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東方電氣評論

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基础研究

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DONGFANG ELECTRIC REVIEW

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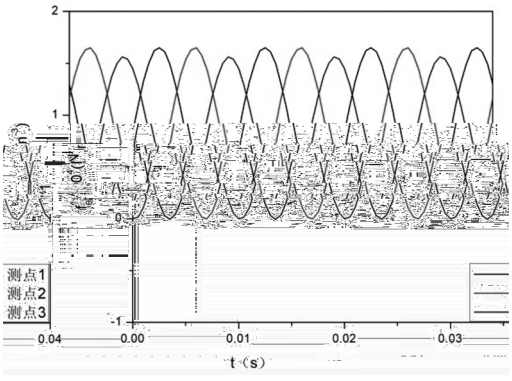

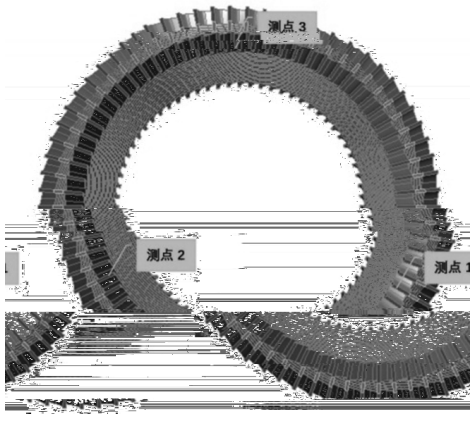

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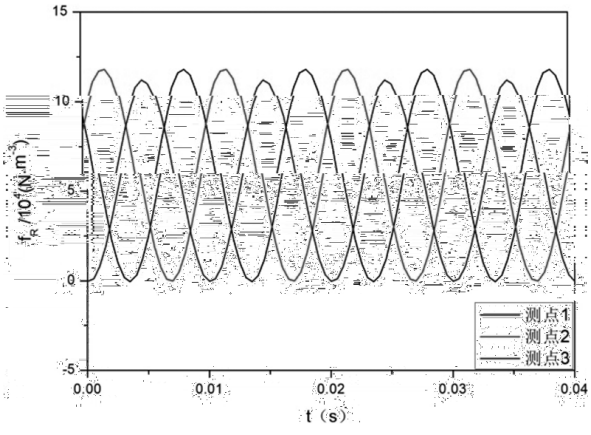

