

复杂榫槽激光冲击强化机器人轨迹控制研究

摘要：激光光束对于强化区域的可达性控制是激光冲击强化技术在复杂空间结构零件应用的关键性难点。以小尺寸航空发动机涡轮盘榫槽为研究对象，通过工业机器人对自身旋转角度、移动距离的精确控制，实现激光斜入射角度精准控制、强化区域位置的精准定位，完成激光冲击强化技术在整体零件上的加工应用。

关键词：激光冲击强化； 机器人； 涡轮盘榫槽

Abstract:The accessibility control of laser beams to the enhanced area is a key difficulty in the application of laser impact enhancement technology in complex space structure parts. Taking the turbine disc groove of the small-size aero engine as the research object, through the precise control of the industrial robot's rotation angle and movement distance, the precise control of the laser oblique incidence angle and the precise positioning of the enhanced area position are realized, and the processing application of laser impact strengthening technology on the overall part is completed.