







## IV. CONCLUSIONS AND RECOMMENDATIONS

In this paper, compaction pressure and compaction displacement behavior were investigated for loose briquetting using grass and leaves. In addition, the combustion behavior for solid round and round hollow briquettes were investigated. Based on the obtained results, the following conclusions can be made:

- The density of loose biomass composed of equal quantities of leaves and grass depends on pressure
- An optimum or saturation density occurs at a pressure of 35 MPa beyond which no further increase in density is observed
- The optimum density of loose biomass briquettes composed of equal quantities of dry leaves and grass is 1250 kg/m<sup>3</sup>
- Solid round briquette combustions achieved a maximum temperature of 210°C while the hollow round briquette achieved 280°C after five minutes of combustion
- The hollow round briquette was found to be the preferred geometry for combustion efficiency

The current work was conducted on two selected loose biomass stocks without due consideration of energy content or other properties. The stock used was mainly based on availability. It is recommended that this work be conducted for a range of biomass stocks especially that which is available in remote communities such as agricultural waste (maize leaves, rice stalks etc.) to ensure that developed technologies are effective for target communities.

Further work is also required to determine the optimum shape and geometry for effective combustion and energy extraction for such applications as space heating and cooking. Energy balance tests should yield more positive indication of the best geometries for such applications.

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