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Reliability Analysis of Flexible Manufacturing Cells Based on Triangular Fuzzy Number

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Abstract

In most of flexible production schemes, the flexible manufacturing cells (FMCs) are more economical and feasible. So, an important task is to establish the correct reliability analysis model for the FMCs. However, with the increasing of system complexity, some reliability analysis modes can hardly describe the actual situation. Besides, due to the lack of test-data and field-data during the design stage of FMC' system, the reliability modeling will be more complicated. In order to deal with the deficient data and the uncertainty occurred from analysis and judgment, this article analyzes the reliability of FMCs system through the method of fuzzy fault tree, which is based on triangular fuzzy membership. At last, a practical example is illustrated. The reliability analysis model indicates that it can offer a diagnostic tool for FMCs system and improve the efficiency of operation and production in FMCs system.

Keywords:

Fault tree | Flexible manufacturing cell | Reliability analysis | Triangular fuzzy number

Mathematics Subject Classification:

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