TO MINIMIZE MAKESPAN IN JOB SHOP SCHEDULING WITH TABU SEARCH ALGORITHM

ABSTRACT

The rapid technology development in manufacture industry, has encouraged the emergence of new innovations to enable the company to win the competition. Commonly, the innovation is highly related with the fulfillment of the various consumers demand. For instance, the demand of various types of products in a short finishing time. Certainly, it becomes a challenge for the company, particularly in production process planning, this production process planning stage is related with the determination of product finishing process order before the operation order on the machine (scheduling). *Tabu Search* is one of algorithm offering the near optimum solution in job shop scheduling by not conducting the searching process in solution areas which has been traced before. This searching process, initially conducted by determining the schedule initialization based on priority rule of *Longest Processing Time* (LPT). And afterwards, operation pair searching is conducted with the same machine (Neighborhood) and the last stage is the new makespan solution calculation and selected operation pair storage into the Tabu List. After that process, makespan value as much as 1171 minutes is obtained which is smaller than the initial makespan (1408 minutes). This result, will reduce the finishing time with efficiency value of 5 neck part or 15 body part. This job shop scheduling process with the Dev C++ program will be compared with manual makespan calculation by using dummy data.

Key words : Job shop scheduling, Tabu Search Algorithm, Makespan