

煤矿安全

SAFETY IN COAL MINES

ISSN 1003-496X
CN 21-1232 TD
11
2017
Vol. 48 No. 11

煤科集团沈阳研究院有限公司

主办

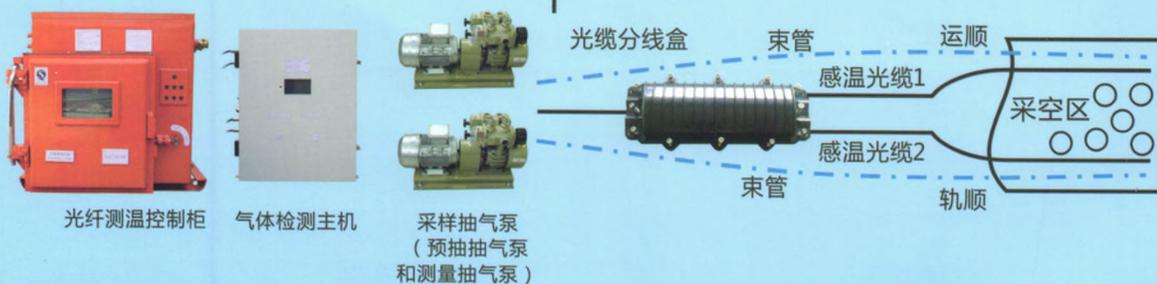
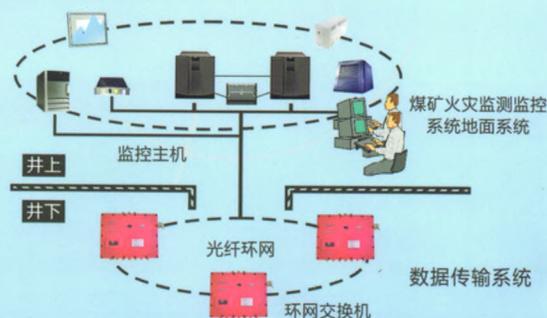
1970年创刊·月刊

GLTECH

光力科技

股票代码: 300480

矿用分布式激光火情监测系统



- ◎ 最完善的火灾预测模型，包含温度、CO、CH₄、C₂H₄、C₂H₂、O₂、CO₂，集分布式光纤传感和激光多气体检测技术为一体。
- ◎ 气体检测采用高分辨率激光吸收光谱技术，消除气体交叉干扰，测量不受粉尘、水汽的影响。
- ◎ 温度检测采用光纤传感技术，本质安全，铺设简单，无需维护，测量准确，可对采空区发火点精确定位。
- ◎ 本地实时连续测量，响应速度快，不受管路影响。

ISSN 1003-496X



11 >

9 771003 496176

WWW.GLTECH.CN

TEL: 0371-6785 8887 E-MAIL: info@gltech.cn CSH: 400-0057-577

ADD: 郑州高新技术产业开发区长椿路十号

主管单位

煤科集团沈阳研究院有限公司

主办单位

煤科集团沈阳研究院有限公司

主 编 罗海珠
副 编 梁绍权

编辑部主任 王福厚
广告发行主管 刘明智

出版单位 《煤矿安全》编辑部
地 址 辽宁省抚顺市经济开发区
滨河路11号

邮政编码 113122

电 话 (024)56616988 56616987
56616981 56613526

电子信箱 mkaq@163.com
mkaqgg@163.com(广告)

