

金属板材数控渐进成形螺旋线轨迹生成 Generation of Spiral Tool Path for Sheet Metal CNC Incremental Forming

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摘要: 在分析金属板材数控渐进成形特点的基础上, 指出现行等高线运动成形方式存在的问题, 提出了一种基于螺旋运动的数控渐进成形方式和基于STL数据模型的螺旋线成形加工轨迹的生成算法。利用顶点偏置方法生成STL模型的等距模型, 采用一系列水平面和与Z轴平行的平面分别切割该等距模型, 求出其交线的交点, 并将其连接成螺旋线成形加工轨迹。算法应用实例表明, 该算法能够生成无干涉的螺旋线成形加工轨迹。 On the basis of characteristic analysis of the sheet metal CNC incremental forming, the problems of current incremental forming method based on contour line motion were proposed put forward, at the same time, an incremental forming method based on helix motion and the algorithm for generation of helix forming path based on STL model were presented. The isometric model of STL model was generated by using vertex offset method, and was intersected with a series of horizontal plane along with the planes that were parallel with the Z axis respectively. Then the points of the intersection lines were obtained which were linked to be the spiral tool path of forming. The case study indicated that the algorithm can generate non-interference spiral tool path of forming.

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