PLANNING OF CUTTER PATH IN HIGH SPEED MACHINING BASED ON MAPPING OF TRIANGULAR GRID SURFACE

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Abstract- This paper puts forward an algorithm of generating a constant CNC spiral path based on curved surface of triangular grid. This algorithm takes fully consideration of the geometry and dynamics characteristics of the cutter-path and triangular grid cell, effectively reducing numbers of cutter lifting and maintaining the continuity of the cutter-path. This algorithm starting biasing from the contact points of cutter on the boundary of profile curve of grid layer by layer and planning the contact points of biased cutter on the parametric field, fitting contact points onto the spiral path by NURBS fitting algorithm, finally the spiral cutter-path is obtained by inverse mapping it on the grid. The algorithm in this paper can generate a path with advantages of consistence boundary, smooth and continuous path and without repeatedly need for feeding or relieving of cutter compared with those paths generated through traditional ways.

Key words: Triangular, Grid cell, Mapping rule, Spiral cutter-path