

Performance Complexity Measurement of Tightening Equipment Based on Kolmogorov Entropy

Authors : Guoliang Fan, Aiping Li, Xuemei Liu, Liyun Xu

Abstract : The performance of the tightening equipment will decline with the working process in manufacturing system. The main manifestations are the randomness and discretization degree increasing of the tightening performance. To evaluate the degradation tendency of the tightening performance accurately, a complexity measurement approach based on Kolmogorov entropy is presented. At first, the states of performance index are divided for calibrating the discrete degree. Then the complexity measurement model based on Kolmogorov entropy is built. The model describes the performance degradation tendency of tightening equipment quantitatively. At last, a study case is applied for verifying the efficiency and validity of the approach. The research achievement shows that the presented complexity measurement can effectively evaluate the degradation tendency of the tightening equipment. It can provide theoretical basis for preventive maintenance and life prediction of equipment.

Keywords : complexity measurement, Kolmogorov entropy, manufacturing system, performance evaluation, tightening equipment

Conference Title : ICMR 2017 : International Conference on Manufacturing Research

Conference Location : Osaka, Japan

Conference Dates : March 30-31, 2017