

ABSTRAK

Terjangkaunya harga dan lengkapnya fasilitas kereta api membuat banyak masyarakat memilih transportasi darat ini. Namun, berdasarkan data dari Buku Statistik Bidang Perkeretaapian jumlah kecelakaan kereta api selama tahun 2021 sebanyak 18 kasus kecelakaan. Penyebabnya bisa dikarenakan oleh beberapa faktor yaitu sarana, prasarana, SDM operator, eksternal, dan faktor alam dengan faktor-faktor yang berpengaruh. Tujuan diadakannya penelitian ini untuk kontrol Kecepatan kereta api dengan HMI secara realtime yang dapat mengurangi angka kecelakaan pada kereta api. Selain itu, penelitian ini bertujuan untuk melakukan kendali dan monitoring kecepatan dan arah putaran motor induksi tiga fasa berbasis *Internet of Things* yang dapat dikendalikan melalui jaringan internet. Pengaturan kecepatan motor dilakukan dengan menggunakan *Varibel Speed Drive* Omron MX2 yang dikontrol melalui Programable Logic Controler Omron CP1E . Sistem kontrol dan monitoring motor induksi ini diimplementasikan pada motor AC 3 fasa dengan menggunakan *multi display*, yang terdiri dari *Human Machine Interface HMI Haiwell B7S-W*, *client* berupa *smartphone* dan laptop. Desain tampilan HMI dan pada HP telah dapat membaca data kecepatan, frekuensi, nilai potensiometer, dan nilai *error* serta dapat mengontrol kecepatan motor 1 dan motor 2 dengan menggunakan HMI atau HP. *Delay* pengujian kecepatan pada HMI rata-rata 2 s.

Kata Kunci: HMI, PLC, Motor AC 3 Phase, Kontrol Kecepatan

ABSTRACT

Affordable prices and complete train facilities make many people choose this land transportation. However, based on data from the Statistics of the Railroad Sector the number of train accidents during 2021 as many as 18 cases of accidents. The cause can be caused by several factors, namely facilities, infrastructure, operator human resources, external, and natural factors nature with the factors factors that influence. Objective of this research is to control train speedwith HMI in realtime which can reduce the number of accidents on trains. In addition, this research aims to control and monitor the speed and direction of rotation of a three-phase induction motor based on the Internet of Things. Monitoring the speed and direction of rotation of a three-phase induction motor based on the Internet of Things that can be controlled via the internet network. Motor speed regulation is carried out by using an Omron MX2 Variable Speed Drive Omron MX2 which is controlled through the Omron CP1E Programmable Logic Controller. This induction motor control and monitoring system is implemented on a 3-phase AC motor. 3 phase by using multi display, which consists of Human Machine Interface Haiwell B7S-W HMI, clients in the form of smartphones and laptops. Display design HMI and on cell phones have been able to read speed data, frequency, potentiometer values, and error values as well as potentiometer, and error value as well as can control the speed of motor 1 and motor 2 by using HMI or HP. The average speed test delay on the HMI is 2 s.

Keywords: *HMI, PLC, 3 Phase AC Motor, Speed Control*