



山东机械向数字化与智能化转型

主管 山东省机械工业协会
主办 山东省机械设计研究院

理事会

理事长: 刘卫东

副理事长: 林江海

理事:

陈声环 曾庆良 邓德乐 齐晓光 李保民
李胜军 李政军 毛志猛 孟庆堂 尚书旗
孙龙平 孙清洲 孙少军 宋家禄 汤世贤
王新建 魏修亭 徐龙泉 薛兴振 许宪志
许允和 于元波 张万谋 张承瑞 张跃成
张志刚 张世君 昞向博 姜小兴 薛峰
孙振华 郭信学 沙克清 马昭喜 马祖文

杂志社

社长: 林江海

副社长: 唐炳武 周靖 夏玉海 姚立新

主编: 吴小临

副主编: 徐民兴

编辑: 刘凌 张秀明 许彦红 郭鹏

英译: 李莹 王建文

编委: 边秀房 丁明 樊炳辉 黄传真

李木森 李军 李玉奎 刘川

刘永飞 石长河 孙宏飞 孙宁

王善坡 徐刚 周以齐 赵玉刚

曹明通

出版: 《现代制造技术与装备》杂志社

编辑: 《现代制造技术与装备》编辑部

发行: 《现代制造技术与装备》广告发行部

刊号: ISSN 1673-5587
CN 37-1442/TH

广告代理权: 现代制造技术与装备编辑部

广告发布登记证: 3700004000145

印刷: 济南景升印业有限公司

本刊声明

凡向本刊投稿, 即视为稿件从发表之日起, 作者将作品的专有版权、网络传播权、汇编权、改编权、音像录制权、翻译权授予本刊, 同时许可本刊转授第三方使用。

·设计与研究·

无线随钻放射源装卸保养系统设计与应用

.....郑春 张冲 张峰 许杰 度海洋 (1)

管道腐蚀的在线涡流检测方法研究.....胡胜伟 韩宁 刘杰 (5)

硬质合金基体上 TiN 与 TiAlN 涂层冲蚀磨损特性研究... 邹雪倩 吴凤芳 朱振杰 (11)

EMS 磁悬浮列车悬浮控制仿真研究.....张士臣 曹泽乾 任坤华 (15)

液压位置保持回路的比较分析.....张保 蒋天合 (20)

工业机器人在仓储整理系统中的应用.....熊隽 陈运军 (21)

基于六轴机器人的连杆锻模自动堆焊系统功能扩展研究

.....谢子锋 王艳 张传龙 张亚楠 (25)

摆动阀泥浆泵冲器传动方案设计.....王智明 邵天宇 张松炜 刘小刚 窦蓬 (28)

提高某型预制破片弹设计精度的研究.....张元军 赵强 (32)

对定子铁芯电镀镍-镀合金挂具的改进研究.....金冰心 (34)

点阵材料零件双尺度 CAD 模型研究.....唐瑶 杨睿 赵创 (36)

同轴度检测误判及替代方法研究.....胡海华 刘东 张鹏 (40)

恒温水嘴试验机综合性能检测系统的研究.....朱文清 (43)

海南码头船舶岸电改造技术应用.....刘智广 (46)

某推料机构的机械仿真技术研究.....赵春辉 (48)

基于无人机异物入侵激光测距报警装置的设计.....朱云阳 沈宝国 (51)

基于有限元和函数的 3D 打印件成本最优化结构设计

.....杨成福 邹洪亮 李生 李亚亮 (54)

车辆底盘勘察机器人上位机软件设计与实现.....张丰丰 高文斌 (56)

基于双重过滤的快速行人检测研究.....张训源 (59)

大型电站锅炉蛇形管屏自动涂装线研发.....张国威 (62)

基于离线编程技术的工业机器人绘图系统研究.....马少龙 梁舒 陈明辉 (65)

新颖惯性冲击原理的二自由度压电旋转关节研究

.....黄康 楚宇恒 汤玉竹 刘根 (67)

基于船舶柴油机冷却系统的模拟仿真与优化研究.....梁建湘 (72)

