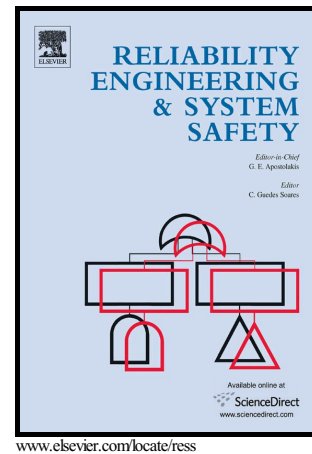


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Reconfiguration-oriented opportunistic maintenance policy for reconfigurable manufacturing systems

Tangbin Xia^{a, b}, Lifeng Xi^a, Ershun Pan^{a*}, Jun Ni^b

*Corresponding author. Tel. /fax: +86-21-34206685.

E-mail address: pes@sjtu.edu.cn (E. Pan).

^a *State Key Laboratory of Mechanical System and Vibration, Department of Industrial Engineering, School of Mechanical Engineering, Shanghai Jiao Tong University, Shanghai 200240, China*

^b *Department of Mechanical Engineering, University of Michigan, Ann Arbor, MI 48109-2125, USA*

Abstract

In today's highly competitive industrial market, reconfigurable manufacturing systems (RMSs) have been invented for diverse products, high quality and quick manufacturing. However, the changeable system structure brings new challenges for multi-unit maintenance scheduling. Thus, this research attempts to develop a novel dynamic maintenance strategy for those reconfigurable structures. In the machine-level decision-making, dynamical maintenance intervals are scheduled according to individual machine degradation. For responding rapidly to various system-level reconfigurations, RMS characters and maintenance opportunities are comprehensively considered. Then, a reconfigurable maintenance time window (RMTW) method is proposed to make real-time schedules for system-level opportunistic maintenance. This reconfiguration-oriented maintenance policy is demonstrated through the case study in a hydraulic steering factory. It is concluded that the proposed methodology can efficiently achieve rapid responsiveness and cost effectiveness for reconfigurable manufacturing systems.

Keywords: maintenance, reconfigurable manufacturing system, reconfigurable structure, rapid responsiveness, cost effectiveness

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