

Chapter VI

Conclusions and Recommendations

5.1 Conclusion

From our studies, it can be concluded that the parameters effecting the continuous stirred vessel filled with water or liquid like water are as follows:

1. High speed of rotation of the impeller gave longer residence time but shorter mixing time.
2. Turbine was the most suitable impeller in the continuous mixing system filled with water.
3. High inlet flow rate gave shorter residence time and mixing time.
4. The impeller set at a distance of $1/3$ of the tank diameter from the bottom of the tank was the most suitable position in the continuous mixing vessel filled with water.
5. Larger impeller diameter caused shorter mixing time and residence time.
6. For 45° pitch bladed impeller, the direction of rotation that caused the current up to the liquid surface gave longer residence time but shorter mixing time than in the opposite direction.
7. Larger tank gave longer residence time than the smaller tank.

6.2 Recommendations

To complete the study in continuous stirred vessel, further studies should be carried out as follows:

1. For the determination of the mixing time, there should be more detecting points in the system in order to obtain accurate time when the system was completely homogeneous.
2. Tank size should be varied on a much larger scale than those used in the experiments, because many factors which affect small systems do not affect large systems such as vortex formation, dead region and vice versa, although the hydrodynamics in the tanks are similar.
3. Different specific types of impellers should be studied in detail, because different type of impeller gives different hydrodynamic and different effect in continuous stirred vessel.
4. Power consumption in each mixing condition should be investigated more thoroughly.
5. Variation of viscosities of the liquid system should be studied, because there are many industrial processes using viscous fluids.
6. Comparison between batch system and continuous system is an interesting study because for the batch system the data is quite complete and certain data concerning

the batch system could be used for the continuous system for designing purposes and selection of mixing system to be used.



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