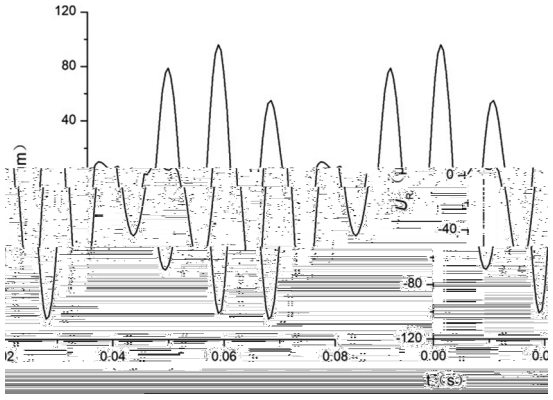
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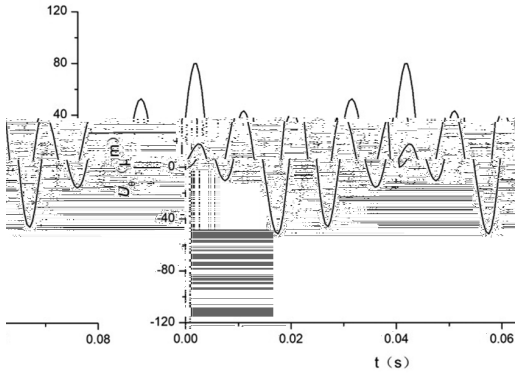
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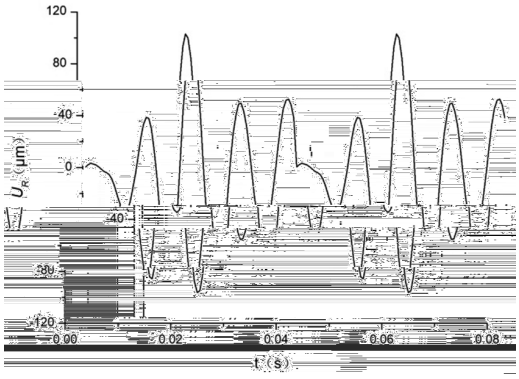
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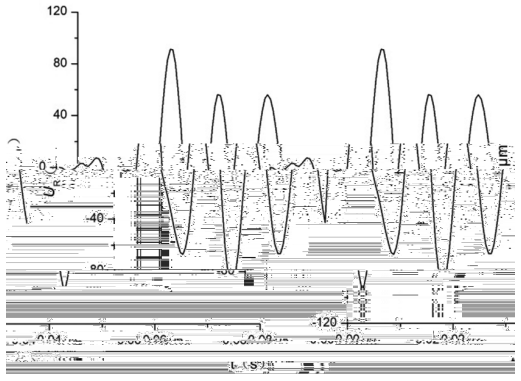
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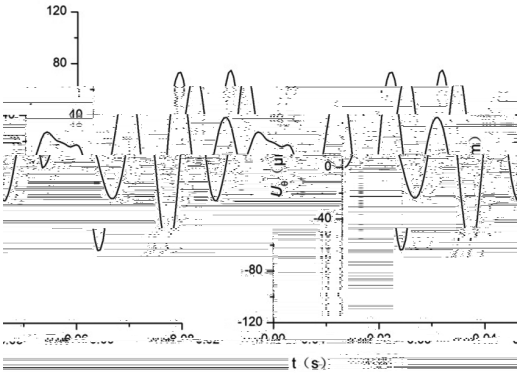
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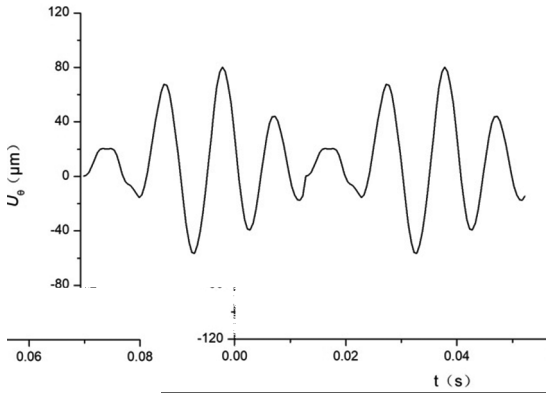
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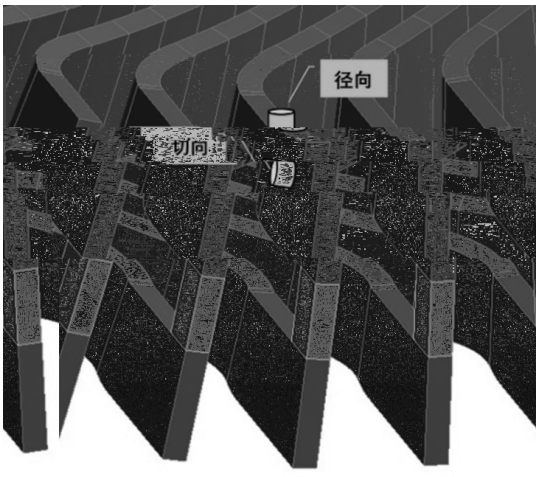
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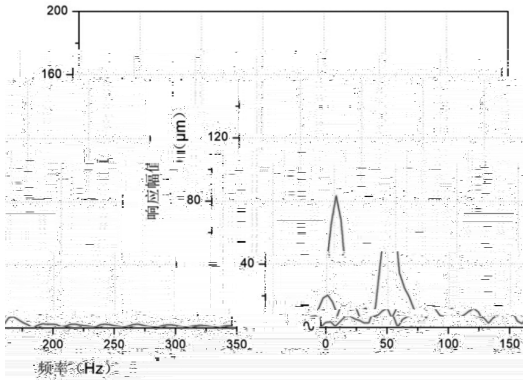
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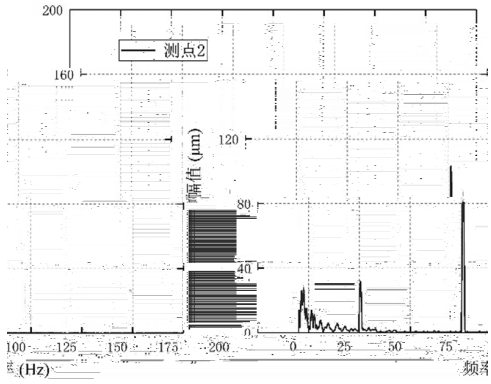
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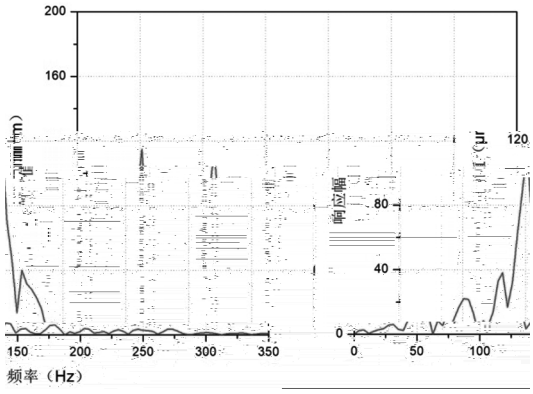
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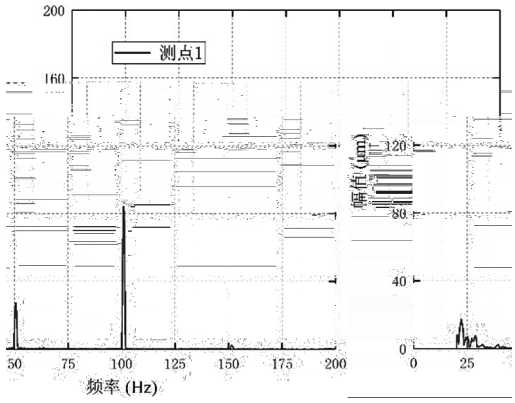
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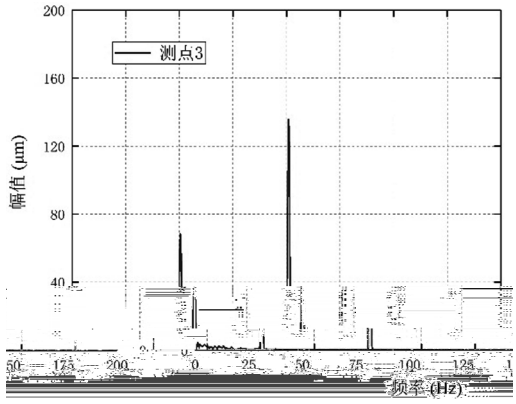
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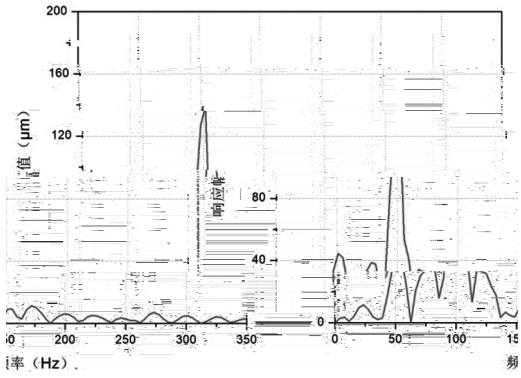

