

Rancang Bangun *Parabolic Trough Collector* dengan Variasi Sudut  
(*Design of Parabolic Trough Collector with a variety angle*)

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***ABSTRACT***

*PTC is another type of thermal solar collector. This PTC is designed using a simple parabolic equation with a length of about 70 cm, an aperture of 50 cm and a copper pipe with a diameter of 12.7 mm. Aluminum plate is used as reflector and copper pipe is used as absorber. PTC system used in this study uses a tilt angle variation 10°, 20° and 30°, where the position of the sun falls perpendicular to the reflector surface. The purpose of this research is to design a small PTC, with a tilt angle variation 10°, 20° and 30° which can evaluate the performance of PTC at the optimal slope angle of September - December. The test was carried out on the top floor of the Jember State Polytechnic Engineering Building, at 10.00 WIB - 14.00 WIB. The system test uses a fluid mass flow rate of 0.00038 kg/s. PTC test results show the highest temperature is an angle of 20° by 74.8 °C at 11.30 WIB with an average efficiency of 12.4%. PTC efficiency depends on the intensity of solar radiation, surface area, outlet - inlet temperature difference, mass flow rate and air flow rate. If the angle of inclination is perpendicular to the position of the sun, the radiation absorbed will be maximum. The highest total heat transfer at PTC angle 20° of 54.58 W. The value of the heat transfer rate produced is influenced by how high the absorption of heat is and the position of the sun that is perpendicular to the tool.*

**Keywords:** *Parabolic Trough Collector, Angle, Efficiency, Heat Transfer*