

◆《中国科学引文数据库》来源期刊  
◆《中国学术期刊综合评价数据库》来源期刊  
◆《中文科技期刊数据库》全文收录期刊

◆《中国核心期刊（遴选）数据库》收录期刊  
◆《中国期刊全文数据库》收录期刊  
◆《中国期刊网》《中国学术期刊（光盘版）》全文收录期刊



创建绿色家园

# 全面腐蚀控制

TOTAL CORROSION CONTROL

唯吾独尊

以中国智慧引领全球  
筑起腐蚀控制钢铁长城

“中国工业防腐蚀技术协会”更名为“中国腐蚀控制技术协会”



ISSN 1008-7818



中国腐蚀控制技术协会主办

全面腐蚀控制杂志社出版



08

2022.VOL.36  
1986年创刊·公开发行

# 全面腐蚀控制

## 技术篇

### 【专论】

1 中水回用循环水工艺控制参数优化研究

/杨海燕 周文凡 江 臣 王 恒 薛红艳

8 燃煤电厂氯的赋存与转化规律研究

/张富峰 卢 锐 余子炎 何家平 关建雄 马双忱

### 【经验交流】

15 某机场机坪管网阴极保护系统杂散电流干扰检测

及相关研究

/李 岚 於 涛

19 影响油气管道施工质量的因素探讨

/孙茗钰

21 阴极保护智能测试桩在油气管道的市场应用前景

/张蔚然 刘晶晶 李欣涛 刘 珍 张 婷

李雪珂 邱金瑶

25 油气站场埋地管道防腐层选用分析

/闫宇陶

28 土建工程混凝土施工技术要点研究

/张荣明

30 钛合金的腐蚀性能研究进展

/雷 丹 李丹平 张国超 李永琦 郑拓文

35 混凝土建筑材料试验检测及相关质量控制

/刘 阳

37 埋地钢质管道牺牲阳极保护检测及施工分析

/粟辉霖 王 强

## CONTENTS 目次

39 基建施工现场管理关键点探讨

/何建宇

41 PDCA循环管理方法在项目后评价中应用探析

/张 静

43 物联网技术在接地网阴极保护系统中的应用

/胡 钊 江 锋

47 大型成品油储罐倒装施工技术分析

/吴敬轩

49 某电站冷却器换热管穿孔原因分析

/刘晓伟 刘 忠

54 油气管道施工工艺优选与安装工程控制

/孟祥辉

56 在用阴极保护管道检测技术的研究应用

/陈 剑

59 长输管道山区特殊地形施工技术

/姜 德

61 核电厂凝汽器传热管漏点的定位检查与修复

/黄 铠 方 江 赵永明 蒋申华 查 萌 刘洪群

64 关于安全阀校验周期判别的实验研究

/马文贺 郭兴建

68 长输管道自动焊工艺关键技术探讨

/蔡 亮

71 漏磁内检测技术在管道完整性评价过程中的应用

/曹 强

74 高土壤电阻率环境下的辅助阳极地床方式的选择

/徐友鹏 别 博 杨飞城 覃立帅

# CONTENTS

## 目次

- 77 原油管道输送常见问题分析  
/刘 莹
- 80 油田地面管线施工管理问题与对策探讨  
/关永彪
- 82 油气管道焊接常见外观缺陷及预防措施分析  
/王 坚
- 85 市政道路工程施工技术与质量管理分析  
/袁良涛
- 88 低渗透油田地面工程总体规划方案探讨  
/纪 凯
- 91 油田地面工程基建项目风险管理分析  
/王 颖
- 93 油气管道焊接质量控制要点分析  
/李玉顺
- 95 超声导波技术在管道腐蚀测量中的应用探讨  
/孙 雷
- 【腐蚀研究】**
- 98 注水管道腐蚀因素及防腐措施分析  
/邴李峰
- 100 大口径钢质输水管道外防腐技术分析  
/郑 超
- 102 原油集输系统腐蚀结垢因素与防治对策探讨  
/王碧玉
- 104 油田长输管道防腐层的选择及施工技术分析  
/崔家宾
- 106 油田集输管线的腐蚀原因分析及防护技术  
/杨 宝
- 109 储罐罐底边缘板腐蚀的控制  
/薛志军
- 111 储油罐防腐施工方法及施工质量控制的策略  
/魏丽春
- 113 储罐边缘板防腐控制技术探讨  
/冉允军
- 115 气田管道防腐措施的应用分析  
/侯 喆
- 117 石油管道防腐机理与技术分析  
/马 岭
- 119 暖通工程施工及管道防腐保温技术的探讨  
/刘文彬
- 121 核电厂循环冷却水系统热交换器海水侧腐蚀  
机理与防护  
/彭可馨 袁 驰 江 锋
- 125 海洋环境下腐蚀钢结构力学性能研究进展  
/潘金龙 梁鸿宇 张恩旺 系星语
- 129 从检查片的腐蚀谈燃气管道的阴极保护作用  
/郭小强 成琳琳 李茜璐
- 131 法兰螺栓电偶腐蚀失效分析  
/杨 峻 宣爱国
- 135 沿海风电场接地网土壤腐蚀性多指标检测与分析  
/尚家明 林国彬 冯世雄 周安兵 赵红梅  
方桂欢 李 岩 林 斌
- 139 单塔汽提装置汽提塔腐蚀原因分析  
/黄新泉

# TOTAL CORROSION CONTROL

(Monthly)

Vol. 36 No.08 (Serial No. 269)

AUG 28, 2022

## CONTENTS

### • Monograph •

- Study on Optimization of Process Control Parameters for Reclaimed Water Reuse ..... YANG Hai-yan, ZHOU Wen-fan, JIANG Chen, WANG Heng, XUE Hong-yan (1)  
Study on Occurrence and Transformation of CDchlorine in Coal-fired Power Plant ..... ZHANG Fu-feng, LU Rui, YU Zi-yan, HE Jia-ping, GUAN jian-xiong, MA Shuang-chen (8)

### • Experience Exchange •

- Stray Current Interference Detection and Related Research on Cathodic Protection System of an Airport Apron Pipeline Network ..... LI Lan, YU Tao (15)  
Discussion on Factors Affecting Construction Quality of Oil and Gas Pipeline ..... SUN Ming-yu (19)  
Application prospect of CATHODIC protection intelligent test pile in oil and gas pipeline market ..... ZHANG Wei-ran, LIU Jing-jing, LI Xin-tao, LIU Zhen, ZHANG Ting, LI Xue-ke, QIU Jin-yao (21)  
