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钛合金振动攻丝刀具破损监测的研究

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STUDY ON MONITORING OF TOOL BREAKAGE FOR VIBRATION TAPPING IN TITANIUM ALLOYS

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摘要

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摘要 对振动攻丝的力学模型进行了研究,找出了钛合金振动攻丝刀具破损失效时的力学特征,并建立了钛合金振动攻丝的振动控制、破损监测和报警停机的自动监控系统。

关键词: 攻丝 钛合金 应力测量 扭转振动

Abstract: Tapping small size thread in deep holes in titanium alloy is a very difficult technology in airplane manufacture. The primary problem is that the frictional torque in the flank face of the tap is very big and makes the tap break or rupture. Although we have improved this operation remarkably by vibration tapping technique, with continuously running the vibration tapping process, the tap teeth are worn gradually and it makes the tap break or rupture also. Therefore, this paper describes some new researches including the study of mechanics model for vibration tapping, the analysis of mechanics characteristic in tap failure, and the method to create an automated monitoring and control system used for vibration control, tap breakage detection and alarm.

Keywords: taps titanium alloy stress measurement torsional vibration

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