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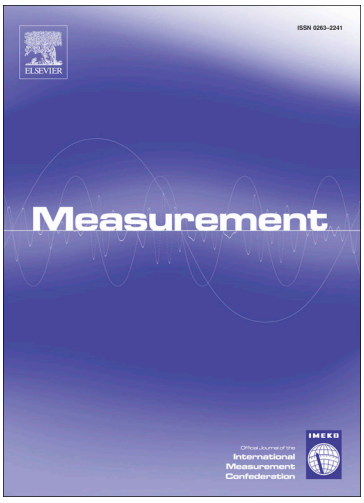

Quality control in machining using order statistics

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Quality control in machining using order statistics

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Abstract

The quality of surface roughness for machined parts is essential in the manufacturing process. The cutting tool plays an important role in the roughness of the machined parts . The process of determining the number of tolerant faults is problematic; this is due to the fact that the behaviour of the cutting tool is random. In this paper, we use an approach based on order statistics to study the construction of functional and reliability characteristic for the faults tolerant machined parts in each five batch of ten machined parts. Our experiments show that the number of faulty machined parts will not exceed two and the distribution of the minimum gives the best interval of the surface roughness. We have shown that the distribution of extreme order statistics plays an important role in determining the lower and upper limits of the roughness measurements depending on the reliability of the cutting tool.

Keywords: Order statistics, extreme value theory, quality control in machining, surface roughness measurements

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