Selection of Anti-corrosion Layer for Buried Pipelines in Petroleum and Gas Stations ..... YAN Yu-tao (25)  
Research on Key Technical Points of Concrete Construction in Civil Engineering ..... ZHANG Rong-ming (28)  
Research Progress in Corrosion Properties of Titanium ..... LEI Dan, LI Dan-ping, ZHANG Guo-chao, LI Yong-qi, ZHENG Tuo-wen (30)  
Concrete Building Materials Test Testing and Related Quality Control ..... LIU Yang (35)  
Detection and Construction Analysis of Sacrificial for Buried Steel Pipeline ..... SU Hui-lin, WANG Qiang (37)  
Discussion on Key Points of Capital Construction Site Management ..... HE Jian-yu (39)  
Application of PDCA Cycle Management Method in Project Post Evaluation ..... ZHANG Jing (41)  
Application of Internet of Things Technology in Grounding Grid Cathodic Protection System ..... HU Zhao, JIANG Feng (43)  
Technical Analysis of Upside Down Construction of Large Product Oil Storage Tank ..... WU Jing-xuan (47)  
Analysis on the Perforation of Heat Exchange Tube of Cooler in a Power Plant ..... LIU Xiao-wei, LIU Zhong (49)  
Oil and Gas Pipeline Construction Technology Optimization and Installation Engineering Control ..... MENG Xiang-hui (54)  
Research and Application of Cathodic Protection Pipeline Detection Technology ..... CHEN Jian (56)  
Construction Technology of Long-distance Pipeline in Special Terrain in Mountainous Area ..... JIANG De (59)  
Location Inspection And Repair of Leakage Point for Condenser Heat Transfer Tube in Nuclear Power Plant ..... HUANG Kai, FANG Jiang, ZHAO Yong-ming, JIANG Shen-hua, ZHA Meng, LIU Hong-qun (61)  
An Experimental Study on Distinguishing the Calibration Period of Safety Valve ..... MA Wen-he, GUO Xing-jian (64)  
Discussion on Key Technologies of Automatic Welding Process for Long Distance Pipeline ..... CAI Liang (68)  
Application of Magnetic Flux Leakage Internal Detection Technology in Pipeline Integrity Evaluation ..... CAO Qiang (71)  
Selection of Auxiliary Anode Beds in High Soil Resistivity Environments ..... XU You-peng, BIE Bo, YANG Fei-cheng, QIN Li-shuai (74)  
Analysis of Common Problems in Crude Oil Pipeline Transportation ..... LIU Ying (77)  
Discussion on Problems and Countermeasures of Oilfield Surface Pipeline Construction Management ..... GUAN Yong-biao (80)  
Analysis on Common Appearance Defects and Preventive Measures of Oil and Gas Pipeline Welding ..... WANG Shu (82)  
Analysis on Construction Technology and Quality Management of Municipal Road Engineering ..... YUAN Liang-tao (85)  
Discussion on the Overall Planning Scheme of Surface Engineering in Low Permeability Oilfield ..... JI Kai (88)  
Risk Management Analysis of Oilfield Surface Engineering Capital Construction Project ..... WANG Ying (91)  
Analysis on Key Points of Welding Quality Control for Oil and Gas Pipeline ..... LI Yu-shun (93)  
Application of Ultrasonic Guided Wave Technology in Pipeline Corrosion Measurement ..... SUN Lei (95)