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One-dimensional Thermal Stress Calculation based on Cylinder Model

CHEN Yanqiang YANG Ling

Abstract: In this paper, one-dimensional thermal stress calculation methods of finite and infinite cylindrical models are studied, and the differences between the assumptions of infinite and infinite cylindrical models are clarified, which lays a foundation for subsequent thermal stress calculation models of rotors. The temperature and stress components of the cylinder are compared between the difference method and the finite element method, and the temperature and thermal stress of a high pressure rotor are calculated by taking it as an example. The results show that the self-programmed calculation speed is fast and the calculation accuracy meets the requirements of engineering application, which provides support for on-line monitoring of rotor thermal stress.

Key words: thermal stress; finite difference method; finite element method

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$F \quad \frac{\lambda}{\rho C}\frac{\Delta \tau}{\Delta r}$

$t' \quad (\quad k)t \quad kt$

$k \quad \frac{r \quad \Delta r}{r \quad \Delta r} \quad F$

$t' \quad \frac{m\,t \quad m\,t \quad m \quad m \quad m \quad t}{m}$

m r Δr

m r B

$m \quad \frac{}{F} \quad r \quad \Delta r$

$B \quad \frac{\alpha \Delta r}{\lambda}$

$T = \frac{R}{R} t$

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$\sigma \quad \frac{E\beta}{\upsilon} T \; t$

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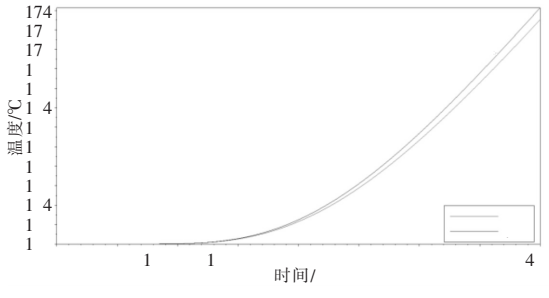

