

AUTOMATION SYSTEM IN AUTOMATIC MOTOR COIL WINDING MACHINE BASED ON HUMAN MACHINE INTERFACE (HMI) VIA ANDROID SMARTPHONE

Name : Faisal Hasby Sadiq
Studen Register Number : 3204171173
Supervisor : Hikmatul Amri, S.ST., M.T.

ABSTRACT

Automation is one of the realizations of technological developments and is an alternative to obtain a working system that is fast, accurate, effective, and efficient so that more optimal results are obtained. The problem that underlies this research is the automation process of the motor coil winding machine where the motor coil winding process in medium industrial-scale businesses still uses a manual system by turning the coil lever on the coil winding machine and utilizing the difference in gear ratios as the influence of RPM from the speed comparison of the winding machine. coil during the motor winding process. This research uses Arduino Uno R3, relay, proximity sensor E18-D80NK, and Bluetooth HC-06 used as system communication between Arduino Uno R3 and smartphone in real time. The purpose of this research is to optimize the results of the time in the motor coil winding process with variations in speed where if the calculation is not carried out correctly it can cause lost calculations between the windings and the counter value with the actual number of turns calculated on the motor coil winding machine. In addition, the automation control system on the motor coil winding machine is designed from a simple user interface which also makes it easier for users to use the created android application. The automation system controlled through the MIT App Inventor on a 220 volt AC motor with the results between the actual reading (read by the proximity sensor) and set the number of turns on the machine obtained an accuracy rate of 100 % for low duty cycle nominal input, namely 15 %, and 98.4 % for the highest level of nominal duty cycle input accuracy of 50 %. With different speed variations, it is found that the calculation of the processing time wrapped around the coil includes 60 turns which takes 8.12 seconds, 120 turns which is 14.06 seconds and 180 turns takes 18.88 seconds.

Keywords: *Arduino Uno R3, MIT App Inventor, Bluetooth*