液压操动机机构缓冲特性研究.....孟旭辉 (73)

泉店煤矿副井提升机液压系统优化升级技术研究.....曹品伟 (76)

火电厂输灰系统中灰气比对输灰直管道的影响.....尹莉钧 刘耀鑫 (78)

挖掘机油温负荷计算及研究.....陆海涛 (79)

优质工业金刚石高温高压合成的研究.....吴旭阳 何慧芬 鲁浩远 (82)

海上间歇式能源发电出力与海洋气候环境关系讨论

——以波浪能、太阳能为例

.....谢磊 余加喜 毛李帆 吴锋 莫若慧 郑秋元 黄汉昌 (83)

双伸缩立柱柱强度与稳定性分析专用软件的开发.....郭丹丹 孙攀 (87)

CRH3A 型动车组列车网络控制系统故障测试平台研制.....刘鹏 (91)

一种节约空间的脚踏式自行车快捷停车装置

.....刘泽田 程才映 刘书辉 汪博渊 王永泉 (93)

基于 ADAMS 的某型发射平台回转俯仰耦合动力学分析.....孙亚东 李涌 (96)

基于 Unity3D 的切削力和切削温度虚拟仿真实验平台

.....丁建宾 刘向阳 刘红彬 魏冰阳 王超 李壮壮 (99)

超高速电梯的开发与设计.....吴传君 (102)

一种保温隔热型材检测环境温度调节系统的设计.....谢景锋 (104)

城市轨道交通车辆电气传动系统的发展探究.....张先武 (106)

现代设计理论和方法在矿用产品中的应用.....乔杉 (107)

分动箱温升验收标准制定的试验方法.....郭志丽 乔明明 杨强强 刘东洋 (109)

一种中小型餐厨垃圾处理设备的设计

.....王义文 付鹏强 宋锦东 石洪影 孙秋君 (111)

虚拟学术社区中的高校科研人员合作机制研究.....于明梓 谢静 (114)

某型十级高压压气机进口总压周向畸变试验研究.....张晓诗 李游 (118)

基于骨架模型的加固显示模块设计.....黄东洋 盛陈 李忠良 (120)

