

CHAPTER V

CONCLUSIONS

This chapter contains the research conclusions and suggestions for further research.

5.1 Conclusions

Conclusions of this research are as follows:

1. Wastes in the cement production processes identified using Value Stream Mapping (VSM) show the indication of defects, overproduction, and inventory wastes. Waste Identification then is conducted using Waste Relationship Matrix (WRM) and Waste Assessment Questionnaire (WAQ) to obtain the ranking of wastes as follows: Defects (19.747%), Overproduction (19.043%), Inventory (17.877%), Transportation (16.613%), Waiting (11.943%), Motion (11.871%), and Overprocessing (2.907%). Process Activity Mapping (PAM) concluded that 60% of Non-Value Added but Necessary activities and 5% of Non-Value Added activities are included in the cement production processes of Indarung V Plant of PT Semen Padang.
2. The improvements suggested using lean manufacturing methods in the cement production processes is obtained by those three methods. Based on Future State Mapping, the recommendations are balancing the work load (*Heijunka*), *kanban*, *kaizen*, and Lean Supermarket. Those methods can decrease the production cycle time about 4.31 percent (600 seconds) of the current production cycle time. Suggestions are also developed by identifying root cause of defects, overproduction, and inventory wastes using Cause and Effect Diagram. Failure Modes and Effect Analysis (FMEA) recognized the highest potential risk (low quality of raw material) and construct the recommendations to conduct a regular inspection in maintaining the quality of material and product.

5.2 Suggestions

Suggestions for further research are as follows:

1. Waste minimization can be conducted to other plants of PT Semen Padang, thus the results can be applied to the whole plants of PT Semen Padang.
2. Objects of waste minimization may be expanded to the whole department in the cement company to get the comprehensive results of the entire cement production processes.

