

# 命者能源重读

# SOUTHERN ENERGY CONSTRUCTION

2025年1月 第 12 卷 第 1 期 Vol. 12 No. 1

战略性新兴能源与未来能源专辑一

ISSN 2095-8676





主办单位: 南方电网数字传媒科技有限公司 中国能源建设集团广东省电力设计研究院有限公司



2025年1月 第12卷 第1期 总第50期

# 目次

#### ◆ 高空风力发电

计及纵向扰动稳定的高空风电系统建模与稳定运行控制方法	
25 MW 级高空风电用摩擦卷扬机设计及优化 ···················· 牛力钊, 尹阔, 雷崇晖 (1	
高空风能电站运维辅助系统研究与设计何航, 汪少勇, 周家慷, 杨源, 张文鋆, 林侃 (2	2)
◆ 能源、交通与气象	
新型能源体系建设中的气象问题与技术进展 申彦波 (3	1)
极端天气对新型电力系统的影响及应对措施思考 曹辰,王增平 (4	3)
服务于新型能源体系建设的气象服务保障体系构建思考	
	8)
海上风电气象服务关键技术及应用分析王博妮,王锋,葛行成,黄芳,桑小卓,张敏 (6	
漂浮式海上光伏智能气候预警平台的实践与研究 周程晟,方世东 (7	5)
◆ 海上风力发电	
兆瓦级风力发电机组偏航制动系统摩擦特性试验分析 刘明,阳雪兵,张学文,黄振荣,卜忠颉 (8	3)
海上风电接入柔直系统的交流故障机理及影响分析江万里,王若愚,李嘉靓,梁靖仪 (9	1)
海上风电多风场集中送出方式优选方法	0)
深远海复杂海况下钢管桩清淤工艺的应用研究	9)
海上升压站机器人智能巡检系统应用分析	
海上风电场选址研究及未来发展前景	
李志川,李星华,劳景水,喻志友,徐伟,孙见章,张子健,李亚 (12	
风力发电机组大直径塔筒分片平台设计与校核 兰嘉文, 翟乾俊, 孙仲泽, 万雄斌 (14	
锤击过程导致的海上风电大直径单桩结构疲劳损伤特性陈涛,丁瑞霖,郭伟,佘俊辉,李卫超(14	
基于滑模变结构的双馈风力发电机矢量控制 朱耀明,张兰红,陈露露 (16	
计及双馈风机无功出力的配电网无功优化张成,陈宇,李灿,陆良帅,夏正龙 (16	
湍流风场下三风机气动功率优化 陈康,王蔚源,涂佳黄 (17	7)
◆信息 ····································	
广告目次 ······(14	0)
客座编辑: 李晓宇、曹辰、杨源、刘东华	

## **SOUTHERN ENERGY CONSTRUCTION**

Vol. 12 No. 1 (Ser. 50) Jan. 30, 2025

### **CONTENTS**

#### **♦** High Altitude Wind Energy

Modeling and Stable Operation Control Method for Airborne Wind Energy System Considering Longitudinal Disturbance Stability
LUO Bixiong, HU Junliang, YANG Yajun, REN Zongdong, HE Yadong (1)
Design and Optimization of Friction Winch for 25 MW Airborne Wind Energy Systems · · · · · NIU Lizhao, YIN Kuo, LEI Chonghui (12)
Research and Design of High Altitude Wind Power Station Operation and Maintenance Auxiliary System · · · · · · · · · · · · · · · · · · ·
····· HE Hang, WANG Shaoyong, ZHOU Jiakang, YANG Yuan, ZHANG Wenjun, LIN Kan (22)
◆Energy, Transportation and Meteorology
Meteorological Issues and Technological Progress in the Development of New Energy Systems · · · · · SHEN Yanbo (31)
Reflections on the Impact of Extreme Weather on New Power Systems and Countermeasures · · · · · CAO Chen,WANG Zengping (43)
Thinking on the Meteorological Services to Ensure the Development of a System for New Energy Sources
ZHU Yongchang, ZHANG Xiaofeng, CHEN Zhenghong, YE Dong, TAN Juan, QIN Yong, LIU Zhaohui, XU Zhiqi (58)
Analysis of Key Technologies and Applications of Meteorological Service for Offshore Wind Power
Practice and Research of Floating Offshore Photovoltaic Intelligent Climate Early Warning Platform ZHOU Chengsheng, FANG Shidong (75)
♦ Offshore Wind Power
Experimental Analysis on Friction Characteristics of MW Wind Turbine Generator Yaw Braking System
LIU Ming, YANG Xuebing, ZHANG Xuewen, HUANG Zhenrong, BU Zhongjie (83)
AC Fault Mechanism and Impact Analysis of Offshore Wind Power Connected to Flexible and Direct Systems
Optimization Method for Centralized Transmission of Offshore Wind Power from Multiple Wind Farms LIU Sheng (100)
Research on Application of Dredging Technology for Steel Pipe Pile Under Complex Sea Conditions in Deep Sea
Application Analysis of Intelligent Robot Inspection System at Offshore Step-up Substation
ZHOU Dengke, CHENG Long, ZHANG Yaping, TANG Peng, GU Sheng, ZHENG Kaiyuan, HE Junsheng, ZHANG Xue (116)
Study on the Siting of Offshore Wind Farms and Prospects for Future Development
LI Zhichuan, LI Xinghua, LAO Jingshui, YU Zhiyou, XU Wei, SUN Jianzhang, ZHANG Zijian, LI Ya (127)
Design and Verification of Large-Diameter Tower Sharding Platform for Wind Turbine
Fatigue Damage Characteristics of Offshore Wind Power Large-Diameter Monopile Structures During Driving Process
······ CHEN Tao, DING Ruilin, GUO Wei, SHE Junhui, LI Weichao (147)
Vector Control of Doubly Fed Induction Generator Based on Sliding Mode Variable Structure
Reactive Power Optimization of Distribution Network Considering the Reactive Power Output of Doubly Fed Induction Generator
Optimization of Aerodynamic Power of Three Wind Turbines in Turbulent Wind Farm CHEN Kang, WANG Weiyuan, TU Jiahuang (177)
◆Information
Advertisement List · · · · · (140)