

中国核心期刊（遴选）数据库 收录期刊

# Value Engineering

中国商界文联 会刊

中国技术经济研究会价值工程专业委员会 会刊  
中国高等教育学会价值工程分会 会刊

中国期刊网 全文收录期刊  
中国学术期刊（光盘版）  
中国学术期刊综合评价数据库来源期刊  
万方数据—数字化期刊群入网期刊  
中文科技期刊数据库收录期刊

ISSN 1006-4311

CN13-1085/N

JIAZHI GONGCHENG

2022 12

下旬刊（总第 656 期 / 第 41 卷）

# 价值工程

ISSN 1006-4311



9 771006 431068

36>

# 价值工程

2022年12月下旬刊 (总第656期 / 第41卷)

1982年创刊 2022年12月28日出版

中国商界文联会刊

中国技术经济研究会价值工程专业委员会会刊

中国高等教育学会价值工程分会会刊

封面刊名题字：袁宝华

主管单位：

河北省科学技术协会

主办单位：

河北省技术经济管理现代化研究会

总顾问：管在源

总 编：高志彪

总编室：师瑞

电 话：0311-87024742

编辑部：马慧霞

电 话：0311-83020178

0311-83036626

传 真：0311-87024742

投稿信箱：vezzsbjb@163.com

网 址：www.vezzs.com

责任编辑：高生明

封面设计：王金军

版面设计：韩宇红

国际标准连续出版物号：ISSN 1006-4311

国内统一连续出版物号：CN 13-1085/N

国内邮发代号：18-2

国内订阅：全国各地邮局

国内发行：河北省报刊发行局

国外发行：中国国际图书贸易总公司

印 刷：廊坊市长岭印务有限公司

编辑出版单位：价值工程杂志社

社 址：石家庄槐安西路88号

邮 编：050091

国内定价：30.00 元人民币

海外定价：30.00 美元

# 目录

## \* 价值管理 \*

- 基于关键链的超高层项目进度管理研究 ..... 陆雅芬等(1)  
公路工程项目工作分解结构(WBS)编码研究 ..... 王福海等(5)  
基于“背街小巷”的可持续发展综合改造研究 ..... 韩俨等(10)  
基于TOD视角的地铁停车场综合开发策略研究 ..... 李佳乐(13)  
基于BP神经网络的入境旧机电产品再制造质量评估研究

- ..... 陈德平等(16)  
上浦高速公路终点仙阳枢纽互通方案设计 ..... 陈晨风(19)  
PPP模式下城市快速路项目管理人员风险偏好影响因素研究  
..... 孟戈等(22)

- 数字产业化对制造业高质量发展的影响研究 ..... 方婷(25)  
高速公路桥梁高墩施工工艺研究与分析 ..... 陈星宇等(28)  
新建崇礼铁路工程线安全管理与风险管控 ..... 王飞(32)  
基于BIM的小样本数据下装配式施工安全评价研究

- ..... 徐彬彬等(35)  
杨凌区畜禽粪污消纳潜力测算及养殖污染风险评价

- ..... 杨香云等(39)  
基于模糊层次分析的城市燃气管网安全评价 ..... 周海怡等(43)  
基于灰色关联度的城市地下综合管廊风险评价研究

- ..... 林长峰等(46)

## \* 价值链·供应链 \*

- 赣州建设物流枢纽城市策略研究 ..... 陈敏(49)

## \* 功能载体创新 \*

- 川藏线拉林段无砟轨道套靴法可换式支承块施工技术 ..... 于厚文(52)  
低能耗小型苦咸水淡化系统设计 ..... 冯裕海等(56)  
既有铁路改造交叉渡线道岔施工方法运用 ..... 覃华(59)  
煤矿井下综采工作面远距离供液系统设计与应用 ..... 魏洋(62)  
岩溶地区盾构隧道施工过程的有限元建模研究 ..... 苏鹏等(65)  
预应力防腐抗浮锚杆施工技术 ..... 韩贵廷(68)  
高速铁路T构桥设计研究 ..... 蓝景涛(71)  
大断面扁平隧道高压富水区施工关键技术 ..... 赵博(74)  
广西关于复合筒基础浮拖工艺的可行性分析 ..... 刘浩弯(77)  
海测滩矿井建(构)物下研石膏体充填关键技术研究 ..... 马鹏(80)

