

刀倾法数控加工机床调整参数转换 NC Machine Settings Transformation for Tilt Method

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关键词: Free-Form机床 机床调整参数转换 刀倾法 准双曲面齿轮

摘要: 研究了刀倾法加工摇台型机床调整参数向Free-Form型机床转换的原理和方法。建立了基于空间坐标变换刀倾法加工的数学模型,可用于单齿分度和连续分度加工;在摇台型机床固定坐标系中,通过辅助坐标系确定了刀具轴和工件轴之间的相对位置和相对运动关系,将这种关系等价地转换到Free-Form坐标系,确定6个数控轴表达式并进行多项式展开。最后,通过算例验证本文转换方法的正确性,TCA结果表明这种转换方法是可行的。

Transformation principle and method for machine settings from cradle-type hypoid generator to Free-Form CNC one was studied. Applying coordinate transformation, the mathematical model of tilt method process for hypoid gears was proposed, which can be used for simulation face milling and face hobbing process. By auxiliary coordinate systems, the relative position and motion between the head-cutter and the workpiece during the two generation process was established, and transformed to Free-Form coordinate system, to obtain and to expand the expression of 6 CNC axes. A numerical example was also employed to verify the proposed method, and the TCA results proved that transformation is feasible.

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