

CHAPTER FIVE CONCLUSIONS & RECOMMENDATIONS

5.1 Conclusions

The design of poly aluminum chloride (PACL) automatic system was checked physically to test overall performance (moving up, down speed and discharging flow rate).

The whole system movement via the wheel is easy without effort addition to that the portable plate moving (up and down) via screw shaft and electric motor fast and safely. The centrifugal pumps discharged the PACL normally and pumped it into the buffer tank in satisfied pressure as Mr. Abdel Hameed Elsir (ALMANARA production manager) mentioned in his report as shown in Appendix C.

The control system (Auto, Manual) design facilitate the control process as addition value to the system, however, the amount of labors that was needed to perform the process is reduced from 3 to 1, as well as the fork lift is eliminated due to that the discharging process is able at any time (day or night) shift as Mr. John Phillidis (ALMANARA plant manager) mentioned in his report as shown in Appendix B Finally this system has a high safety degree addition to that it can transport, store, maintain and operate easily.

5.2 Recommendations

The high initial cost is observed on this system due to PLC usage which has high performance level and cost reflected on the total cost, so replacing by a microcontroller instead of PLC is recommended as we know the microcontroller has the ability to perform such kind of processes.

Additional to that another electric motor can be connected to the poly aluminum chloride automatic filling system wheels to facilitate the move from position to another by using a remote control device.

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The connection can be built between the poly aluminum chloride automatic filling system and the PACL buffer tank that let the system start discharging process automatically when the buffer tank level reduced from a certain level.