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透平机叶轮叶片五轴数控粗加工优化方法的研究

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Research on Method of 5-axis NC Rough Machining of Turbine Blade

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摘要

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摘要 为提高透平机叶轮叶片的加工质量和效率,在粗加工阶段,提出采用侧铣方法代替传统五轴数控加工中点铣,实现高效加工。基于多片直纹面包络叶片型面,提出一套复杂曲面蜕变直纹面方法,并给出相应算法,实现侧铣加工。以喷推叶轮为例,采用UG-NX进行建模与数控编程,用VERICUT刀轨仿真,通过加工路径的比较,对加工效率进行量化分析。结果表明,采用分段侧铣方法,生成的刀轨刀轴矢量变化均匀,刀具和零件未发生干涉,加工效率和加工质量明显得到提高。

关键词: 透平机 五轴数控加工 侧铣 直纹面 粗加工优化

Abstract: In order to improve the quality and efficiency of turbine milling, the flank milling is a good method, especially for rough milling. This article provides a whole solution that is wrapping the sculptured-surface by multiple ruled surfaces, including optimized arithmetic and application. NC programming by UG and simulating and analyzing by VERICUT, the results indicate that the segmental flank milling can give much better quality and greater efficiency than the traditional manufacturing method.

Keywords: turbine blade multi-axis machining flank-milling ruled-surface rough-optimization

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