ABSTRACT

Most of the previous research about printed circuit board (PCB) assembly had focused on machine-level optimization problems, such as placement sequence and feeder assignment. Less research effort was devoted to middle to short period production planning problems simultaneously. On the basis of goal-oriented strategies, this thesis studied the PCB production planning from Master Production Scheduling (MPS) to Finally Assembly Scheduling (FAS). The goal strategies in MPS were based two types of cost reductions that included production and holding cost. MPS is therefore a multiple criteria optimization problem. This thesis applied physical programming approach to solve this MPS problem. The solution from MPS was fed into the second layer problem to obtain final assembly sequence. The second layer (FAS) problem is a NP hard problem. In this research, GA was chosen to solve FAS problem. We compared solutions obtained from GA approach and the mathematical model in term of solution quality and efficiency.

Keywords : Printed circuit board assembly ; Master Production Schedule ; Finally Assembly Schedule ; Physical programming ; Genetic algorithm