

**ANALISIS GANGGUAN *SINGLE PHASING* PADA SISTEM
PROTEKSI MOTOR *DOCTOR OSCILATOR* DI PT. INDAH
KIAT *PULP & PAPER***

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ABSTRACT

The Doctor Oscillator motor at PT Indah Kiat Pulp & Paper plays an important role in driving the doctor blade, which is used to clean the roll from residual fibers and pulp during the paper production process. One of the disturbances that can occur in a three-phase motor is single phasing, which is a condition where one phase of the electrical supply is lost, causing the motor to operate with only two phases. This condition can cause an imbalance in voltage and current and potentially damage the motor windings if it is not handled immediately. This study aims to determine the causes of single phasing disturbances in the Doctor Oscillator motor; evaluate the condition of the protection system in securing the motor; and analyze the differences between normal and abnormal motor conditions.

The research method was carried out through direct field observation, recording voltage and current measurements on each phase, inspection of protection components, and interviews with technicians responsible for the Doctor Oscillator motor. The collected data were then compared between normal and abnormal conditions to identify the changes occurring in the motor's electrical system. The measurement results under abnormal conditions showed that the

voltage of phase R was 380.9 V, phase S was 381.5 V, and phase T was 0 V. Meanwhile, the current in phases R and S was 0.9 A each, while the current in phase T was 0 A. Under normal conditions, the voltage of phase R was 380.9 V, phase S was 381.5 V, and phase T was 380.8 V, with currents of 0.9 A in phase R, 0.9 A in phase S, and 1.0 A in phase T. The comparison indicates that the disturbance occurred due to the loss of the phase T supply. Based on the inspection results, the disturbance was caused by a Thermal Overload Relay (TOR) that had experienced deterioration due to long-term use, resulting in reduced contact conductivity. After the TOR was replaced, the three-phase power supply returned to normal and the motor was able to operate properly again. The results show that the condition and service life of protection components need to be considered because they can affect the reliability of the motor's electrical system. Therefore, regular inspection and maintenance of protection components are necessary to prevent single phasing disturbances and maintain the continuity of the roll cleaning process.

Keywords: *Doctor Oscillator, single phasing, three-phase motor, Thermal Overload Relay, protection system.*