论文与报告

基于EHLEP-N模型的FMS实时调度和控制

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摘要
本文提出一种新的更适合柔性制造系统(FMS)建模的扩展高级E-Net,简称EHLEP-N (Extended High Level Evaluation Petri Net).将EHLEP-N与专家系统技术相结合,使 EHLEP-N对FMS更具有描述性,推理和决策能力.以EHLEP-N为FMS的建模工具,设计并建立FMS实时调度控制专家系统.借助于该系统,提出并研究新的旨在减少空闲(noinputs) 和消除阻塞的实时动态再调度规则.加工实验结果表明:1)该系统满足实时性和调度控制功能的要求;2)新规则的产率(throughputs)比传统规则平均提高7%.

关键词　　Petri网　FMS　实时调度与控制　专家系统

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FMS Real Time Scheduling and Control Based on Ehlep-N Model

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Abstract
In this paper, the authors propose the new Extended High Level Evaluation Petri Net (EHLEP-N) which is more suitable for modelling FMS. Merging EHLEP-N with expert system techniques leads to more descriptive, inferential and decisive power. EHLEP-N being taken as a means of modelling F MS, the real-time scheduling and controlling expert system for FMS is designed and built up. By means of the system, the new real-time dynamic-rescheduling rules are proposed and researched, in which no-inputs can be decreased and blockings can be eliminated. The results of the machining experiment prove that: 1) the system can meet the demand of real time scheduling and control; 2) the throughputs of the new rules can increase on an average by 70% as compared with those of the traditional rules.

Key words　　Petri nets　FMS　real-tim　scheduling and control　expert system

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