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AN ASSEMBLY TOLERANCE ANALYSIS AND OPTIMIZATION METHOD BASED ON MONTE CARLO SIMULATION

Abstract

In the process of design manufacture of space vehicles, assembly information and tolerance information could be integrated directly and effectively by using the product tolerance optimizing analysis under virtual computer environmentBased on this, we could analysis and optimize the tolerance distribution, and finally prove the quality of assembly, reduce the production cost, and shorten the product exploitation period This paper compared the characteristics of typical tolerance analysis measures on basis of the arrangement of various tolerance analysis theories, then reached a conclusion that Monte Carlo Simulation is more adapted in complicated three-dimensional non-linearity tolerance combination during space vehicle product assembly. The paper studied the assembly system Tolerance Modeling Technology and the tolerance analysis technology based on Tolerance ModelingOn the aspect of tolerance analysis technology this article took a typical example of assembly (based on one plane and double pins)introduced a tolerance analysis method based on Monte Carlo Simulation. Finally, the paper proved the assembly tolerance analysis and optimization method by a subassembly of a space vehicle.