单联多跨度悬臂连续梁施工技术研究	李梦洁(84)
轴流式叶轮轴四轴加工刀具轨迹优化与验证	刘辉(87)
城区内大直径供水管道密封性检测检验	李斌(90)
建林岩隧道通过高瓦斯煤系地层的施工处治	曲振国(93)
某焦化厂熄焦废水处理技术	郭宏等(96)

\* 价值应用 \*

液晶显示玻璃基板双机器人搬运系统设计	张世杰等(99)
金属和纤维增强层压复合板的屈曲行为	冒妍特(102)
基于激光跟踪仪的活动桥支铰轴系测量	李昌凯等(105)
城市轨道交通地下车辆基地消防车道设计若干问题探讨	张娥娥(108)
基坑设计中如何消除或降低水的危害	张幸洪等(111)
基于数字孪生理论的智慧农场节能减排系统设计研究	沈依青等(115)
液化判别中国交通规范和 NCEER 法对比分析研究	许波等(118)
尿酸对 AZ31B 镁合金超声滚压表面在模拟体液中腐蚀行为的影响	霍瑾翔等(121)
天然气管道泄漏扩散数值模拟研究	阚一炜等(124)
地震地质灾害信息服务需求分析	周亚东(127)
一种拮抗式气动肌肉驱动柔性关节的动态面控制	周滔(130)
气动肌肉驱动的下肢外骨骼膝关节结构设计	卢炼(133)
基于贝叶斯优化 LSTM 的 S 型道路车辆轨迹预测	雷俊廷(136)
BIM 交通模拟技术在施工交通组织设计中的应用	吴伟令等(139)
全金属泥浆马达定子电解加工成型预测研究	刘世英(143)
基于 Pyrosim 的某学生宿舍楼火灾数值模拟	陈舒扬等(146)
宜昌站 SVR 电波流速仪测量数据分析浅谈	曾令等(149)
基于 BIM 技术在房建施工安全管理的应用	程广森(153)
市政道路沥青混凝土路面施工过程中超声波技术的应用	李丽明(157)

\* 理论综述 \*

异质性环境规制对工业就业的影响研究	陶宇霄(160)
广州市森林公园生态系统服务功能及其评价指标研究综述	荣亮亮等(163)
新时代科普文创的主题聚焦	李翠亭(166)

**郑重声明**

- 1.本刊所刊载内容未经书面许可,任何部分不得以任何形式翻印、转载、复制,及存储于检索系统,提供给公众或私人使用。
- 2.来稿在 15 个工作日内给予回复录用与否,若未收到回复信息,请来电咨询稿件进展。来稿正常刊登周期为 3 个月内,未录用者可自行处理。请勿一稿多投,不涉及保密、署名无争议,请作者自留底稿,恕不退稿。
- 3.编辑部对来稿文章标题、内容、参考文献等保留删修权,不同意删修的稿件请在来稿中声明。
- 4.本刊已许可相关期刊网站以数字化方式复制、汇编、发行、信息网络传播本刊全文。本刊支付的稿酬(或稿酬与作品审稿费、与作品样刊费相抵)已包含相关期刊网站著作权使用费,所有署名作者向本刊提交文章发表之行为视为同意上述声明。如有异议,请在投稿时说明,本刊将按作者说明处理。

**Value Engineering**  
**(VE)**  
 Fortnightly Issue  
 Started in 1982  
 Vol.41 No.12  
 (Sum No.656)  
 Published in Dec. 28, 2022

**Inscribed:** Yuan Baohua  
**General Counsel:** Guan Zaiyuan  
**Executive Editor-in-chief:**  
 Gao Zhibiao  
**Manager:**  
 Hebei Association for  
 Science and Technology  
**Sponsor:**  
 Hebei Institute of Technology  
 Economy and Modern Management

