for this it is essential to measure the boiling temperature with high capacity thermometers.

The efficiencies of the two different burners of the double gas cooker was calculated and was found to be 50-93% for optimum burning condition. The efficiency of the given burner is not constant. Those values could vary on the basis of surrounding conditions and quality of the gas cooker. The high value of efficiency could be obtained in optimum burning condition in field however this value is normally lower than the value obtained in controlled laboratory condition. The efficiency of gas cookers depends on: 1. Environmental conditions such as wind, temperature and pressure. 2. Burner size of cooker and size of bottom face of cooking vessel.

KEYWORDS: Gas Cooker, Self-Ignited Cooker, Burner, Gas, Performance Evaluation