印制电路板设计的电磁兼容性分析.....	刘圣晓 (122)
电控硅油离合器控制算法剖析及优化.....	龚纪强 (124)
航空发动机转子安装边制造误差对装配性能的影响研究.....	孙汕民 李 永 (126)
· 工艺与装备 ·	
数控宏程序高速车蜗杆探析.....	陈淳辉 李金方 杨 杰 (132)
煤矿机电设备降低零件磨损的途径与润滑措施探析.....	曹 凯 (134)
桥门式起重机裂纹分析及检验注意事项探究.....	黄钟佳 (136)
面向绿色制造的机电产品工艺规划选择研究.....	李 磊 吴利平 邹修敏 (138)
直径 450mm 以下不锈钢三元叶轮加工工艺分析	裴忠科 (141)
铝及铝合金垂直固定管道手工钨极氩弧焊技术研究.....	唐 豪 (142)
聚氨酯发泡材料应用于冷藏汽车保温层的工艺研究.....	闫玉琴 (144)
西门子 SGT5-4000F (+) 型燃机盘车启动失败原因分析及对策	韩 超 (147)
通用飞机燃油系统洁净度控制.....	龙 涛 姜东晓 刘 硕 文 帅 (149)
滑动气垫技术在动车组底架设备装车中的应用.....	王方荣 (151)
航空有机玻璃钻孔加工工艺研究.....	王启超 姜东晓 李佳望 陈礼文 芬鼎彝 (153)
大 H 型钢 BD 轧机压下系统机械磨损原因分析.....	丁刘杰 王学瑜 陈 闯 (155)
超级电容器电极狭缝挤压式涂布质量缺陷分析.....	黄庆福 黄梓涵 (158)
机器人焊接技术在建筑铝模板行业的应用.....	刘一桥 王树春 王 奥 (160)
无机熔盐材料及其在太阳能转化与储存中的应用.....	朱 闯 巩 莉 (161)
定向刨花板生产设备和工艺控制探析.....	卢项乾 (163)
装载机驱动桥试验载荷谱编制及整车疲劳寿命预测.....	唐 恒 王伟丽 (164)
汽轮机蒸汽室盖螺栓断裂分析研究.....	陈付平 赵鹏飞 (166)
某型电液伺服系统故障维修探析.....	陈 雷 (168)
油浸变压器常见故障分析及处理措施.....	李迎春 (170)
炼铁高炉重力除尘器输灰改造.....	曹建斌 (172)
机械制造加工工艺合理化的机械设计制造分析.....	郑 亮 (174)
基于运行数据的航空发动机健康状态评估方法.....	侯振华 (176)
双质量飞轮在航空活塞发动机上的应用和维护.....	张宇庆 (178)
SA-312TP316H 不锈钢管理弧焊接试验	武云龙 (181)
炼油污水处理场浮选项目的优化与改造措施.....	陆一鸣 (182)
基于 ASME BPVC VIII -1 卷 UCS 篇的低温压力容器建造要求探讨	谢春晓 (184)
破碎设备对中煤破碎再选效果的影响探究.....	马传广 (186)
机电设备安装中存在的隐患与应对策略.....	马金春 (189)
自来水供水电气设备变频调速存在的问题及解决措施.....	谢立辉 (190)
· 自动化与控制 ·	
基于 PLC 温室控制系统的设计与实现	李 彬 黄美莲 (192)
基于单片机和 PLC 技术的实时控制系统设计	任源博 (195)
真空镀膜机自动控制系统的研发现状及应用研究.....	张小飞 (197)
三坐标测量机的自动测量和应用.....	安 婷 薛小燕 (198)
选矿磨矿浓度自动控制功能的实现与应用.....	孟 飞 (200)
电工电子技术在无功补偿自动控制中的运用.....	史 丹 (202)
基于华太远程 I/O 实现 PLC 与机器人之间的通信	冯韶霞 (204)
直线电机双驱龙门机器人设计与控制.....	后程文 (206)
· 行业交流 ·	
基于矩阵式管理的高职院校节能减排新常态及其应对策略研究.....	王宗磊 (209)
人造板原料及制造技术的创新.....	韦亚健 (213)
VR 技术在汽车专业教学中的应用	谢忠华 (214)
啤酒行业电气设备配置与管理研究.....	谷志勇 刘丽娟 (216)
探索机械加工企业的精益化生产管理.....	王 佳 (218)
设备全生命周期管理在卷烟制丝车间的应用.....	尹 馨 (219)
“新工科”建设背景下职业院校工程教育改革发展探究.....	蔡 楨 (221)
过程装备与控制工程的认识探究.....	赵顺财 (223)

