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12-1991

# Material Handling in a Flexible Manufacturing Systems Processing Part Families

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Savory, Paul; Mackulak, Gerald; and Cochran, Jeff, "Material Handling in a Flexible Manufacturing Systems Processing Part Families" (1991). *Industrial and Management Systems Engineering Faculty Publications*. 30.

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P. Savory, G.T. Mackulak and J.K. Cochran (1991), "Material Handling in a Flexible Manufacturing Systems Processing Part Families," *Proceedings of the 1991 SCS Winter Simulation Conference*, (ISBN: 0-7803-0181-1), ed. Nelson, Kelton, and Clark, pp. 375-381, Phoenix, Arizona, December 1991.

## **MATERIAL HANDLING IN A SIX MACHINE FLEXIBLE MANUFACTURING SYSTEM PROCESSING PART FAMILIES**

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### **KEYWORDS**

Material Handling, Computer Simulation, Flexible Manufacturing Systems, Part Families

### **ABSTRACT**

The objective of this simulation study is to analyze the system performance of a six machine flexible manufacturing system cell in which a material handling system is to be incorporated. The analysis focuses on determining the production potential of the cell by grouping common parts into "families". To accomplish this, computer simulation models are developed using the SIMAN simulation language.

Initially the manufacturing cell is modeled with no material handling system to get an upper bound estimate of production output. We next explore the impact that an automatic guided vehicle (AGV) has on system performance of the manufacturing system cell. A final analysis is performed in which a conveyor system is implemented as the material handling device. The resulting performance comparison is presented in the form of confidence intervals.

Upon examination of the simulation results, our recommendation is to implement a conveyor system for material handling. Using an AGV in the flexible manufacturing cell creates a bottleneck which causes production output to dramatically decrease. The daily production output of the manufacturing cell is not limited by incorporating a conveyor as the material handling system.