### • Corrosion Research •

- Analysis of Corrosion Factors and Anti-corrosion Measures of Water Injection Pipelines ..... BING Li-feng (98)  
Analysis on External Anti-corrosion Technology of Large Diameter Steel Water Transmission Pipeline ..... ZHENG Chao (100)  
Discussion on Factors of Corrosion and Scaling in Crude Oil Gathering and Transportation System and Countermeasures ..... WANG Bi-yu (102)  
Selection and Construction Technology Analysis of Anticorrosion Layer for Long-distance Pipeline in Oil Field ..... CUI Jia-bin (104)  
Corrosion Cause Analysis and Protection Technology of Oil Field Gathering and Transporting Pipeline ..... YANG Bao (106)  
Corrosion Control of Tank Bottom Edge Plate ..... XUE Zhi-jun (109)  
Anti corrosion Construction Method and Construction Quality Control Strategy of Oil Storage Tank ..... WEI Li-chun (111)  
Discussion on Anti-corrosion Control Technology of Tank Edge Plate ..... RAN Yun-jun (113)  
Application Analysis of Anticorrosion Measures for Gas Field Pipelines ..... HOU Zhe (115)  
Anti Corrosion Mechanism and Technical Analysis of Oil Pipeline ..... MA Ling (117)  
Discussion on HVAC engineering Construction and Pipeline Anti-Corrosion and Insulation Technology ..... LIU Wen-bin (119)  
Corrosion Mechanism and Protection of Seawater side of Heat Exchanger in Recirculating Cooling Water System of Nuclear Power Plant ..... PENG Ke-xin, YUAN Li, JIANG Feng (121)  
Research Progress on Mechanical Properties of Steel Under the Marine Corrosion Environment ..... PAN Jin-long, LIANG Hong-yu, ZHANG En-wang, XI Xing-yu (125)  
Discussion on the Cathodic Protection Effect on Gas Pipeline By the Coupons Corrosion ..... GUO Xiao-qiang, CHENG Lin-lin, LI Qian-lu (129)  
Failure Analysis of Galvanic Corrosion for Flange Bolt ..... YANG Jun, XUAN Ai-guo (131)  
Multi index Detection and Analysis of Soil Corrosivity of Grounding Grid for Coastal Wind Farm ..... SHANG Jia-ming, LIN Guo-bin, FENG Shi-xiong, ZHOU An-bin, ZHAO Hong-me, FANG Gui-huan, LI Yan, LIN Bin (135)  
Cause Analysis of Stripper Corrosion in Single Tower Stripper ..... HUANG Xin-quan (139)