Modern Manufacturing Technology And Equipment

Contents

· Design and research ·

Design and Application of Radioactive Source Handling and Maintenance System.....	(1)
Research on Online Eddy Current Testing Method of Pipe Corrosion	(5)
Erosion Wear Performance of TiN and TiAlN Nitride Coatings on Cemented Carbide Substrates	(11)
Simulation of Levitation Control for EMS Magnetic Levitation Train	(15)
Comparable Analysis of the Position Holding Circuit	(20)
The Application of Industrial Robot in Storage and Sorting System.....	(21)
Research on Function Expansion of Automatic Surfacing System for Connecting Rod Forging Die Based on Six Axis Robot	(25)
Design of the Transmission Scheme of Swing Valve Pulser Based on CFD	(28)
Study on Improving Design Accuracy of a Type of Precast Beer	(32)
Improvement Study on Electroplating-nickel Alloy Hanger of Stator Core	(34)
A Research on Double-scale CAD Model of Lattice Material Components	(36)
Research on Coaxiality Error Detection Method	(40)
Research on the Comprehensive Performance Testing System of Thermostatic Faucets Test Machine ..	(43)
Application of Shore Power Transformation Technology of Hainan Wharf	(46)
Research on Mechanical Simulation Technology of a Pusher Mechanism	(48)
The Design of Laser Ranging Alarm Device Based on the Object Invasion of UAV.....	(51)
Cost Optimization Structure Design of 3D Printed Parts Based on Finite Element and Function.....	(54)
Design and Realization of Upper Computer Software for The Surveying Robot for Vehicle Chassis	(56)
Fast Pedestrian Detection Algorithm Based on dDouble Filtering	(59)
Research and Development of Automatic Coating Line for Serpentine Tube Panel of Large Utility Boiler ..	(62)
Research on Industrial Robots Drawing System Based on Offline Programming	(65)
Research on Two Degree of Freedom Piezoelectric Rotary Joint Based on New Inertial Impact Principle...	(67)
Research on Simulation and Optimization of Marine Diesel Engine Cooling System	(72)
Study on the Buffering Characteristics of Hydraulic Operating Mechanism.....	(73)
Research on Optimization and Upgrading of Hydraulic System of Auxiliary Shaft Hoist in Quandian Coal Mine	(76)
The Influence of The Ratio of Ash to Gas in the Ash Conveying System of Thermal Power Plant	(78)
Calculation and Research of Thermal Load of Excavator Air Conditioning	(79)
High Temperature and High Pressure Synthesis of High Quality Industrial Diamond.....	(82)
Discussion on the Relationship between the Output of Marine Intermittent Energy Generation and Marine Climate and Environment ——Taking Wave Energy and Solar Energy as Examples	(83)
Professional Software Development for Strength and Stability Analysis of Double Telescopic Legs of Hydraulic Roof Support	(87)
Design of the Fault Test Platform for CRH3A EMU Train Network Control System.	(91)
A Kind of Space Saving Quick Stop Device for Pedal Bicycle	(93)
Rotation and Pitch Coupling of a Launch Platform Based on ADAMS Kinetic Analysis	(96)
Virtual Simulation Experiment Platform of Cutting Force and Cutting Temperature Based on Unity3D ...	(99)
On the Development and Design of Super High Speed Elevator	(102)
A Temperature Control System for Testing Environment of Thermal Insulation Profile	(104)
On the Development of Electric Transmission System of Urban Rail Vehicles	(106)
Application of Modern Design Theory and Method in Mining Products	(107)
Test Method for Development of Transfer Case Temperature Rise Acceptance Criteria	(109)
A Kind of Small and Medium-sized Equipment for Food Waste Treatment	(111)
Research on Cooperation Mechanism of University Researchers in Virtual Academic Community.....	(114)
Experimental Investigation of a Ten-stage High Pressure Compressorwith Inlet Circumferential Distortion.....	(118)



Bimonthly

No.7,2020

Total Issue No.284

Published on July 2020

Sponsor: Shandong Machinery Design
And Research Institute
Shandong Mechanical Engi-
neering Societ

Publisher: The Periodical Office Of
Modern Manufacturing Technology
And Equipment

Editor: The Editorial Office Of
Modern Manufacturing Technology
And Equipment

Distributor: The advertising Office of
Modern Manufacturing Technology
And Equipment

International Code: ISSN1673-5587

Domestic Code: CN37-1442/TH

Advertising Agent: Editorial Department of
Modern Manufacturing Technology and Equipment

