

Agricultural Irrigation System Prototype Using Solar Submersible Pump

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ABSTRACT

Indonesia is an agricultural country with a large agricultural area, currently Indonesia is experiencing food security disturbances. This significant increase in rice imports is an indicator that domestic rice production in Indonesia has decreased, the decline in domestic rice production is caused by the rice planting season which is carried out 2-3 times a year and the long dry season can cause huge losses. harvest. failure. Agricultural irrigation systems currently still use traditional methods, namely oil-fired water pumps, but fuel oil has weaknesses including being expensive and wasteful, as a substitute for fuel water pumps there is technology, namely renewable energy which is an abundant type of irrigation. energy sources. which can be an alternative to overcome fuel scarcity by utilizing solar energy which is converted into electrical energy through solar cells with a photovoltaic process. The purpose of this research is to design a solar farm irrigation system and analyze the performance of the design so that later farmers can irrigate their agricultural land. The test was carried out for three days starting from 08.00-12.00 WIB, the data collection time span was 5 minutes after it was discovered that on the first day the average panel voltage to the SCC was 12.7 Volts and the average solar irradiance was 596.2 W/ m², the second day the average panel voltage to SCC is 12.5 Volts and the average solar radiation is 463.9 W/m², the third day the average panel voltage to SCC is 12.6 Volts and the average solar radiation is 691 .8W/m².

Keywords: *Solar panel, Water pump, Irrigation.*