CONTENTS

Proceedings of 2022 29th International Conference on Nuclear Engineering Volume 12

Innovative and Smart Nuclear Power Plant Design

ICONE29-88894 ......................................................... V012T12A001
Evolution of the Evening Method of Coolant Flow in the Large Core Based on Patent History
    Wenchi Yu and Hao Fu

ICONE29-90341 ......................................................... V012T12A002
Study on Application of Hollow Springs in Seismic Isolation in Nuclear Power Plants
    Nannan Hou and Jianling Dong

ICONE29-90555 ......................................................... V012T12A003
Seismic Isolation Scheme Design of 200MW Nuclear Heating Reactor
    Nannan Hou and Jianling Dong

ICONE29-90923 ......................................................... V012T12A004
Design Overview for Process System of Chlorine Production by Electrolyzing Saline in the Nuclear Power Plant
    Rui Wang, Kehao Zeng, Kechen Xu, Hongmei Yan, Wei Bai, and Jing Li

ICONE29-91244 ......................................................... V012T12A005
Preliminary Research on Digital Twin of Main Thermodynamic Systems in Nuclear Power Plant for Thermal Performance Monitoring
    Xun Zhang, Jianfei Hou, Heino Zimmermann, and Zhaohui Xiang

ICONE29-91533 ......................................................... V012T12A006
Research and Application of 3d Visualization Digital Twin System for Ultrasonic Testing of Key Equipment in NPP
    Zheng-Hui Yang, Yi Zhang, Hao Wang, and Ya-Nan Zhang

ICONE29-91570 ......................................................... V012T12A007
Research on Smart Nuclear Power Construction Based on Digitalization and System Engineering in TNPS
    Qiang Yang

ICONE29-91707 ......................................................... V012T12A008
Comparative Study on Creep-Fatigue Damage Assessment Between RS Procedures and a Full Inelastic Analysis
    Antony M. Hurst, Louis C. W. Chang, and Nak-Kyun Cho

ICONE29-91714 ......................................................... V012T12A009
Design and Validation on Preload of Manway Bolt for Pressurizer of Nuclear Power Plant Under Hydrotest Condition
    Tao Chen, Guangming Xiong, Guanhua Fu, Xiaolong Zhao, Defu Wang, Yongqiang Zhang, and Enming Liang

ICONE29-91827 ......................................................... V012T12A010
A Knowledge Retrieval Method for Layout Design of Nuclear Power Reactor Coolant System Based on Hypernetwork and Deep Structured Semantic Model
    Bin Wang, Bingtao Hu, Zhifeng Zhang, Yixiong Feng, and Jianrong Tan

ICONE29-91886 ......................................................... V012T12A011
Thermal Performance Monitoring and Analysis of Nuclear Power Plant
    Jianfei Hou, Xun Zhang, Heino Zimmermann, and Zhaohui Xiang
ICONE29-91926 .......................................................... V012T12A012
Research on Electromagnetic Interference Protection of Nuclear Power Unit Equipment Under the Application of New Wireless Technology in Smart Nuclear Power
Bing Chen, Guidan Zhao, Zhiping Zhong, Yong Zheng, and Charlie Yu

ICONE29-91928 .......................................................... V012T12A013
Research and Application of Automatic Modeling Technology for Mechanical Analysis of Nuclear Power Pipelines Based on PepS
Xiao Cheng Gong, Xian Jing Jin, and Yu Zhang

ICONE29-91950 .......................................................... V012T12A014
Study on a High Reliability Power Supply Scheme for Distributed Control System of Nuclear Power Plant
Tian Hongpeng and Zhang Lin

ICONE29-92061 .......................................................... V012T12A015
Research on Accident Diagnosis Method of Reactor System Based on XGBoost Using Bayesian Optimization
Yongchao Liu, Xiangyu Li, Biao Liang, Bo Wang, Sichao Tan, and Puzhen Gao

ICONE29-92073 .......................................................... V012T12A016
Development and Application of Modular Information Management System for Nuclear Power Engineering
Xiaocheng Gong, Xinwei Xu, and Wei Zhou

ICONE29-92101 .......................................................... V012T12A017
Research and Application on Drawing Method of Optimizing for the Intelligent Process System Flow Chart of the Nuclear Power
Haiyan Chen, Licheng Tian, Zhigang Zhou, and Jiaojiao Yang

ICONE29-92110 .......................................................... V012T12A018
Optimization the Protection Configuration of the RAM Excitation System of the Nuclear Power Plant
Wang Lin, Zhao Yan-jun, and Zhang Xing-Zhen

ICONE29-92126 .......................................................... V012T12A019
Risk Monitoring of Spurious Safety Injection in Pressurized Water Reactor Nuclear Power Plants
Yu Huang, Zhenying Jiao, Zhenying Wang, Taike Wang, Kaihe Kong, Min Li, and Jianwen Zhang

ICONE29-92174 .......................................................... V012T12A020
Research on GIL Fault Diagnosis and Location Method Based on Partial Discharge and Vibration Monitoring
Sen Liu

ICONE29-92207 .......................................................... V012T12A021
Effect of Oxidizing All-Volatile Treatment on Alumina-Forming Austenitic Oxidation Behavior in Supercritical Water
Gao Yang, Dayun Sun, Shuo Cong, Lefu Zhang, and Xianglong Guo