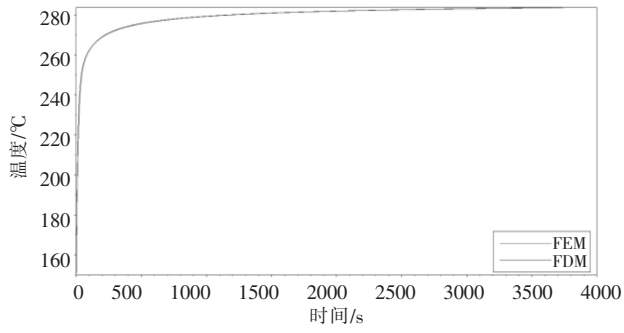

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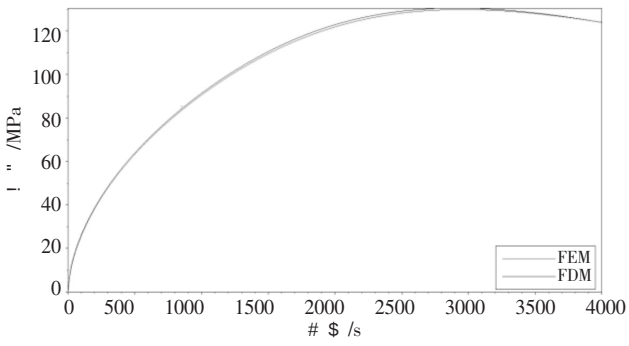

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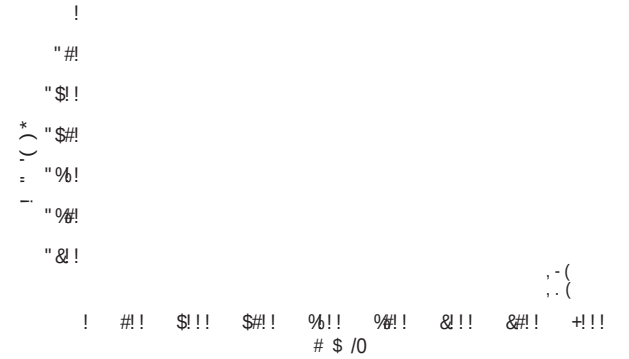

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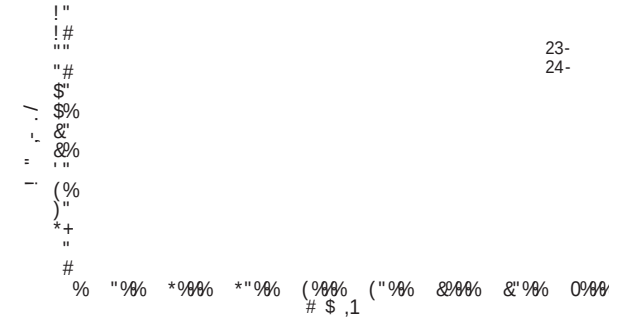

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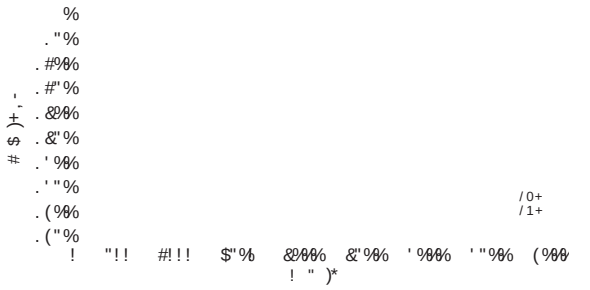

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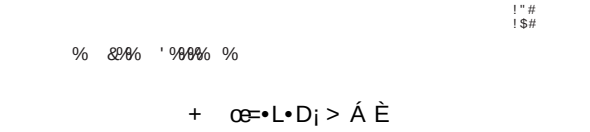

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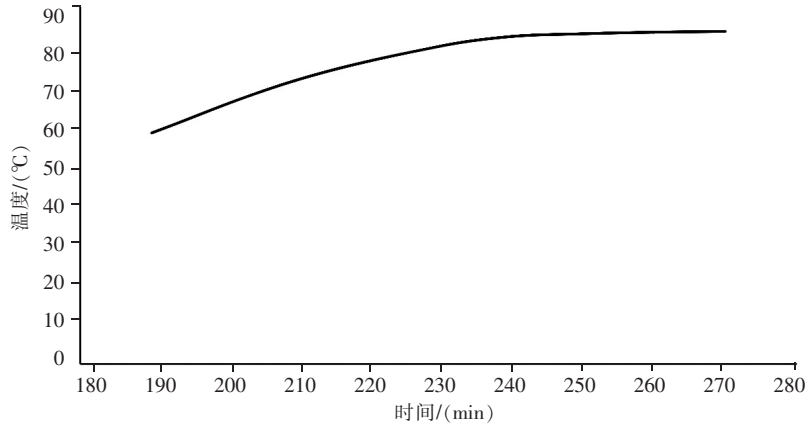
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Analysis of Decommissioned Wind Power Blade Recycling System

LU Tao XUE Linjia HU Shilei ZHUANG Yuanfa DENG Yi

Abstract: The recycling of decommissioned wind power blades is the key to the green and sustainable development of wind power throughout its life cycle. This paper summarizes the relevant research results in the field of decommissioned wind power blade recycling. The maturity, advantages and disadvantages, ecological and economic benefits of each technology path are analyzed systematically and comprehensively. It provides support for the overall promotion of the recycling and utilization of decommissioned wind power blades, the layout of the industry according to local conditions, and helps the construction of the wind power industry waste recycling system.

