





# SOUTHERN ENERGY CONSTRUCTION 2024年1月 第11卷第1期 Vol.11 No.1

- 能源气象技术专刊 特约主编 陈正洪 申彦波 ---

封面文章

中国气象局风能太阳能预报系统(CMA-WSP) 在风资源短期预报中的检验评估 ──王明<sup>⊠</sup>,孟丹,许沛华,许杨,陈正洪,贾蓓西

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





# 风光资源监测与评估

面向空中风力发电系统的高空风场观测	蔡彦枫,	李晓宇	(1)
考虑地形影响的太阳能资源精细化评估及技术可开发量计算 孙朋杰,何飞,	,陈正洪	,孟丹	(10)
基于高塔数据的山区丘陵与平原湖区风能参数差异分析许杨, 陈正洪,	,申彦波	,孟丹	(19)
基于威布尔分布的风功率密度计算方法比较		… 李化	(33)
风力机组尾流模型适用性评价李胜, 葛文澎, 吴嘉诚,	,曲春明	,孙睿	(42)
基于 Fourier 拟合的光伏跟踪系统设计	,盘瑶,	胀剑云	(54)
港口实景下大型风电机组工程化设计分析 唐道贵, 柯耀, 张乾能, 李将渊, 1	俞浩焕,	朱琳杰	(64)

# ◆ 风光发电功率预测

中国气象局风能太阳能预报系统(CMA-WSP)在风资源短期预报中的检验评估	
王明, 孟丹, 许沛华, 许杨, 陈正洪, 贾蓓西 (7	3)
基于机器学习的风电场风速多模式集合预报高盛,许沛华,陈正洪(8	5)
基于大涡模拟与中尺度数值天气模式的精细化风场模拟 欧敏焯, 吴迪, 张敏 (9	6)
典型风电场地形大气稳定度对风机出力的影响 王彬滨,余江,张荣,孙朋杰 (10	5)
基于改进 LSTM 神经网络的风电功率短期预报算法高盛, 许沛华, 陈正洪, 成驰 (11	2)

### 电网负荷气象预测

# ◆ 电力气象灾害应对

风荷载对全潜式浮式风机拖航运动响应的影响 …………………………………………………………赵业彬,任建宇,乐丛欢 (176) 沿海强风区 500 kV 架空输电线路防风加强设计 ………… 颜子威,朱映洁,章东鸿,潘春平,龚有军 (185) 基于湖北输电线路灾情的山火分布特征分析 …………… 叶丽梅,黄俊杰,高正旭,万君,张丽文 (196)

### ◆ 信息

特约主编:陈正洪、申彦波 特约编委:孙朋杰、任永建 客座编辑:蔡彦枫、何明琼、王明

**CN** 44-1715/**TK** \* 2014 \* **b** \* 16 \* 204 \* **zh** \* **P** \* ¥ 15.00 \* 2000 \* 20 \* 2024-01

# **SOUTHERN ENERGY CONSTRUCTION** Vol. 11 No. 1 (Ser.44) Jan. 30, 2024

# **CONTENTS**

### **•** Detection and Evaluation of Wind and Solar Resources

High-Altitude Wind Field Observation of Airborne Wind Energy System ····· CAI Yanfeng, LI	Xiaoyu (1)
Refined Assessment of Solar Energy Resources and Calculation of Technical Exploitable Capacity Considering Terrain Influence	
SUN Pengjie, HE Fei, CHEN Zhenghong, MEN	G Dan (10)
Analysis of Differences in Wind Energy Parameters Between Mountainous, Hilly, Plain and Lake Areas Based on Mast Data	
XU Yang, CHEN Zhenghong, SHEN Yanbo, MEN	G Dan (19)
Comparison of Wind Power Density Calculation Methods Based on Weibull Distribution	LI Hua (33)
Applicability Evaluation of Wind Turbine Wake Models LI Sheng, GE Wenpeng, WU Jiacheng, QU Chunming, SU	JN Rui (42)
Design of Photovoltaic Tracking System Based on Fourier Fitting LIU Xingyu, ZHU Jinrong, PAN Yao, ZHANG J	ianyun (54)
Engineering Design Analysis of Large-Scale Wind Turbine in a Port	
TANG Daogui, KE Yao, ZHANG Qianneng, LI Jiangyuan, YU Haohuan, ZHU	Linjie (64)

### **Wind and Solar Power Generation Forecast**

Validation and Evaluation of the China Meteorological Administration Wind Energy and Solar Energy Forecasting System (CMA-WSP) in Short-Term
Wind Resource Forecasting WANG Ming, MENG Dan, XU Peihua, XU Yang, CHEN Zhenghong, JIA Beixi (73)
Wind Speed Multi-Mode Ensemble Forecasting for Wind Farms Based on Machine Learning GAO Sheng, XU Peihua, CHEN Zhenghong (85)
Refined Wind Simulation Based on Large Eddy Simulation and Mesoscale Numerical Weather Model … OU Minchao, WU Di, ZHANG Min (96)
Influence of Atmospheric Stability on Wind Power Output Under Typical Wind Field Topography
WANG Binbin, YU Jiang, ZHANG Rong, SUN Pengjie (105)
A Short-Term Calgorithm Based on Improved LSTM Neural Network GAO Sheng, XU Peihua, CHEN Zhenghong, CHENG Chi (112)

### ♦ Meteorological Forecast of Power Grid Load

Application of EEMD-BP Method Based on Meteorological Factors in Grid Electricity Consumption Forecast
ZHANG Zhen, XIAO Ying, REN Yongjian, CHEN Zhenghong (122)
Prediction of Summer Daily Maximum Power Load in the Hubei Section of the Yangtze River Economic Belt Based on Meteorological Factors
WANG Lijuan, REN Yongjian, WANG Junchao, OUYANG Wei (133)
Day-Ahead Forecast of Electrical Load Based on EMD-MLP Combination Model
LIU Luyao, CHEN Zhigang, SHEN Xinwei, WU Jinsong, LIAO Xiao (143)
Meteorological Service Indicators of Power Consumption in Yinchuan City Based on Risk Warning
······ XIAO Yunqing, CHENG Yao, MA Shaojun, REN Baifan, ZHAO Teng (157)
Application of Relative Risk of Meteorological Factors in Power Grid Electricity Load Forecasting
QU Xiaoli, YOU Qi, LI Wenqing, YANG Linhan, WANG Jie, ZHANG Jinman, GAO Zetian, ZHOU Shuo (166)

### ♦ Coping with Power Meteorological Disasters

Effect of Wind Loads on Towing Response of Submersible Floating OWT ZHAO Yebin, REN Jianyu, LE Conghuan (176
Enhanced Design of Wind Protection for 500 kV Overhead Transmission Lines in Coastal Strong Wind Areas
Analysis of the Distribution Characteristics of Mountain Fires Based on the Disaster Data of Hubei Transmission Lines

### ♦ Information

Advertisement List (20)	)4)
-------------------------	-----