The comparison of three types of Indonesian solar box cookers

Herliyani Suharta[a], A. M. Sayigh[b], K Abdullah[c] and K Mathew[d]

[a] Technical Implementation Unit Energy Technology Laboratory (UPT LSDE) — BPP Teknologi PUSPIPTEK, Serpong, Tangerang 15314, Indonesia; [b] University of Hertfordshire, Hatfield Herts, AL 10 9AB, UK; [c] Laboratory of Energy and Agricultural Electrification, Institut Pertanian Bogor, Bogor, Indonesia; [d] Murdoch University, Perth, WA. GPO Box S 1400, Perth WA 6849 Australia

Available online 24 August 2000

Abstract

This paper describes the influences which govern solar box cookers: HS 7534, HS 7033 and the newest design HS 5521. The best of solar cooker, type HS 7033 gave oven temperature of 202°C between 12:00 and 12:45 p.m. on October 7, 1997. Thirty-four units of this type have been field tested since September 1997. It was found that these solar cookers have a good heat storage capability, therefore they can be used for consecutive cooking. The optimization of the size, the aperture area, the insulator thickness, the oven volume and the reflector area leads to a new design, type HS 5521. Its volume is only 35% of the volume of HS 7033 and cheaper. The performance comparison of the last two solar cookers are described based on the data collected during testing with and without load. The HS 5521 has the same heat collection rate and is able to cook as fast as HS 7033.