

**Pengaruh Penambahan Konsentrator Lensa Fresnel Terhadap Kinerja
Kompor Surya Tipe Parabola Silinder**

*The Effect of Adding a Fresnel Lens Concentrator on the Performance of a
Cylindrical Parabolic Type Solar Stove*

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ABSTRACT

The solar stove is a cylindrical parabolic type in the shape of a half tube with a diameter of 43 cm and a length of 63 cm using an aluminum absorber material with a thickness of 0.02 mm. Treatment was carried out by comparing the performance of the stove with the addition of a fresnel lens concentrator and without a fresnel lens. Stoves with fresnel lenses have several tilt variations, namely 0°, 45° and 60° to determine their maximum performance. Testing was carried out at 09.00 – 14.00 WIB on the roof of the Engineering Building. The slope of the solar cooker is equalized. The solar stove is set to have the same tilt at 09:00 to 11:15 45° tilt facing northeast, at 11:15 to 12:15 90° tilt facing north and at 12:15 to 14: 00 faces northwest with a slope of 45°. The fresnel lens is placed on a support where the height is adjusted to match the focus of the fresnel lens. The highest water temperature value was obtained in testing a solar cooker with the addition of a 60° fresnel lens of 83.5 °C. The highest cooking power and efficiency values were obtained in testing a cylindrical parabolic solar cooker with the addition of a 45° fresnel lens of 30.20618 W and 12.024% respectively. The cooking power value is influenced by the highest water temperature, the initial temperature of the water and the time to reach the highest temperature. The efficiency value is influenced by solar irradiation, initial water temperature, highest air temperature, solar cooker area and absorber material quality.

Keywords: *Cooking Power, Efficiency, Fresnel Lens, Solar Stove.*