CHAPTER 8

CONCLUSION AND FUTURE SCOPE

This chapter aims at summarizing the work executed in the thesis and highlights the significant contributions of the thesis. The scope of future work is also reviewed in the chapter.

8.1 CONCLUSION

In this research work, the performance improvement of the refining process through fluidized catalytic cracking unit using various control strategy are evaluated. A comparative analysis has been carried out to investigate the improved performance of the refining process through fluidized catalytic cracking unit using various control strategy such as; PID, NPID, Fuzzy logic controller, Model predictive control, and Active disturbance rejection control strategy.

Further, the study discusses the performance indices of the controller for Servo and servo with regulatory responses such as; reactor temperature and regenerator temperature are measured for various control strategies. From the obtained simulation result, it is concluded that the developed active disturbance rejection control strategy works reliably and provides sufficient results.

Moreover, from the results, it can be concluded that the refining process through fluidized catalytic cracking unit using active disturbance
rejection control settling time is faster and also better disturbance rejection capability when compared to PID, NPID, Fuzzy Logic Controller, and Model Predictive Control.

Hence in this research work, the simulation results demonstrate the success of the control scheme implemented in the newly developed the refining process through the fluidized catalytic cracking unit.

8.2 FUTURE SCOPE

Since importance in forecasting the response of FCCU to improve efficiency has become essential, it would be beneficial; to concentrate on the following issues in future research works.

The following hopeful topics are proposed for future research:

- Developing the model using more lumps for kinetics, multi-dimensions for the riser, and multi-phase system.
- Development has to be made on the riser system of FCCU in-order to decrease the shrinkage, reduce the weight, mechanical downtime and losses.
- Developing the model to taking account the friction effects between phases with the wall of the riser and between phases itself.
- Derivation of analytical expressions for the response of the FCCU to the cyclone, VSS, and regenerator performance as well.