THE SOLAR COOKER TOLOKATSIN V

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Abstract: In 1995 the first Tolokatsin solar cookers were designed and constructed, based on non-imaging optics, with a multi compound solar concentrator, a hollow cylindrical absorber inside which a stainless steel recipient for containing the food to be cooked used to be placed. They could be sized for practically any volumetric capacity (from 1 to more than 100 L) with only slight variations in their designing parameters. These solar ovens were designed for a quickly heating up, but trying that after reaching around 100°C the temperature doesn't go much above 120 °C in order to avoid the formation of hazardous substances, like acrylamides, or the burning of the meals. However, for semi cloudy skies, this limited concentration delayed the cooking time, and jeopardizing the success of the process in cloudy days. The new solar cooker Tolokatsin V has a much greater geometric concentration, and optimized according to Rincon criteria, and it also has a higher optical efficiency. Even though its stagnation temperature is 160 °C, this value cannot be reached out with full meal charge, when it works in a stationary position. This allows a safe and quick cooking even in semi cloudy days, more efficiently than with the Tolokatsin original design. This paper presents the design criteria and parameters values for this brand new design, and the merit figures according some recognized standards for solar cookers.

Keywords: Tolokatsin solar cookers. Solar cooking.