

Experimental Investigation on Advanced Stove

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Abstract: *Improving the thermal as well as emissions performance of biomass cookstoves has been of interest to researchers for a long time. Despite there being a vast literature on the subject, several technical issues remain unresolved with a variety of data and opinions being presented. The present article aims at bringing together literature spanning over three decades that addresses technical aspects of biomass stoves, i.e., their design, analysis and testing. Literature on various design principles, features which determine the stove performance and different methods of performance prediction have been reviewed. Different cookstove testing protocols have been compared and various issues related to cookstove testing are critically discussed. The results of laboratory and field studies on cookstoves by various researchers are presented. Literature on health impact of cookstoves, their dissemination and adoption has also been included. The focus has been on critically analyzing the findings presented by various researchers over the past 3–4 decades in the backdrop of the advancement of the state of knowledge in the area. Wherever conflicting findings were encountered, efforts have been made to reconcile the same using the understanding of the fundamental phenomena.*

Keywords: Advanced Stove

REFERENCES

- [1]. World Energy Outlook 2010. France: International Energy Agency. Available from: <http://www.worldenergyoutlook.org/media/weo2010.pdf>
- [2]. Prehistoric food 15000000-3500 BC. [Internet]. Available from: <http://www.library.thinkquest.org/C005446/Food/English/prehistoric.html>
- [3]. Consolidation of information: cooking stoves handbook. Tata Energy Research Institute [Internet]. Available from: <http://www.unesdoc.unesco.org/images/0005/000530/053052eb.pdf>; 1982 [cited 17.12.12].
- [4]. Kumar M, Kumar S, Tyagi SK. Design, development and technological advancement in the biomass cookstoves: a review. *Renew Sustain Energy Rev* 2013;26:265–85.
- [5]. Kshirsagar MP, Kalamkar VR. A comprehensive review on biomass cookstoves and a systematic approach for modern cookstove design. *Renew Sustain Energy Rev* 2014;30:580–603.
- [6]. New initiative for development and deployment of improved cookstoves: recommended action plan: final report. New Delhi: Ministry of New and Renewable Energy, Government of India; 2010
- [7]. Bonjour, S.; Adair-Rohani, H.; Wolf, J.; Bruce, N. G.; Mehta, S.; Prüss-Ustün, A.; Lahiff, M.; Rehfuess, E. A.; Mishra, V.; Smith,
- [8]. K. R. Solid fuel use for household cooking: country and regional estimates for 1980–2010 *Environ. Health Perspect.* **2013**, 121, 784–790
- [9]. Lim, S. S.; Vos, T.; Flaxman, A. D.; Danaei, G.; Shibuya, K.; Adair-Rohani, H.; Amann, M.; Anderson, H. R.; Andrews, K. G.; Aryee, M. A comparative risk assessment of burden of disease and injury attributable to 67 risk factors and risk factor clusters in 21 regions, 1990–2010: A systematic analysis for the Global Burden of Disease Study 2010 *Lancet* **2012**, 380, 2224–2260
- [10]. Smith, K. R.; Bruce, N.; Balakrishnan, K.; Adair-Rohani, H.; Balmes, J.; Chafe, Z.; Dherani, M.; Hosgood, H. D.; Mehta, S.; Pope, D. Millions dead: How do we know and what does it mean? Methods used in the comparative risk assessment of household air pollution *Ann. Rev. Public Health* **2014**, 35, 185–206