网 址 www.mkaqzz.com

发行范围 公开发行

发行单位 《煤矿安全》编辑部
或全国各地邮局

邮发代号 8-293

印刷单位 煤炭科学研究总院抚顺分院
胶版印刷厂

中国标准连续出版物号 ISSN 1003-496X
CN 21-1232/TD

企业法人营业执照注册号 210400000026129

商标注册证 第1144537号

出版日期 11月20日

定 价 20.00元

北京联络处 (010)64464228



“煤传媒”微信公众号



《煤矿安全》微信公众号

万方数据

目 次

试验·研究

- 基于物理模拟的煤与瓦斯突出主控因素及能量演化过程 唐一博,袁亮,薛俊华,薛生(1)
- 碎软煤层顶板岩层水平井大尺寸穿层压裂物理模拟试验研究 巫修平(5)
- 贵州煤矿煤与瓦斯突出防治技术体系研究 韩真理,张书金,衡献伟,徐晓乾,李晓华(9)
- 煤岩破坏过程中的统计损伤模型研究 张彪,张遂安,夏立满,王千玮,张晓冬(13)
- 煤层注碱治理硫化氢工艺参数研究 孟庆安(17)
- 基于影响因素优选的煤层瓦斯渗透率预测模型 王攀,杜文凤,冯飞胜(21)
- 外加水对煤中瓦斯渗吸效应影响的实验研究 樊亚庆,王兆丰(26)
- 瓦斯抽采过程中煤体低温氧化对煤岩动力灾害的影响 高振勇,武光玉,李玥(29)
- 松软含硫化铁结核煤层成孔问题研究 侯红(33)
- 基于CFD内壁微振荡喷嘴雾化特性数值研究 李晓建,刘邱祖,张宏(37)
- 二氧化碳气体井下远距离输送的可行性研究 葛亮,邵毅敏,唐彦昌,张广勋,刘林,陈波(40)
- 围压效应下煤岩组合体破坏与裂纹发育的细观模拟 张为民,卜滕滕(45)
- 不同围压下煤层波速的实验分析 童继强,杨德义,李志军,任华育,王增玉(49)
- 特大断面立井初支优化研究 张赞,苏学贵,王堂,杨宗一,张锁(53)
- 不同应力状态下岩石声发射波形分形研究 何正刚(57)
- 黏土类煤系泥岩电化学改性试验 孙耀辉,张亚涛(61)
- 频率信号激励下煤电性试验及其特征研究 柳苏,张玉贵,许小凯,赵晨光(65)
- 浆液析水对受注破裂泥岩的弱化实验研究 廉振山,郝晋伟,周斌(68)

技术·创新

- “三软”煤层水力冲孔与压裂耦合致裂增透技术 刘海波,尚政杰(71)
- 立井快速揭煤中径向井压裂增透技术 陈宾,展勤建(76)
- 综放工作面回采煤体出水快速治理技术 徐志远,姬中奎,张宜明,倪向忠(80)
- 矿井降温与热能利用一体化技术 牛永胜(84)
- 深部高应力沿空掘巷非对称支护技术 郑伟(88)
- 强动压巷道大变形顶板弱化围岩控制技术 代生福(92)
- 倾斜厚煤层错层位相邻巷道联合支护技术 姚善泳,徐杰,王志强,苏泽华,张瑞,徐春虎(96)
- 缓倾斜易自燃大断面综放工作面快速回撤技术 杨波(100)
- 强动压坚硬顶板大跨度煤巷底鼓协同控制技术 宋要斌,郭巍,张世玉,赵登峰(103)

设计·开发

- 基于PLC的煤矿通风控制系统优化改造 关英春(107)
- 煤与瓦斯突出监测报警系统突出判定及避险方法 范洪利(109)
- 紧急避险设施用大容量锂离子蓄电池均衡策略 孟积渐(113)
- 云时代的应急救援装备管理系统 李文峰,王晓辉(116)

《煤矿安全》杂志唯一投稿平台:

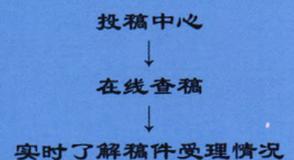
www.mkaqzz.com



投稿流程:



查稿流程:



注: 投稿请用IE浏览器

本刊声明:

- ☆ 本刊所有来稿自投稿之日起3个月内未收到“稿件采用通知书”, 作者可另行处理, 在此之前请勿一稿多投。
☆ 根据编辑加工原则, 本刊可能会对采用的稿件进行必要的删改, 不同意删改的, 请在投稿时声明。
☆ 本刊有出电子版、网络版、与网站技术交流和与各数据库合作的权利, 作者著作权使用费(包括上述几种方式), 并与本刊稿酬一次性付清。如作者不同意将文章以上述形式收录, 请在来稿时声明。

Table listing articles such as '矿用无轨胶轮车速度失控保护装置' by 赵美荣, etc.

应用·实践

Table listing practical applications like '动压区域巷道锚注联合支护技术在新窑煤矿的应用' by 段金红, etc.

分析·探讨

Table listing analytical articles such as '采空区瓦斯涌出情况对瓦斯浓度及自燃带分布的影响' by 王春霞, etc.

