

翰默 HAIMER 安全锁应用实例

SAFE-LOCK® APPLICATION EXAMPLES



安全锁：在美国航空工业大型飞机工厂中的应用

Safe-Lock: Application in the aerospace industry at a large aircraft manufacturer in the USA

问题

- 金属去除率低 (尤其在粗加工中)
- 刀具寿命低
- 加工钛合金和铝合金时, 导致昂贵零件的报废
- 各种不同方式的高夹持力的刀柄的测试全部失败了: 强力铣刀柄、冷压刀柄、液压刀柄和强力热缩刀柄, 都不能防止刀具被拔出
- 因此客户只能使用侧固式刀柄

Problem:

- Low metal removal rate (especially for roughing)
- Low cutting tool life
- Expensive scrap at titanium and aluminium workpieces
- All tests with different systems failed: Milling Chucks, Press-Fit Chucks, Hydraulic Chucks or reinforced shrink fit chucks could not prevent cutting tool pull-out, despite high clamping forces
- As a result they only used Whistle Notch / Weldon

目标

- 需要增加金属去除率——尤其针对粗加工
- 需要延长刀具寿命
- 需要提高成品率, 避免报废

Target:

- Needed to increase metal removal rate – especially for roughing
- Wanted to increase cutting tool life
- Increase of process reliability to avoid expensive scrap

应用实例: 钛合金粗加工

工件: 材料为 Ti6Al4V 的钛合金飞机组件
 机床: 立式加工中心
 主轴接口: HSK-A100
 使用刀柄: 直径 Ø 32 mm, 长度 120 mm,
 含安全锁的翰默 HAIMER 热缩刀柄
 粗加工:
 精加工: 具有相同涂层的同一种硬质合金刀具
 有效切深 83 mm

Application: Roughing Titanium

Workpiece: critical airplane component made of Ti6Al4V, a titanium alloy
 Machine: Vertical portal milling machine
 Machine tool: HSK-A100
 Tool holder: Shrink Fit Chuck HAIMER Safe-Lock, Ø 32 mm, length 120 mm
 Roughing,
 Fine machining: one and the same coated solid carbide tool, effective cutting length of 83 mm

结果

- 所有测试品中均有安全锁结构, 各个加工过程中刀具在刀柄中没有任何移动
- 刀具没有任何从刀柄中拉出的危险
- 刀具寿命可延长两倍, 甚至更多
- 在粗加工和最后的精加工过程中, 加工面无振痕, 光洁度高, 侧固式刀柄无法达到类似效果
- 通过增加 30% 的金属去除率, 使加工效率得到大幅提高

Result:

- Cutting tool was securely held due to Safe-Lock in all tests, no movement in the chuck during the entire machining process
- No danger of the tool being pulled out of the chuck
- Tool life more than doubled
- During roughing and finishing operations no vibrations, and consequently no chatter marks – unlike the Weldon chuck
- Significant productivity increases through the increase in material removal rates of 30%

刀具寿命增加 100%

100% MORE TOOL LIFE WITH

SAFE-LOCK®