中文核心期刊·科技核心期刊
主办单位：中国机械工程学会、北京机床研究所有限公司

ISSN 1005-2402
CODEN ZYJIE8

制造技术与机床®

1
2023

ZHIZAO JISHU YU JICHUANG
MANUFACTURING TECHNOLOGY & MACHINE TOOL

FANUC Series 0*i*-MODEL F Plus

更易用 更强大

全新高效加工技术 / 全新表面精细处理技术 / 全新开放性平台 / 全新 FANUC *i*HMI

北京发那科机电有限公司
北京市海淀区上地信息产业基地信息路9号

销售电话 010-62984739 010-62984741 (传真)
服务热线 400-6100-777 010-62984745 (传真)
培训电话 010-62984726-1868 021-69228386 (深圳&上海)

◆广告

关注智造无限

ISSN 1005-2402
9 771005 240234 01>
万方数据

目次
CONTENTS

《制造技术与机床》2023 年第 01 期（总第 727 期） No.01.2023 Total Issue No.727

1 | 国内外动态 / Information at Home and Abroad

专题专访 / Special Topics & Interview

6 | 《制造技术与机床》编辑部召开 2022 年编委会| 本刊记者 / 谭弘颖

7 | “智造先进 领航未来”高峰论坛成功举办| 本刊记者 / 谭弘颖

故障诊断 / Fault Diagnosis

9 | 基于深度特征提取和对抗域适应网络的滚动轴承故障诊断/陈凯　张礼华　赵恒　陈景铭
Rolling bearing fault diagnosis based on depth feature extraction and domain-adversarial training of neural networks/CHEN Kai, ZHANG Lihua, ZHAO Heng, CHEN Jingming

16 | 基于 LE 和 DBN 算法的轴承故障信号特征提取及诊断/余震　何留杰　王峰
Feature extraction and diagnosis of bearing fault signals based on LE and DBN algorithms/YU Zhen, HE Liujie, WANG Feng

21 | 基于经验模态分析的机床主轴轴承外圈非接触式故障检测方法/刘斌　刘佳　张海鹏
Fault detection method of machine tool bearing based on empirical modal analysis/LIU Bin, LIU Jia, ZHANG Haipeng

特种加工 / Non-traditional Machining

29 | 面向超磁致伸缩换能器的超声电源设计与性能分析/韦泽川　李均　冯峰　查慧婷　许超　马原　赵学奇　冯平法
Design and performance analysis of ultrasonic generator for giant magnetostrictive transducer/WEI Zechuan, LI Jun, FENG Feng, ZHA Huiting, XU Chao, MA Yuan, ZHAO Xueqi, FENG Pingfa

36 | 超声振动辅助切削三维 SiCp/Al 复合材料温度仿真研究/林洁琼　闫东　卢明明　李家成　高鑫
Temperature simulation of ultrasonic assisted cutting of three-dimensional SiCp/Al composites/LIN Jieqiong, YAN Dong, LU Mingming, LI Jiacheng, GAO Xin

44 | TB9 钛合金超声辅助切削试验研究/刘乐　张亚龙　关悦　金宏　刘前峰　刘海
Experimental study on ultrasonic assisted cutting of TB9 titanium alloy/LIU Le, ZHANG Yalong, GUAN Yue, JIN Hong, LIU Qianfeng, LIU Hai

切削加工 / Cutting Processing

49 | CFRP 铣削加工刀具优化/贺皑　袁信满　陈保林　胡智钦
Optimization of CFRP milling tool/HE Ai, YUAN Xinman, CHEN Baolin, HU Zhiqin

55 | 椭圆振动辅助切削振动参数对加工 SiCp/Al 切削力的影响研究/卢明明　周瑞琦　杜永盛　高强　杨亚坤
Study on the influence of elliptical vibration assisted cutting vibration parameters on machining SiCp/Al cutting force/LU Mingming, ZHOU Ruiqi, DU Yongsheng, GAO Qiang, YANG Yakun

万方数据

61 | 无氧铜深孔钻削仿真与试验研究/韩晓兰　侯杰　郑桓　张旭康
Simulation and experimental study of deep hole drilling of oxygen-free copper/HAN Xiaolan, HOU Jie, ZHENG Huan, ZHANG Xukang