监察·管理

Table listing management articles like '延期突出事故认定及统计分析' by 徐乐华, etc.

SAFETY in COAL MINES

Monthly(Started in 1970)

November 2017

Vol.48, No.11(Total 520)

Competent Authority

CCTEG Shenyang Research Institute

Sponsor

CCTEG Shenyang Research Institute

Chief Editor LUO Haizhu
Deputy Chief Editor LIANG Shaoquan
Editorial Director WANG Fuhou
Advertisement & Distribution LIU Mingzhi

Publisher Editorial Office of
《SAFETY in COAL MINES》

Address No.11 of Binbe Road, Fushun
Economic Developing-area, Liaoning, China

Post code 113122

Tel 86-24-56616988 56616987
56616981 56613526

E-Mail mkaq@163.com
mkaqgg@163.com(advertisement)

Website www.mkaqzz.com

Issuer Public Offering

Subscribe(to) Editorial Office of 《SAFETY in
COAL MINES》 or Local Post Offices

Postal Distribution Code 8-293

Printed by Offset Printing Factory of
Fushun Branch of CCRI

**China Standard Serial
Numbering** ISSN 1003-496X
CN 21-1232/TD

Business License No. 210400000026129

**Trademark Registered
Certificate** No.1144537

Publishing Date November 20

Price 20 yuan

Beijing Liaison Office 86-10-64464228

万方数据

CONTENTS

Test·Research

- Control Factors of Coal and Gas Outburst and Energy Evolution Based on Physical Simulation
TANG Yibo, YUAN Liang, XUE Junhua, XUE Sheng(1)
- Study on Physical Simulation Test of Cross-strata Hydraulic Fracturing for Big Size Horizontal Well in Roof Strata of Broken Soft Coal Seam
WU Xiuping(5)
- Study on Technical System of Coal and Gas Outburst Prevention and Control in Guizhou Coal Mines
HAN Zhenli, ZHANG Shujin, HENG Xianwei, XU Xiaoqian, LI Xiaohua(9)
- Study on Statistical Damage Model of Coal Rock Destruction Process
ZHANG Biao, ZHANG Suian, XIA Liman, WANG Qianwei, ZHANG Xiaodong(13)
- Study on Parameters of Hydrogen Sulfide Treatment in Tiexin Coal Mine by Injecting Alkali
MENG Qing'an(17)
- Prediction Model of Coalbed Gas Permeability Based on Optimization of Influencing Factors
WANG Pan, DU Wenfeng, FENG Feisheng(21)
- Experimental Study on Imbibition Effect of Joining Water to Coal Containing Gas
FAN Yaqing, WANG Zhaofeng(26)
- Influence of Low Temperature Oxidation of Coal Body on Dynamic Disasters of Coal and Rock During Coal Seam Gas Extraction
GAO Zhenyong, WU Guangyu, LI Yue(29)
- Research on Pore-forming in Soft Coal Seam Containing Iron Sulfide Nodule
HOU Hong(33)
- Numerical Simulation on Atomization Characteristics of Lining Micro Oscillation Cavity Nozzle Based on CFD
LI Xiaojian, LIU Qiuzu, ZHANG Hong(37)
- Feasible Research of Long Distance Underground Transportation for Carbon Dioxide Gas
GE Liang, SHAO Yimin, TANG Yanchang, ZHANG Guangxun, LIU Lin, CHEN Bo(40)
- Mesoscopic Simulation of Failure and Crack Development of Coal-rock Combination Under Different Confining Pressure
ZHANG Weimin, BU Teng(45)
- Experimental Analysis of Wave Velocity of Coal Seam Under Different Confining Pressure
TONG Jiqiang, YANG Deyi, LI Zhijun, REN Huayu, WANG Zengyu(49)
- Optimization Research on Primary Support of Shaft with Large Section
ZHANG Zan, SU Xuegui, WANG Tang, YANG Zongyi, ZHANG Suo(53)
- Fractal Study on Acoustic Emission Waveform of Rock Under Different Stress States
HE Zhenggang(57)
- Experiment on Electrochemical Modification of Clay Coaly Mudstone
SUN Yaohui, ZHANG Yatao(61)
- Research on Coal Electrical Experiment Stimulated by Frequency Signal and Its Characteristics
LIU Su, ZHANG Yugui, XU Xiaokai, ZHAO Chenguang(65)
- Experimental Study on the Weakening of Slurry Bleeding to Broken Mudstone
LIAN Zhenshan, HAO Jinwei, ZHOU Bin(68)

