ABSTRACT

TITLE:	Conversion of a Propane Burner to Burn Biogas
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ABSTRACT: Currently, developing countries around the world rely on the use of biomass materials for their cooking needs. Consequences of cooking with biomass include illnesses related to smoke inhalation and the depletion of natural resources. Biogas is an emerging fuel alternative that has the potential to replace the use of biomass for cooking. Biogas is roughly 60% methane and 40% carbon dioxide and is the byproduct in the anaerobic digestion of biological material. Since it is an emerging fuel source, there is a need to develop an economical way to burn it. Chinese made biogas stoves exist, but they are not an affordable option for most families in developing countries. This project explored the viability of converting a propane burner—from a developing country—to burn biogas. Starting with a theoretical fluids framework and through experimental testing, this work demonstrates how the jet size of the propane burner can be changed to permit the combustion of biogas. In addition, optimization tests were performed that varied both jet size and supply gas pressure in order to fine a combination that yielded the highest burner efficiency. Though these results confirmed this idea as a feasible option, further testing should be performed to outline a systematic plan for mass implementation in developing countries.