数控技术 / CNC Technology

67 | 基于 EtherCAT 通信的双 CPU 总线型柔性折弯加工中心专用数控系统研发/吴凤和　王帅淇　孙迎兵　张会龙　王宇　连辉　柴海宁
Research on dedicated CNC system for flexible bending machining center based on EtherCAT communication and dual-CPU bus type/WU Fenghe, WANG Shuaiqi, SUN Yingbing, ZHANG Huilong, WANG Yu, LIAN Hui, CHAI Haining

74 | GNC62 数控系统专用加工功能的开发和集成/耿文剑
Develop and integrate special machining functions for GNC62 CNC systems/GENG Wenjian

78 | 华中数控卧式四轴机床坐标系自动补偿研究/杨凯　胡兴平　冯常喜　张宁　吴飞　赵志虎
Research on automatic coordinate system compensation of Huazhong NC system horizontal four-axis machine tool/YANG Kai, HU Xingping, FENG Changxi, ZHANG Ning, WU Fei, ZHAO Zhihu

设计与研究 / Design and Research

83 | 基于随机森林贝叶斯优化的机械臂运动参数优化研究/刘晨晖　张为民　薛峰
Research on kinematic parameters optimization of robot arm based on random forest Bayesian optimization/LIU Chenhui, ZHANG Weimin, XUE Feng

91 | 台虎钳的集成夹紧系统研究/杨茜　尹甜甜　盖蕾
Research on integrated clamping system of bench vice/YANG Xi, YIN Tiantian, GAI Lei

97 | PMSM 的新型趋近律滑模调速控制器设计/谭舒丹　马家庆
A novel reaching law sliding mode speed controller design for PMSM/TAN Shudan, MA Jiaqing

102 | 基于坠落机制的混沌麻雀算法 AGV 路径规划/李一铭　王跟成
Based on falling mechanism chaotic sparrow algorithm of AGV path planning/LI Yiming, WANG Gencheng

109 | 不同指令轨迹条件下滚珠丝杠进给系统运动精度特性研究/雷美荣　苏芳　王舒玮　王晨升
Study on tracking precision characteristics of ball screw feed system under different set-trajectory conditions/LEI Meirong, SU Fang, WANG Shuwei, WANG Chensheng

工艺与制造 / Technology and Manufacture

114 | 融合帝国竞争与遗传算法的零件加工工艺排序方法/李书涵　周学良　冷杰武
A part machining process ranking method incorporating imperial competition and genetic algorithm/LI Shuhan, ZHOU Xueliang, LENG Jiewu

121 | 转向螺母多向联动加载成形工艺研究/刘丹　刘光辉　王涛　刘华
Multi-direction linkage loading forming process for steering nut/LIU Dan, LIU Guanghui, WANG Tao, LIU Hua

检测与质量 / Test and Quality

126 | 基于机器视觉的直齿轮齿距偏差检测/逯海滨　张丹　李长安　隋文涛　窦亚萍　张宇凡
Spur gear pitch deviation detection based on machine vision/LU Haibin, ZHANG Dan, LI Changan, SUI Wentao, DOU Yaping, ZHANG Yufan

万方数据

132 | 基于正多边形截面薄壁零件旋压成形质量研究/王佰超　张欣龙　高建军　张澧桐　张洪明　王慧冬
Research on spinning quality of thin-walled parts based on regular polygon section/ WANG Baichao, ZHANG Xinlong, GAO Jianjun, ZHANG Litong, ZHANG Hongming, WANG Huidong

139 | GPS 轮廓法粗糙度数据处理研究与实现/潘丽丽
Research and implementation of roughness data processing based on GPS profile method/ PAN Lili

管理信息化 / Management and Informatization

145 | 一种基于改进 NSGA-II 的多目标绿色柔性作业车间调度方法/郑锦灿　邵立珍　雷雪梅
A multi-objective green flexible job shop scheduling method based on improved NSGA-II algorithm/ZHENG Jincan, SHAO Lizhen, LEI Xuemei

153 | 基于机器学习的图号申请系统设计与实现/罗瑞旭　张辉　张胜文　李坤　方喜峰
Design and implementation of drawing number apply system based on machine learning/ LUO Ruixu, ZHANG Hui, ZHANG Shengwen, LI Kun, FANG Xifeng

160 | 隐性扰动下柔性作业车间重调度决策/宋李俊　徐志鹏　李斐
Flexible job-shop rescheduling decision with hidden disturbance/SONG Lijun, XU Zhipeng, LI Fei

万方数据