Technology·Innovation

- Hydraulic Punching and Hydraulic Fracturing Coupling Permeability Improving Technique in "Three Soft" Coal Seam
LIU Haibo, SHANG Zhengjie(71)
- Fracturing and Permeability Increasing Technology for Radial Well in Rapid Unconverging Coal of Shaft
CHEN Bin, ZHAN Qinjian(76)
- Technology of Rapid Treatment on Water Inrush From Mining Coal in Fully Mechanized Caving Face
XU Zhiyuan, JI Zhongkui, ZHANG Yiming, NI Xiangzhong(80)
- Integration Technology Research on Mine Cooling and Heat Energy Utilization
NIU Yongsheng(84)
- Asymmetrical Supporting of Gob-side Entry Driving in Deep Roadway with High Stress
ZHENG Wei(88)
- Control Technology of Surrounding Rock for Large Deformation Roof in Dynamic Pressure Roadway with Weakening Roof
DAI Shengfu(92)
- Combined Support Technology of Adjacent Roadway by Staggered Outward Arrangement in Inclined Thick Seam
YAO Shanyong, XU Jie, WANG Zhiqiang, SU Zehua, ZHANG Rui, XU Chunhu(96)
- Quickly Withdrawing Technology for Easy Spontaneous Combustion and Gentle Dip Fully Mechanized Caving Face with Large Section
YANG Bo(100)
- Cooperative Control Technology for Large Span Coal Roadway with Strong Dynamic Pressure and Hard Roof
SONG Yaobin, GUO Wei, ZHANG Shiyu, ZHAO Dengfeng(103)

Design·Development

- Optimization and Modification for Control System of Coal Mine Ventilation Based on PLC
GUAN Yingchun(107)
- Outburst Judgement and Avoiding Methods for Monitoring and Alarming System of Coal and Gas Outburst
FAN Hongli(109)
- Equalization Strategy of Large Capacity Lithium-ion Battery for Underground Emergency Facilities
MENG Jijian(113)
- Management System of Equipment Used for Emergency Rescue in the Age of Cloud
LI Wenfeng, WANG Xiaohui(116)
- Protection Device of Speed Out of Control for Mine-used Trackless Rubber-tyred Vehicle
ZHAO Meirong, WANG Zhiwei, REN Xiaoli(119)
- Design of Power Head for Coalmine Tunnel Directional Drilling Rig
LIU Zhi(122)



煤科集团沈阳研究院
有限公司

系列产品

- ◆ 紧急避险系统
- ◆ 煤矿安全生产监控系统及人员定位系统
- ◆ 煤矿瓦斯抽放配套装备
- ◆ 矿井通风防灭火装备
- ◆ 煤矿瓦斯基础参数测定仪器
- ◆ 矿山救护装备
- ◆ 低压供电系统配套装备
- ◆ 矿用钻机及配套装置
- ◆ 露天矿卡车调度系统及边坡监测装备
- ◆ 模拟仿真训练系列

立足服务

保障安全

依靠创新

共同发展

WWW.SYCCRI.COM

辽宁 抚顺 经济开发区滨河路11号
T 024-56616909 F 024-56616800

辽宁 沈阳 东滨河路108号
T 024-24117298 F 024-24117568



A Kind of Efficient and Composite Wet Dust Collector in Heading Face

ZHANG Jiangshi,LIU Jinfeng,LI Xiaoxi,WANG Yameng(126)

An Improved Overcurrent and Overvoltage Protection Circuit of Intrinsically Safe Power Supply

LI Yiwen,WU Yincheng,XIN Yongxiang,HUANG Chun(130)

Modal Analysis of Speed-reducer Bevel Gear of Aerial Passenger Device for Coal Mine

LI Dan,BIAN Jianchao(133)

Research on Electromagnetic Characteristics of Spark Discharge Resulting from Electrical Equipment

Faults in Mine

LI Meng,ZHOU Lingling,TONG Minming,XU Jie(136)