ICONE29-92260 .......................................................... V012T12A022
Intelligent Monitoring and Diagnosis of CCWS Heat Exchanger For Nuclear Power Plant
Qian Ming, Jian Hu, and Wu Wang

ICONE29-92491 .......................................................... V012T12A023
Research on LOCA Dynamic Analysis Model of Reactor System
Shuai Liu
<table>
<thead>
<tr>
<th>ICONE29-92613</th>
<th>V012T12A024</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research on Cold End Optimization of Water Supply Mode of Expanded Unit System of Circulating Water System in Coastal Nuclear Power Plant</td>
<td>Fang Lin, Jiale Jian, Fang Wang, and Jia Yang</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ICONE29-92728</th>
<th>V012T12A025</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Novel PID Self-Tuning Method Based on Closed-Loop Identification Used in Nuclear Power Plants</td>
<td>Pengbin Zhang, Kunpeng Xing, Tao Zou, Zhijia Yang, Jingyang Wang, and Hongrui Wang</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ICONE29-92770</th>
<th>V012T12A026</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digital Twin-Driven Development of Online Monitoring and Data Management Systems in TMSR-SF0</td>
<td>Wen-Qian Liu, Li-Feng Han, and Li Huang</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ICONE29-92804</th>
<th>V012T12A027</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study on Reactor Vessel Water Level Measurement Method for Emergency Decision-Making of Nuclear Power Plant</td>
<td>Yanming Shi and Zhenying Wang</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ICONE29-92866</th>
<th>V012T12A028</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research on Automatic Arrangement Method of Process Piping in Nuclear Power Plant</td>
<td>Jincheng Su, Jing Xue, Xiaopan Jia, and Zhenjie Gu</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ICONE29-92890</th>
<th>V012T12A029</th>
</tr>
</thead>
<tbody>
<tr>
<td>First-Principles Study on Adsorption Reaction of Oxygen Molecules on Fe (110) Crystal Surface</td>
<td>Zeng Xiaochuan, Li Xuejun, He Cuizhu, and Hu Qiaodan</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ICONE29-92900</th>
<th>V012T12A030</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>ICONE29-92912</th>
<th>V012T12A031</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application of Industrial Digital Twins in Nuclear Power Plant</td>
<td>Jing Xie, Yueming Fu, Xun Zhang, Hengdi Zhang, Jianfei Hou, Xiangjie He, Fei Yu, and Run Lin</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ICONE29-92994</th>
<th>V012T12A032</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research and Development of Three-Dimensional Digital Operation Management Platform for NPPs</td>
<td>Hao Wang, Li-Cheng Tian, Jia Lin, and Hui-Zhen Huang</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ICONE29-92995</th>
<th>V012T12A033</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>ICONE29-93009</th>
<th>V012T12A034</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research and Development of Default Value Analyses and Management Platform for Nuclear Power Plant Control System</td>
<td>Hongbin Zhao, Zhiyong Liu, Hemin Liu, and Weifang Liu</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ICONE29-93093</th>
<th>V012T12A035</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design Improvement of the Discharge Proposal Preventing SG Overfill After SGTR in HPR1000 PWR</td>
<td>Qinghua Li, Jun Fang, Yafei Li, Bin Zhao, and Guangfei Wang</td>
</tr>
</tbody>
</table>
Design of Ecological Interface for Nuclear Power Plant Based on Cognitive Work Analysis
Qike Yan, Feng Cheng, Hui Wu, and Junzhou He

Application of Detail Design Data of Nuclear Power Plant in Project Construction and Operation Under the Background of Digitization
Huizhen Huang, Licheng Tian, and Jiafu Yan

Joint Extraction of Entities and Relations Based on Hybrid Feature Representations
Xing Kun-peng, Xue Yang, Kong De-yan, Dong Wei, and Ji Zhen-yan

Research on Immersive Simulation of Key Equipment Process Flow in Nuclear Power Plant Based on VR Technology
Yi Zhang, Zhi-Gang Zhou, Hao Wang, and Zheng-Hui Yang

Feasibility Analysis of Intelligent Instrument Application In Nuclear Power Shuzhi Chen, Meiliang Huang, Qimeng Shen, Jie Chen, Xiaqiang Liu, Junli Wang, Weidong Wang, and Yueming Fu

Research on Structural Optimization Technology of Fuel Assembly Parts Based on Topology and Optimal Design Huabin Fan, Shiyin Xu, and Huili Jia

A Collaborative Edge Computing Framework for Predictive Maintenance in Nuclear Power Plants Yixiong Feng, Yong Wang, Bingtao Hu, Zhaoxi Hong, and Jianrong Tan

Study of Breeding Performance in a Heat Pipe Cooled Traveling Wave Reactor With Th and U Fuels Kunfeng Ma and Po Hu

Research and Application Innovation of Digital Twin Technologies for Key Equipment of Nuclear Power Plants Dong Zhao and Fenghua Guan

The Core Design Modifications for Stirling Thermal-Electric Integrated Micro Reactor Xia Yan, Xuedong Ou, Mingqiang Lin, Jian Mou, Shaolei Sun, Chunyun Chi, Chunqing Zhao, and Qin Zhou

Design and Development of Intelligent Replacement Robot for Radioactive Spent Filter Element in NPP and Its Performance Validation Yongjun Ge, Yishan Lin, Honghu Xie, and Jinchun Yang