**Chief Editor's Department:**  
 Shi Rui  
**Editor:** Editorial Team of VE  
**Publisher:**  
 Magazine Publishing House of VE  
**Address:**  
 No.88 Huai'an Road, Shijiazhuang  
**Tel:** (0311) 87024742  
**E-mail:** vezzshjb@163.com

**Printed by:**  
 Changling Printing Co., Ltd. Langfang  
**Distributor:** Shijiazhuang Post Office  
**Subscriptions:**  
 Chinese Local Post Office  
**Domestic Issue Code:** 18-2  
**Domestic Single Price:** ¥30.00  
**Overseas Single Price:** 30.00  
**Open Publishing**  
**ISSN 1006-4311**  
**CN 13-1085/N**

# CONTENTS

## VALUE MANAGEMENT

- 1 Research on Super High Level Project Schedule Management Based on Critical Chain ..... LU Ya-fen,*et al.*  
 5 Study on Work Breakdown Structure (WBS) Coding of Highway Engineering Project ..... WANG Fu-hai,*et al.*  
 10 Research on the Comprehensive Transformation of Sustainable Development Based on "Back Streets" ..... HAN Yan,*et al.*  
 13 Research on Comprehensive Development Strategy of Metro Parking Lot Based on TOD Perspective ..... LI Jia-le  
 16 BP Neural Network Based Remanufacturing Quality Assessment of Imported Used Mechanical and Electrical Products ..... CHEN De-ping,*et al.*  
 19 Scheme Design of Xianyang Hub Interchange of the Terminal Shangrao-Pucheng Expressway ..... CHEN Chen-feng  
 22 Research on Factors Influencing Risk Preference of Urban Expressway Project Managers under PPP Mode ..... MENG Ge,*et al.*  
 25 Research on the Impact of Digital Industrialization on the High-quality Development of Manufacturing Industry ..... FANG Ting  
 28 Research and Analysis on Construction Technology of High Pier of Expressway Bridge ..... CHEN Xing-yu,*et al.*  
 32 Safety Management and Risk Control of the Newly-built Chongli Railway ..... WANG Fei  
 35 Research on Assembled Construction Safety Evaluation Based on BIM with Small Sample Data ..... XU Bin-bin,*et al.*  
 39 Estimation of the Potential of Livestock and Poultry Manure Absorption and Risk Assessment of Breeding Pollution in Yangling District ..... YANG Xiang-yun,*et al.*  
 43 Safety Evaluation of Urban Gas Pipeline Network Based on Fuzzy Analytic Hierarchy Process ..... ZHOU Hai-yi,*et al.*  
 46 Study on Risk Assessment of Urban Underground Utility Tunnel Based on Grey Relational Degree ..... LIN Chang-feng,*et al.*

## VALUE CHAIN•SUPPLY CHAIN

- 49 Study on the Strategy of Building Ganzhou into a Logistics Hub City ..... CHEN Min

## FUNCTION CARRIER INNOVATION

- 52 Construction Technology of Replaceable Bearing Blocks by Booting Method for Ballastless Track in Lhasa-Linzhi Section of Sichuan Tibet Railway Tunnel ..... YU Hou-wen  
 56 Design of a Small-scale Brackish Water Desalination System with Low Energy Consumption ..... FENG Yu-hai,*et al.*  
 59 Application of Construction Methods for Crossing Crossover Turnouts in Reconstruction of Existing Railways ..... QIN Hua  
 62 Design and Application of Long Distance Liquid Supply System in Fully Mechanized Coal Face ..... WEI Yang  
 65 Finite Element Modeling Study on the Construction Process of Shield Tunnel in Karst Area ..... SU Peng,*et al.*