Dynamics Analysis of Blocked System of Trackless Rubber-tyred Vehicle

NIU Qinyu,WANG Zhichao,YANG Peng,WANG Yongzhi,TIAN Haibo(140)

Application·Practice

Application of Bolt-grouting Combined Support Technology in Dynamic Pressure Roadway of Xinyao Coal Mine

DUAN Jinhong(144)

Technology and Application on Gas Extraction Hole Protection for Promoting Drainage Under Disturbing of Blasting Driving

WANG Chunguang(148)

Deep Hole Pre-grouting Technology in Abnormal Area of Large Mining Height Working Face

TAO Guangmei(152)

Comprehensive Support Technology of Gob-side Entry Retaining in Soft Limestone Floor

MA Qing,TAN Yunliang,ZHAO Zenghui,LI Xin,LI Rui(155)

Application of Pier Column Gob-side Entry Retaining Roadway in Weak Roof Coal Seam

ZHU Huaizhi,WANG Miao,XU Pengwei,HUANG Chengjun(159)

Analysis·Discussion

Influence of Goaf Gas Emission on Gas Concentration and Spontaneous Combustion Zone Distribution

WANG Chunxia,AI Dechun,YANG Fuling(163)

Comparative Analysis of Gas Extraction Methods for Goaf in High Gas and Easy Spontaneous Combustion Coal Seam

GUO Jianhang(167)

Study on Impact of Reverse Fault Dip on Coal and Gas Outburst

YU Meilu,ZUO Yujun,PAN Chao,LI Wei,HE Chenhong,WANG Hao(171)

Application of Qrifice Plate Flowmeter in Coal Mine Gas Drainage Measurement and Analysis of Common Problems

LIU Chunfeng,YANG Lingxiao(175)

Analysis of Drilling Cuttings Discharging Efficiency of Double Head and High Slice Screw Drilling Pipe Under High Rotating Speed

XU Baolong,YAO Ningping,ZHANG Jie,ZHANG Qingjin(179)

Characteristics and Mechanism Analysis of Dust Reduction by Rotating Water Mist

YAN Jingjing,WANG Fei(183)

Height Prediction Methods of Water Flowing Fractured Zone Under Condition of Fully-mechanized Mining

WANG Guohua,YIN Shangxian,LIU Ming,ZHANG Xiangwei(187)

Separation Layer Determination of Composite Roof in Coal Roadway Based on Damage Analysis

CHEN Guanglin,WANG Hongsheng(191)

Safety Analysis of Anti-explosive and Anti-impacted Airtight Wall Based on ANSYS Numerical Simulation

JING Yi,ZHANG Xixi,CHENG Jianwei(194)

Prediction of Surrounding Rock Stability in Coal Roadway Based on JADE-ELM Method

WANG Dongsheng,JIN Xiao(198)

Failure Characteristics and Control of Surrounding Strata of Coal and Rock Roadway

QIU Wenhua,KONG Linghai,ZHAO Shankun,ZHANG Shuxia,WANG Huiming(202)

Research Status and Prospect on Mechanism of Top Coal Broken in Longwall Top Coal Caving Face

LI Lianghui,WEI Weijie(206)

Three Dimensional Expressions of Overburden Subsidence and Calculation of Porosity Distribution in Fully Mechanized Mining Face

ZHANG Yanbin,WANG Yi(210)

Analysis of Coal-rock Damage Evolution and Acoustic Emission Characteristics Based on Particle Discrete Element Model

ZHANG Lei,LIU Yue(213)

Theoretical Analysis and Numerical Simulation on Plastic Zone in Circular Tunnel Under Bidirectional Non-uniform Stress Field

ZHANG Chunwang,SONG Xuanmin,WANG Wei,ZHANG Yujiang,YANG Shili(217)

Steady Mining Subsidence Prediction Method by Fusing Multi-source Parameters Identification Results

WANG Lei,WEI Tao,CHI Shenshen,CHEN Yuanfei(222)

Supervision·Management

Identification of Coal and Gas Delay Outburst Accidents and Statistic Analysis

XU Lehua,JIANG Haina,FENG Zengchao(226)

Analysis Study on Present Situation of Emergency Rescue in China's Coal Mines

XIE Xuecai,GONG Weidong,LIN Chen,LIANG Yueqiang(229)

