

# DESIGNING AND TESTING RICE FIELD WATERING SYSTEM USING OFF GRID SOLAR POWER GENERATION AT WARGONYAN VILLAGE, KEBUMEN, CENTRAL JAVA

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## ABSTRACT

*Indonesia has potential numbers of renewable energy sources. Solar energy is one of the unlimited energy sources, which is most widely used as an energy source to generate electricity. Utilization of renewable energy, among others, by utilizing solar energy by using solar cells as a converter of solar energy into electrical energy, which is known as Solar Power Generation (PLTS). PLTS is basically a power supply, which is designed to supply small to large electricity needs, both independently and hybrid (combined with other energy sources), both with a decentralized method (one house one generator) or with a centralized method (electricity distributed with cable network). A problem that exists in farmers in the village of Wargonayan, Kebumen, Central Java, is for watering rice fields using wasteful diesel or gasoline for watering costs. The need for electricity for watering rice fields is very necessary for farmers, which is effective and low cost. One solution to overcome the problem of electricity in rice field watering in Wargonayan village, Kebumen, Central Java, is the provision of renewable energy sources that are environmentally friendly and easy to find solar energy as an alternative to electricity systems for watering rice fields and by using solar energy. It can utilize the energy into electrical energy using Solar Panels and Off Grid electricity systems. The results of the research showed that the watering system using the SPP off running in accordance with the expectations and needs of the system of watering the rice fields in Wargonayan village required 42000 watts. Indeed, the use of off grid solar power plants required 44 pieces of 50 Wp solar panels so that the system ran as it needed.*

**Keywords:** *PLTS, Renewable Energy, Solar Panel.*