

A Concurrent Approach Solving for the Job Scheduling in FMS

Moonsoo Cho* · Byunghee Chung*

* Soongsil University

Abstract

This paper proposes a concurrent design approach solving for the job scheduling problem in an flexible manufacturing systems environment by extending a constructive algorithm [Moreno and Ding, 1993] which tried to solve the loading and scheduling problems concurrently. Most scheduling papers related to manufacturing systems consider the schedulability factors independently.. Loading problem can be defined in a various ways such as selection jobs from a certain technological constraints. Scheduling problem has been solved after loading problem is solved. That has been a traditional and sequential approach that has been shown in the literature. However, job schedule problem should have been focused on concurrent solution of the loading and scheduling problems. One such strategy certain to address the managerial and manufacturing of the future is concurrent engineering approach, since the design, development, and production of a product has been one of the greatest challenges which flexible manufacturing systems face today. Furthermore, concurrent design has been recently promoted in many manufacturing systems as a response to solve the complex design problems. Viewed as a more systematic approach of creating high quality products and bringing them to market at lower cost and in significantly less time, it also attracts the attention of quality designers. However, the concurrent approach solving for the loading and scheduling problems simultaneous in FMS within a static environment having an objective function of minimizing the makespan has been considered by a limit number of researchers. Hence, the concurrent design for solving those problems such that the constrained system utilization factors are maximized is proposed by extending constructive algorithm.