Key words: decommissioned wind turbine blades; physical recycling; chemical recycling; pyrolysis recycling; collaborative disposal of cement kilns; fluidized bed; incineration

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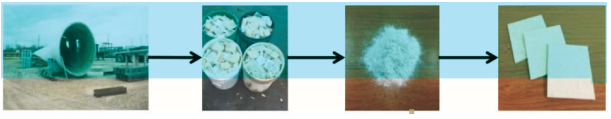

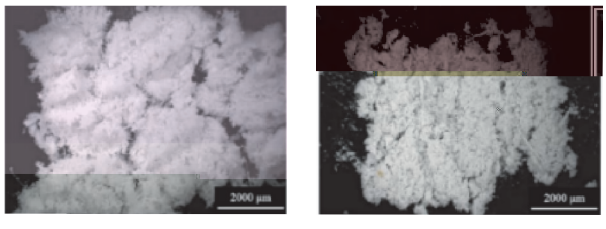
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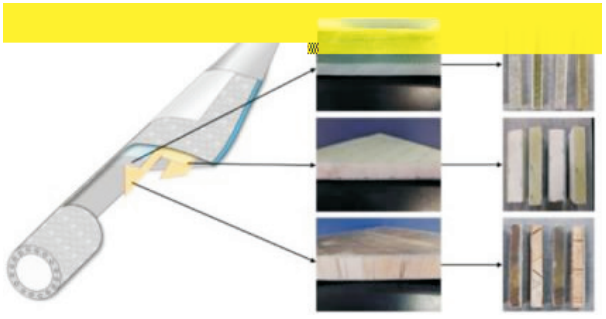

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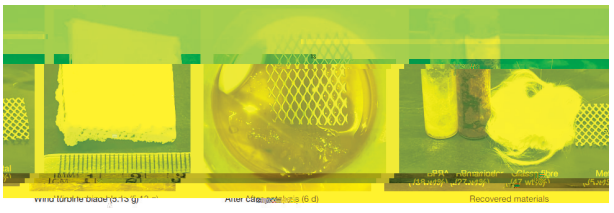

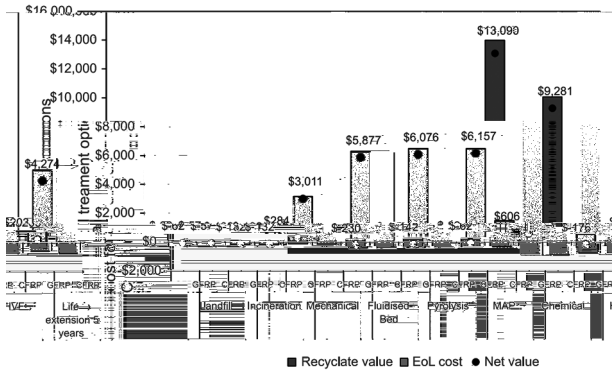
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$230
$203
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Incineration
Mechanical
Fluidised Bed
Pyrolysis
MAE
Chemical
Life extension 5 years
■ Recyclate value ■ EoL cost ● Net value

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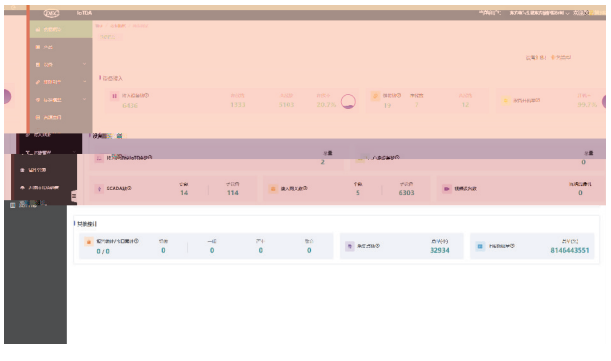

