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ANALYSIS AND VERIFICATION OF BEARING CAPACITY OF STIFFENED PANEL OF CARBON
FIBER REINFORCED POLYMER COMPOSITES

Abstract

For improving the carrying capacity and reduce the launch cost considerations, all kinds of spacecraft on the structure of the weight has a strict limit. Compared with traditional metal materials, advanced carbon fiber resin matrix composites have higher specific strength and specific stiffness than many other excellent features, can significantly reduce the spacecraft weight. The composite stiffened panel with many advantages has been widely used in various spacecrafts. So it is of great significance to carry out analysis and verification. According to the structural characteristics of the composite stiffened wall panel, the finite element analysis model was established, and the static strength analysis of the stiffened panel was carried out by using the compression load. The displacement and strain results of the stiffened panel are obtained by simulation analysis, and the damage mode and bearing capacity of the structure are predicted. The test and verification of the reinforced slab structure was designed and completed. Through the combination of simulation analysis and experimental verification, the static strength assessment of the stiffened panel structure was carried out, and the bearing capacity of the structure was obtained, which provided a reference for the subsequent design and improvement of the composite structure.