

ABSTRACT

The Induction Motor is one of the important components in the industry, especially in Steam Power Plants (PLTU). One of the problems with large capacity induction motors is at start. The large current and the lack of cooling due to the small rotational speed of the motor at start, cause an increase in temperature in the motor windings. The increase in temperature in the windings can cause a decrease in the lifetime of the winding insulation and on the rotor bars. Therefore, the motor cannot be turned on repeatedly. However, repeated start protection on induction motors has not been widely used so there is a possibility of damage that occurs due to repeated starting of the motor.

In this study, the protection is designed according to the IEC Std standard. 60034-12-2007, 8.3 and NEMA std. MG 1-2011, 12.54.1. which states that the induction motor can withstand repeated starts 2 times at environment temperature conditions and once at operating temperature conditions of the induction motor. Protection is realized using a Programmable Logic Controller which is connected to the RTD-PT100 Sensor input and Variable Frequency Drive. The results of this study When given a running test for 3879 seconds, the interlock system successfully detects cold start and active protection when the induction motor starts at a temperature of 28 Celsius consecutively 2 times. The interlock system also manages to detect Hot Start when the induction motor is at a temperature of 31 Celsius and active protection when starting 1 time. In the Hot Temperature Interlock test, the active protection system occurs. When there is a sudden increase in temperature, namely at 38 seconds the induction motor is active and the temperature is at 28 Degree Celsius and at 40 seconds a temperature spike is simulated to 88 Degree Celsius which causes the interlock to activate and the motor to become inactive. So based on testing the interlocking system can work well when there is a repeated start process and an instantaneous increase in temperature.

Keywords: *Induction Motor, Start, Interlocking.*