68	Construction Technology of Prestressed Anti-corrosion and Anti-floating Anchor .....	HAN Gui-ting
71	Study on Design of T-structure Bridges of High-speed Railway .....	LAN Jing-tao
74	Key Construction Techniques of Large Section Flat Tunnel in High Pressure Water Rich Area .....	ZHAO Bo
77	Feasibility Analysis on Floating Towing Technology of Composite Tube Foundation in Guangxi .....	LIU Hao-luan
80	Research on Key Technology of Filling Gangue Gypsum under Construction (Structure) in Haicetan Coal Mine .....	MA Peng
84	Research on Construction Technology of Single Multi Span Cantilever Continuous Beam .....	LI Meng-jie
87	Optimization and Verification of Tool Path for 4-Axis Machining of Axial Flow Impeller .....	LIU Hui
90	Detection and Inspection of Leakproofness of Large-diameter Water Supply Pipeline in Urban Area .....	LI Bin
93	Construction Treatment of Jianlinyan Tunnel Passing Through High Gas Coal Stratum .....	QU Zhen-guo
96	Treatment Technology of Coke Quenching Wastewater in a Coking Plant .....	GUO Hong, <i>et al.</i>

### VALUE APPLICATION

99	Design of Double Robot Handling System for LCD Glass Substrate .....	ZHANG Shi-jie, <i>et al.</i>
102	Buckling Behaviour of Metallic and Fibre Reinforced Laminated Composite Plates .....	MAO Yan-te
105	Measurement for Moveable Bridge Shafts with Laser Tracker .....	LI Chang-kai, <i>et al.</i>
108	Discussion on Some Problems of Fire Lane Design for Underground Vehicle Base of Urban Rail Transit .....	ZHANG E-e
111	How to Eliminate or Reduce the Harm of Water in Foundation Pit Design .....	ZHANG Xing-hong, <i>et al.</i>
115	Research on Energy Saving and Emission Reduction System Design of Smart Farm Based on Digital Twin Theory .....	SHEN Yi-qing, <i>et al.</i>
118	Comparative Analysis and Research on Liquefaction Discrimination between Chinese Traffic Regulations and NCEER Method .....	XU Bo, <i>et al.</i>
121	Effect of Uric Acid on the Corrosion Behavior of Ultrasonic Rolling Surface of AZ31B Magnesium Alloy in Simulated Body Fluid .....	HUO Jin-xiang, <i>et al.</i>
124	Numerical Simulation Study on Leakage Diffusion of Gas Pipelines .....	KAN Yi-wei, <i>et al.</i>
127	Analysis of Demand for Information Service of Seismic Geological Hazards .....	ZHOU Ya-dong
130	Dynamic Surface Control of a Flexible Joint Driven by an Antagonistic Pneumatic Muscle .....	ZHOU Tao
133	Design of Pneumatic Muscle-driven Knee Joint Structure for Lower Limb Exoskeleton .....	LU Lian
136	Prediction of S-type Road Vehicle Trajectory Based on Bayesian Optimized LSTM .....	LEI Jun-ting
139	Application of BIM Traffic Simulation Technology in Construction Traffic Organization Design .....	WU Wei-ling, <i>et al.</i>
143	Research on the Prediction of All Metal Mud Motor Stator Electrochemical Machining .....	LIU Shi-ying
146	Numerical Simulation of a Student Dormitory Fire Based on Pyrosim .....	CHEN Shu-yang, <i>et al.</i>
149	Analysis of the Measurement Data of the Surface Velocity Radar at Yichang Hydrological Station .....	ZENG Ling, <i>et al.</i>
153	Application of BIM Technology in Building Construction Safety Management .....	CHENG Guang-sen
157	Application of Ultrasonic Technology in Asphalt Concrete Pavement Construction of Municipal Roads .....	LI Li-ming

### THEORETICAL REVIEW

160	Research on the Impact of Heterogeneous Environmental Regulation on Industrial Employment .....	TAO Yu-xiao
163	Review on Ecosystem Service Function and Evaluation Index of Forest Parks in Guangzhou .....	RONG Liang-liang, <i>et al.</i>
166	Focused Themes of Science Popularization Cultural Creativity in the New Era .....	LI Cui-ting