

## Determination of Routing and Sequencing in a Flexible Manufacturing System Based on Fuzzy Logic

Pramot Srinoi<sup>1\*</sup> and Somkiat Thermsuk<sup>2</sup>

### Abstract

This paper is concerned with scheduling in Flexible Manufacturing Systems (FMS) using a Fuzzy Logic (FL) approach. Four fuzzy input variables; machine allocated processing time, machine priority, machine available time and transportation priority are defined. The job priority is the fuzzy output variable, showing the priority status of a job to be selected for next operation on a machine. The model will first assign operation of parts to machines under the given production plan and then determine the input sequence of the assigned operations for each machine based on a multi-criteria scheduling scheme. A complete fuzzy scheduling algorithm is developed to solve the operation allocation and operation scheduling problems in FMS environments aiming to approach the objectives of minimizing mean flowtime, maximizing machine utilization and balancing machine usage. The test results demonstrate the superiority of the fuzzy logic approach in most performance measures.

**Keywords :** Flexible manufacturing system, Scheduling, Part routing, Fuzzy Logic

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<sup>1</sup> Department of Industrial Engineering, Faculty of Engineering, Kasem Bundit University.

<sup>2</sup> Department of Industrial Engineering, Faculty of Technical Education, Rajamangala University of Technology Krungthep.

\* Corresponding author, E-mail: p\_srinoi@hotmail.com Received 8 May 2017, Accepted 20 July 2017