5. Conclusion and Recommendations

From the study that was done it was recommended that a flat plate air collector of a size 22m^2 facing North at a tilt of 22 degrees could be used in conjunction with coal/wood in tobacco barn.The collector will be coupled to a 200W fan or blower which would be powered by a photovoltaic system of solar invertor size of (230V, 480W). The solar inverter would have its own 4m^2 solar panel for energy supply.

Table 12. Flue gases mass reduction achieved by design

Products of combustion	Current mass of flue gas produced/kg	Mass of gases on implementation of design/kg
CO_2	48.24	48.24 x 0.22 = **10.6**
SO_2	0.09	0.09 x 0.22 = **0.02**
N_2	13.55	13.55 x 0.22 = **2.98**

The potential use of solar energy to complement the heat energy requirement for small scale farmer tobacco curing in Zimbabwe is feasible and economically viable. According to design if a curing barn is properly insulated, wood energy required is 28MJ/kg instead of the traditional 32,2 MJ/kg to fully cure a kg of leaf tobacco. So by implementing a flat plate air collector of a size 22m^2 to an insulated barn will make a contribution of 30.5% of the energy required for tobacco curing.According to this investigationit was shown that solar could be used to produce heat that could be used in the curing barn. Hence this studywas vital in assessment of solar energy potential is reducing emission of greenhouse gases.

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Biography

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