Research on Relationship Between Safety Cognition and Unsafe Behavior of Coal Miners

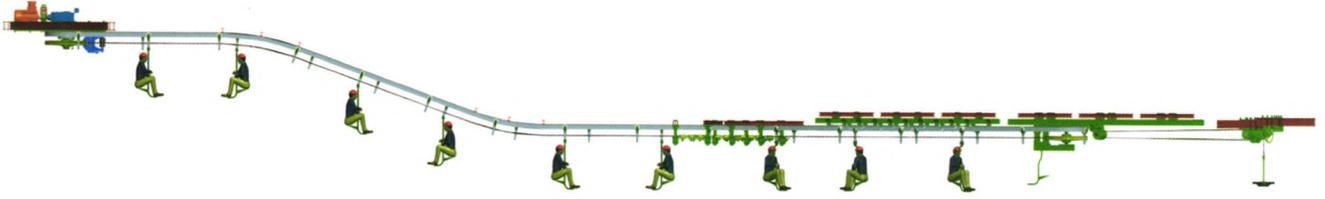
LI Hongxia,LI Siqi(233)

Coal Mine Safety Production Level Analysis for Coal-producing Provinces in China Based on Grey Fixed Weight Clustering Method

WU Daming(237)

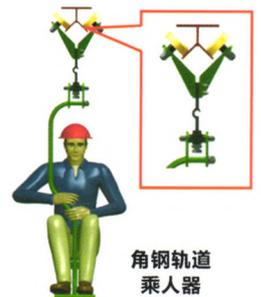
万方数据

矿用绳牵引轨道式架空乘人装置(俗称“轨道猴车”)

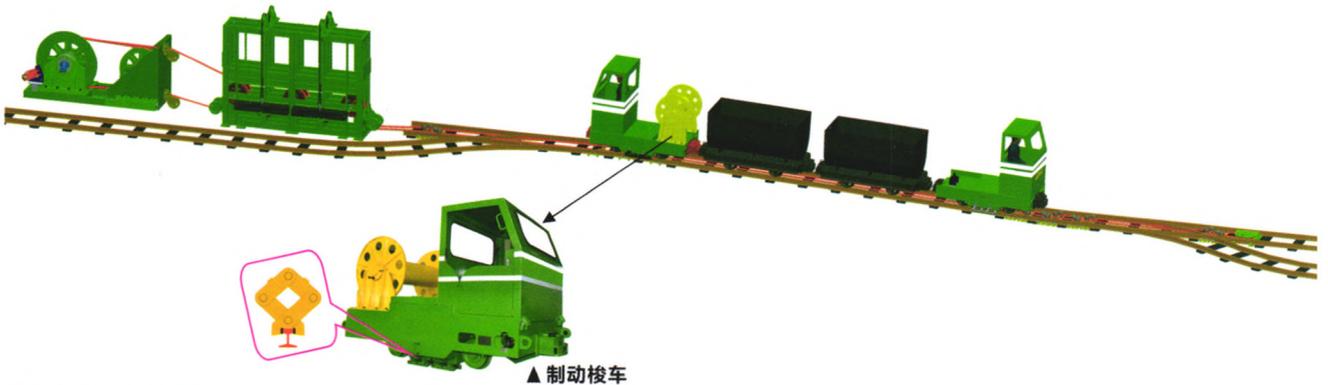


★ 产品特点

不掉绳	大运量
不飞车	任意转弯
大坡度	抱索器形式简单
无托绳轮和压绳轮	物联网技术应用



矿用无极绳连续牵引车(俗称“梭车”)



★ 产品特点

头车和尾车制动功能	互打点互通话功能	调速功能
漏泄通讯功能	后备保护功能	换油时间自动提醒功能
转弯运行功能	开机前强制检查功能	全线路语音提示功能(此功能选配)
云技术应用功能(此功能选配)	远程监控功能(此功能选配)	

 **湘潭市恒欣实业有限公司**

全球“猴车”科研、制造、销售、服务领军企业

营销专线: 0731-55672999 55672019
总机: 0731-55672666
网址: www.hx12666.com
地址: 湖南省韶山市高新区

售后专线: 0731-55672016 55672022
传真: 0731-55672012 55672100
E-mail: xiao12666@163.com
邮编: 411300

