

ABSTRACT

Automation systems in the industrial world often use more than one type of Programmable Logic Controller (PLC) and control different industrial machines, for example monitoring the water level in the tank and monitoring the speed of a Direct Current (DC) motor. The PLCs can be integrated with Supervisory Control and Data Acquisition (SCADA) systems to monitor, control, and acquire data on industrial processes. The use of two PLCs of different types raises the question of whether the SCADA system can work optimally, has good data communication, and is it accurate in monitoring in real-time. In this research, an integration of SCADA systems was made for two different types of PLCs, that is Omron PLC and Schneider PLC for water tank level and DC motor monitoring, both of which used a miniature plant. Wonderware InTouch software is used for Human Machine Interface (HMI) SCADA systems, using OLE for Process Control (OPC) technology in KEPServer software to unify Omron Factory Interface Network Service (FINS) and Modbus data communication protocols. This research resulted in the integration of SCADA systems on two PLCs who have different types with 100% success rate. SCADA systems using HMI can monitor water tank plants and also monitor DC motor speeds in real-time because the speed of data transfer via ethernet on Omron PLCs has an average value of 9496 Bps and only 7.135 ms for delay average, as well as on PLCs Schneider has an average data transfer speed of 9480 Bps and only has 7.089 ms for delay average. Monitoring the level of the water tank has an accuracy rate value 96.212% and monitoring the speed of the DC motor has an accuracy rate value 98.044% based on a comparison of the values displayed by the HMI SCADA system and the actual values on the plant.

Keywords: SCADA, PLC, Omron, Schneider, OPC