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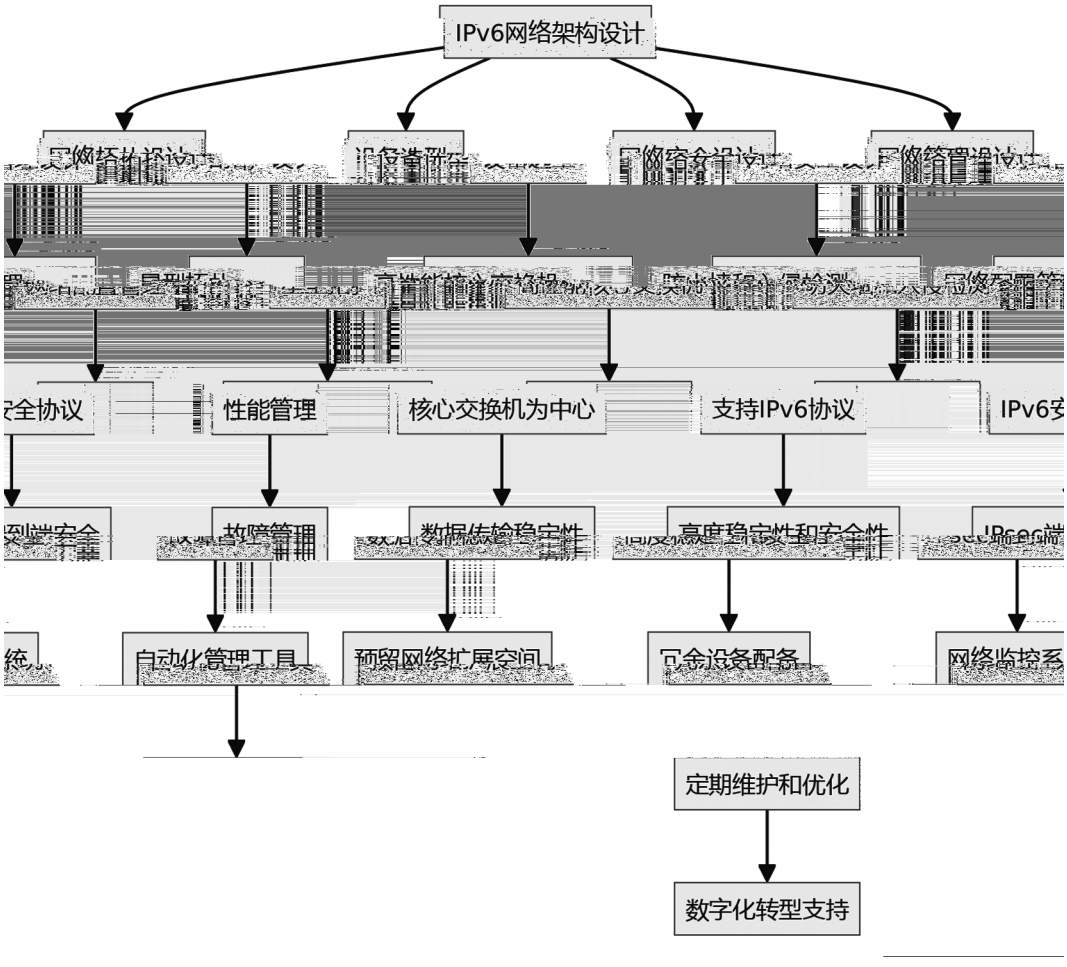
IPv Network Design for Digital Factory in the Nuclear Power Equipment Industry

CAO Zeqi

Abstract: In the burgeoning field of nuclear power equipment manufacturing, the advent of digital factories heralds a transformative era, leveraging the prowess of IPv technology to revolutionize network infrastructure. This study delves into the intricacies of designing an IPv network tailored for the digitalization of nuclear power equipment factories, encapsulating a blend of technological innovation and strategic foresight. The research commences with an exploration of the historical trajectory and current landscape of digital factories within the nuclear sector, underscoring the imperative for a robust, scalable, and secure network framework. IPv , with its expansive address space and enhanced security features, emerges as a cornerstone in this architectural endeavor. The methodology encompasses a meticulous analysis of network architecture, security protocols, and management strategies, enriched with detailed case studies from leading nuclear equipment manufacturers. These case studies illuminate the practical implementation and operational nuances of IPv networks, offering a nuanced perspective on their efficacy and challenges. The findings reveal a promising trajectory for IPv integration, promising not only enhanced connectivity and security but also paving the way for future innovations in smart manufacturing. As the nuclear industry strides towards a more interconnected and intelligent future, the role of IPv in shaping this evolution is both profound and indispensable.