**The Periodical Office Of
Modern Manufacturing Technology
And Equipment**

Add: 129 JiLuo Road, Jinan

Post Code: 250031

Tel: (0531)85955168

(0531)87116637

Http://www.sdji.cbpt.cnki.net

E-mail:sdjx168@163.com

mmte@163.com

zzjsyzb@163.com

zzjsyzb@126.com

Design of Reinforcement Display Module Based on Skeleton Model	(120)
EMC Analysis of PCB Design	(122)
Analysis and Optimization of Control Algorithm for Electronic Silicon Oil Clutch	(124)
Research on the Influence of Manufacturing Error of Aeroengine Rotor Installation Edge on Assembly Performance	(126)
· Technology and Equipment ·	
Discussion on CNC Macro Program Worm of High-speed Car	(132)
The Way to Reduce the Wear of Mechanical and Electrical Equipment in Coal Mine and the Lubrication Measures	(134)
Crack Analysis and Inspection Precautions of Bridge Crane	(136)
Research on Process Planning Selection of Electromechanical Products for Green Manufacturing	(138)
Discussion on the Processing Technology of Stainless Steel Three-dimensional Impeller with Diameter Less than 450mm	(141)
Study on Manual TIG Welding Technology of Aluminum and Aluminum Alloy Vertical Fixed Pipeline	(142)
Study on the Technology of Polyurethane Foam Applied to the Thermal Insulation Layer of Refrigerated Automobile	(144)
The Cause Analysis and Solution of Siemens SGT5-4000F Gas Turbine Turning Gear Failed Start	(147)
Cleanliness Control of General Aircraft Fuel System	(149)
The Application of Air Cushion Technology in the Loading of EMU Underframe Equipment	(151)
Research on Drilling Process of Aero Plexiglass	(153)
Analysis of the Mechanical Wear of the Screw Down System of the BD Rolling Mill for Large H-beam	(155)
Ultrapacitor Electrode Slot Extrusion Coating Quality Defect Analysis	(158)
Analysis of the Application of Robot Welding Technology in Aluminum Formwork Industry	(160)
Inorganic Molten Salt Material and its Application in Solar Energy Conversion and Storage	(161)
Discussion on Production Equipment and Process Control of Oriented Particleboard	(163)
Compilation of Test Load Spectrum of Loader Drive Axle Test and Prediction of Vehicle Fatigue Life	(164)
Analysis and Research on Bolt Fracture of Steam Chamber Cover of Steam Turbine	(166)
Analysis of Fault Maintenance of a Certain Electro-hydraulic Servo System	(168)
Common Fault Analysis and Treatment Measures of Oil-immersed Transformer	(170)
Transformation of Gravity Dust Collector for Iron Making Blast Furnace	(172)
Analysis of Mechanical Design and Manufacturing Based on Rationalization of Mechanical Manufacturing Process	(174)
Health Assessment Method of Aeroengine Based on Operation Data	(176)
Application and maintenance of Dual Mass Flywheel in Aviation Piston Engine	(178)
Submerged Arc Welding Test of SA-312TP316H Stainless Steel Pipe	(181)
Optimization and Transformation Measures of Flotation Project in Refinery Wastewater Treatment Plant	(182)
Discuss about the Construction Requirements for the Low Temperature Pressure Vessels Based on ASME BPVC VIII -1 PART UCS	(184)
Impact of Crushing Equipment on Crushing and Re-separation Effect of Medium Coal	(186)
Hidden Troubles in Installation of Electromechanical Equipment and Countermeasures	(189)
Problems Existing in Variable Frequency Speed Regulation of Electric Equipment for Tap Water Supply and Their Solutions	(190)
· Automation and Control ·	
Teaching Design and Implementation of Greenhouse Control System Based on PLC	(192)
Design of Real-time Control System Based on MCU and PLC Technology	(195)
Research and Application of Automatic Control System of Vacuum Coating Machine	(197)
Automatic Measurement and Application of CMM	(198)
Realization and Application of Concentration Automatic Control Function in Ore Dressing and Grinding	(200)
Application of Electrical and Electronic Technology in Automatic Control of Reactive Power Compensation	(202)
Communication Between PLC and Robot Based on Huatai Remote I/O	(204)
Dual-drive Linear Motor Gantry Robot System Design and Control	(206)
· Industry exchange ·	
Based on the Matrix Management of Energy Conservation and Emission Reduction of Higher Vocational Colleges and Countermeasures	(209)
A Rustic Opinion on the Innovation of Raw Material and Manufacturing Technology of Wood-based Panel	(213)
Application of VR Technology in Automobile Teaching	(214)
Research on Configuration and Management of Electrical Equipment in Beer Industry	(216)
Exploring Lean Production Management in Mechanical Processing Enterprises	(218)
Application of Equipment Life Cycle Management in Cigarette Filming Workshop	(219)
On the Reform and Development of Engineering Education in Vocational Colleges under the Background of "New Engineering" Construction	(221)
Understanding of Process Equipment and Control Engineering	(223)