

CHAPTER 6

Conclusion and Recommendation

6.1 Conclusion

In Dyeing and Finishing industry, the scheduling method used is still in the old pattern, which depends on the experience of the scheduler. This existing method uses only the knowledge in this production, but it does not use the knowledge in production planning. Thus the objective of this study is to develop a proper scheduling method, which combines the production's constraints and the scheduling theories, to meet some objectives of the studied factory.

The main concepts using in this developed method are Backward scheduling, Constraint-Guided heuristic search, Group scheduling and Dispatching rule. Since this production schedule does not depend on only in the general constraints such as due date, machine capacities, but also the product characteristic and machine characteristic. The scheduling concepts used is under analytical solution, not only in numerical methods. Thus, this scheduling method is developed with the knowledge-based approach. It must understand clearly about the production constraints and the nature of the problems. However, the experienced supervisor is still playing an important role in scheduling are re-scheduling.

The results of from this study have proved that there is a significant improvement in the production performance measured from reducing production lead-time and work in process, and increase machine utilization and productivity. However, this testing is a simulation not from the actual implementation, and the condition in each method is a little bit difference.

The difficulty of this study is that the developed method uses the concept of knowledge based approach. Better scheduling method always comes after a better understanding of production system. This method is developing with a new knowledge all the time. Until now this developed method can be programmed in the computer as and expert system.

6.2 Recommendation

6.2.1 Further Improvement of Scheduling Method

The developing scheduling method is a first version. There are the other heuristics theory, the production's constraints and the company's requirement should be determined to improve this method. The example of the issues which could be considered to improve this method such as:

1.) The cost of setting up: The Dyeing and Finishing process have a lot of constraints in sequencing to avoid set up the machine. Now the scheduler does not know that how many orders, weight or roll can be processed in a set up. Since there are no information in cost of set up. This make the scheduler tries to minimize set up time by sequencing orders which do not require new set up continuously, especially in Dyeing section but it could result in a longer lead time in Finishing production.

2.) The priority of each customer: The new method also uses FCFS heuristics. Thus the customer, which comes first, will has the first priority in the schedule. However, the company has to give priority to the major customers in the schedule

3.) Reduce the reference lateness: The method is used to reduce the lateness.

3.1) Resequencing the color: To sequencing of color consistency in Dyeing and Finishing machines, it can change the sequence alternatively. Determine the sequence that has the minimum lateness.

3.2) Change to overlapping capacity machine. The range of capacity in some machines is overlap. The schedule has more alternative machines to reduce the lateness.

Machine	Capacity	Machine	Capacity	Overlapping Weight
HT 200 kg	60 – 210	HT 400 kg	100 - 420	100 – 210
HT 600 kg	400 – 630	HT 1000 kg	500 - 1050	500 – 630
W 100kg	40 – 110	W 200 kg	80 - 220	80 – 110

Table 6.2.1 The overlapping capacity machine

3.3) Change from RW machine to W machine: Some order of dyeing can be processed in both RW and W machines. Mostly the scheduler chooses

to process in RW machines because it is easier in control the condition and gives better quality. However, the order of Uncut fabric, which is mostly for the local market, can be produced in W machine without any quality problem.

3.4) Devide the big orders: A big order of Uncut fabric orders (600 kg up) can be dyed separately in two small batch such as 400kilograms. This can reduce the load of the large machine, especially in case that the company has many medium size machine.

4.) Trial and error: There are many alternative in sequencing the order. This needs trial and error technique to find the best sequence for the production. This needs the computer program to use this technique.

5.) The priority of each type of Finishing machine: The scheduler can give the first priority to the Uncut Fabric-Finishing machine, which produce the export fabric.

6.2.2 Implementation of the Scheduling Method

To implement this method in the real situation of production, the work procedure should be developed to use the computer program. This program likes the expert system. Moreover, this scheduling module should be linked to the other database as

1) The fabric warehouse: The worker would have the information to prepare the daily production. Moreover they could arrange just-in-time plan to receive the fabrics from the customer.

2) The inventory of dyestuffs: This can check the stock of dyestuffs of each machine immediately. If there is any problem, it can solve fast. This also provides the information to order dyestuffs in suitable quantity. This reduces the over stock.

3) The production floor: It can link with the shop floor control system as bar-coding system. This can evaluate the processing time of each order relation to the schedule. If it is behind schedule, this information triggers the scheduler to reschedule. Furthermore, the report analyzes the schedule and actual production time is the useful information to improves the production.

Therefore information in scheduling should be link to the other databases in the production to have the cooperation and fast problem solving.

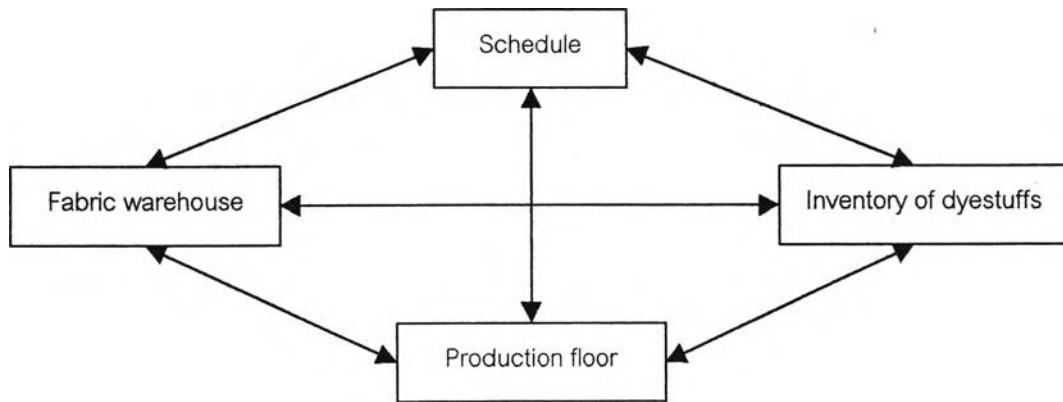


Figure 6.2.2 The relation in production