Key words: nuclear power equipment; digital factory; IPv network design; smart manufacturing; network security

2 IPv6


IPv6网络架构设计
性能管理
核心交换机为中心
支持IPv6协议
自动化管理工具
预留网络扩展空间
定期维护和优化
数字化转型支持

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U4~4 ¶ • @ë@ÎæL• ”K‘ ³ M4 +± ÔK_%~ Æ&’ â í ”x 2(4 0v ¶ • @ë4 C ”E Á50;~Fô*U ' » çêù +± ¶ • | @Û¯ çê ù” ý È0] 0 +± ¶ • EG %9 # ”4~4 +þÔ2(4 +± ' /ø Œ\ : C4g +±”° 6* L Ë # +þÔ4~4 'ã . ”÷ # þ(Ý £ 1)3 / e ò â ”-› 4~4 +±/` ÇDý=y %×Ò

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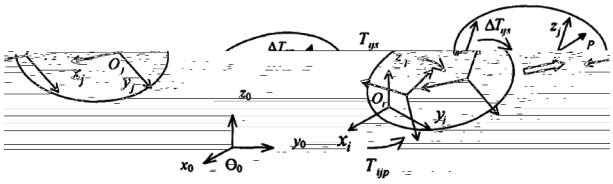
618000

Research on Analysis and Control Technology of Contour Error in Multi Axis Machining of Blade Parts

WU Jiakui CHEN Daoquan HE Wei YUAN Shaobin LV Jianhao

Abstract: This article mainly discusses the error control technology for CN

B B



B B

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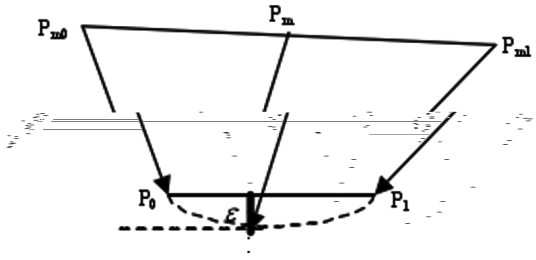
P x y z A B P x y z A B P P′



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P x y z A B P x y z A B

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P P P x y z A B

$$\begin{cases} x\ x\ x \\ y\ y\ y \\ z\ z\ z \\ A\ A\ A\ / \\ B\ B\ B\ / \end{cases}$$

P P x y z

$$\begin{cases} x\ x\ L\ B\ A \\ y\ y\ L\ A \\ z\ z\ L\ B\ A \end{cases}$$

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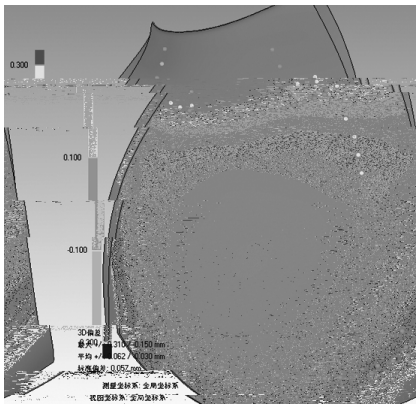
0.300
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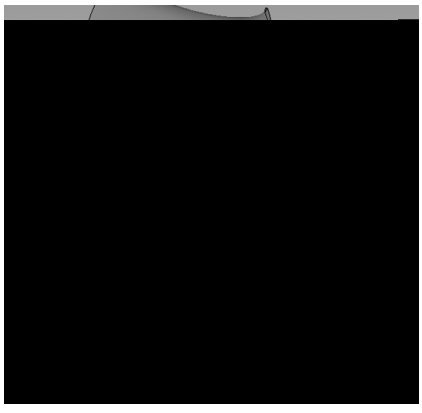

