ABSTRAK

Proses transfer produk berupa semen mortar dari *hopper bagging* ke *chamber bagging* selama proses produksi yang dilakukan secara manual tidak efisien dan efektif. Setelah melakukan observasi, proses transfer secara manual tidak efektif karena proses transfer tidak akurat dan proses pengemasan jadi lambat sehingga tidak sesuai dengan harapan perusahaan. Ketidakakuratan proses transfer dikarenakan kesalahan operator dalam memantau *level* produk. Sedangkan proses pengemasan lambat dikarenakan kelalaian operator melakukan proses transfer.

Pada penelitian dengan judul "Rancang Bangun Sistem Kontrol Level Semen Mortar Di *Chamber Bagging* Menggunakan *Capacitive Proximity Sensor E2K-C25MF1* Berbasis *PLC Siemens S-7 ET200S*", bertujuan untuk mengimplementasikan sistem kontrol pendeteksi semen mortar secara otomatis dan akurat agar dapat mengoptimalkan kinerja *butterfly valve* dalam proses transfer produk ke *chamber bagging*. Pengambilan data dilakukan dengan metode observasi pada proses transfer & proses pengemasan.

Hasil penelitian ini menunjukkan bahwa sistem kontrol dapat berfungsi dengan baik, *capacitive proximity sensor* dapat mendeteksi *level* produk di dalam *chamber bagging* secacara akurat dan kinerja *butterfly valve* telah teroptimalisasi dalam melakukan proses transfer produk. Hal ini dapat dilihat pada nilai persentase rata-rata *error* proses transfer produk ke *chamber bagging* yang menurun dari 29% menjadi 1% dengan kondisi *sight glasses* harus dibersihkan secara berkala. Selain itu, terjadi peningkatan proses pengemasan yang sangat signifikan dari rata-rata 191 *bag* per jam menjadi 287 *bag* per jam atau meningkat sebesar 50,26%.

Kata kunci: *capacitive proximity sensor*, *PLC Siemens S-7 ET200S*, *butterfly valve*, pendeteksi semen mortar, *chamber bagging*.

ABSTRACT

Transfer process of mortar cement product from hopper bagging into chamber bagging during production process which carries out manually is not effective and neither is efficient. After conducting observation, transfer process manually is ineffective due to inaccurate transfer process and packaging process becomes slow, so it doesn't meet company's expectations. Inaccuracies of transfer process is caused by operator's mistake in monitoring product level. Whereas, packaging process becomes slow due to operator's negligence in conducting transfer process.

In this research with title "Design a Mortar Cement Level Control System Inside of Chamber Bagging by Using Capacitive Proximity Sensor E2K-C25MF1 Based on PLC Siemens S-7 ET200S", aims to implement an automatic and accurate mortar cement detector control system in order to be able in optimizing butterfly valve performance in product transfer process into chamber bagging. Data retrieval is done by observation method on transfer process & packaging process.

The results of this research showed that the control system is well function, the capacitive proximity sensor is able in detecting product level inside of chamber bagging accurately and the performance of butterfly valve is optimized in conducting product transfer process. This could be seen at the average error percentage of product transfer process into chamber bagging which decreases from 29% up to 1% by condition the sight glasses should be cleaned periodically. Furthermore, there is a significant increase in packaging process from an average of 191 bags per hour to 287 bags per hour or increased for 50,26%.

Keywords: capacitive proximity sensor, PLC Siemens S-7 ET200S, butterfly valve, mortar cement detector, chamber bagging.