

DESIGN AND BUILDING OF AN AUTOMATIC TRANSFER SWITCH (ATS) AND AUTOMATIC MAIN FAILURE (AMF) PANEL USING 3 INPUT SOURCES (PLTS, PLN, AND GENSETS)

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ABSTRACT

Electricity consumption in Indonesia will continue to increase in 2022, reaching 1,173 kilowatt hours (KWH), an increase of 4.45% compared to 2021. In Indonesia, PLTUs are still the most reliable, but over time coal is decreasing, so it is necessary to switch to the use of New and Renewable Energy. (EBT). PLTS is an environmentally friendly renewable energy alternative but cannot yet be the only electricity supply to consumers because it depends on the sun. Therefore, PLN is still needed. Disruptions often occur in the PLN distribution network resulting in power outages and require generators as reliable back up. Automatic Transfer Switch (ATS) and Automatic Main Failure (AMF) systems are needed for automatic switching from one electricity source to another. ATS and AMF are designed using Contactor components, Time Delay Relay (TDR), MK2P-I Relay etc. Based on test data, when PLTS as the main priority source goes out it will switch to PLN and when PLTS and PLN are off, the load will be supplied by the generator. Switching the electricity source to PLTS and PLN with a delay of 3 seconds and 5 seconds for switching to the generator in order to stabilize the electricity produced by the generator. The ATS and AMF systems are equipped with a Din Rail Voltage Protector as a safety measure to cut off electricity from the PLTS source when the voltage is below 198V (-10%) and above 231V (+5%) against the nominal voltage of 220V according to regulations based on SPLN 1:1978.

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