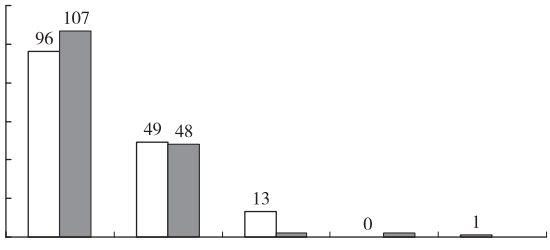
96
107
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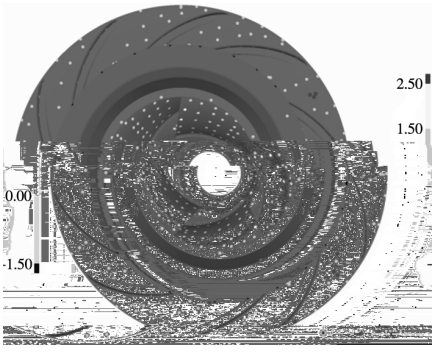
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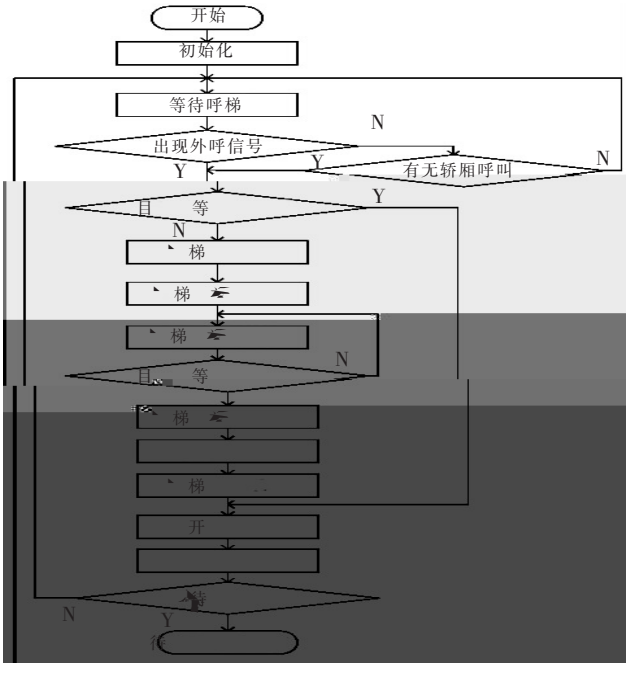
开始
初始化
等待呼梯
出现外呼信号
有无轿厢呼叫
等
梯
开
N
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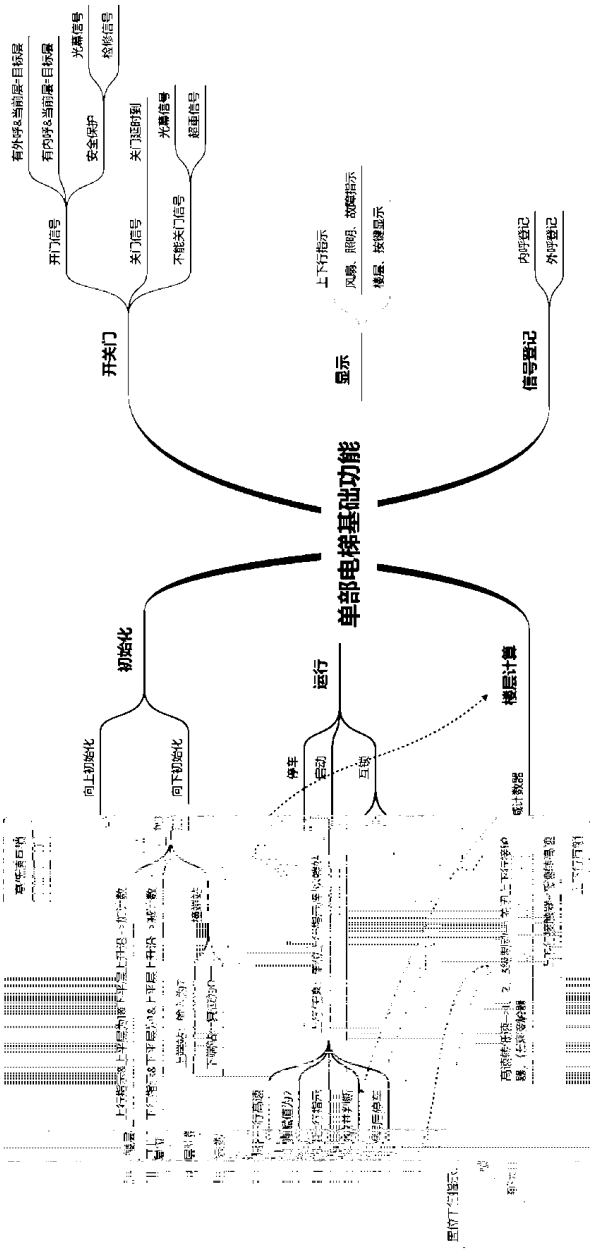
1


单部电梯基础功能
开关门
开门信号
关门信号
不能关门信号
有外呼&当前层=目标层
有内呼&当前层=目标层
安全保护
关门到时
光幕信号
超重信号
光幕信号
检修信号
显示
上下行指示
风扇、照明、故障指示
楼层、按键显示
信号登记
内呼登记
外呼登记
初始化
向上初始化
向下初始化
运行
停车
启动
互锁
楼层计算

2

S F F

S F F F F

S S S S S S S F S S

F F

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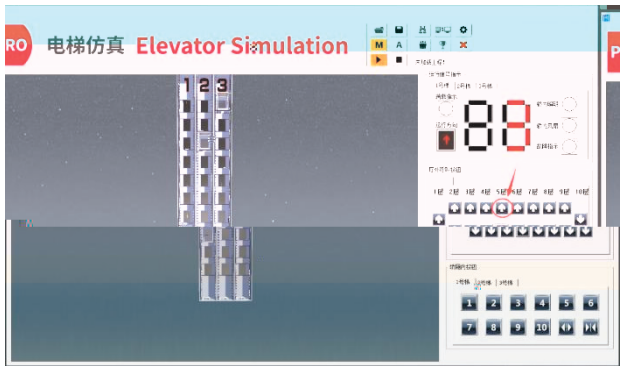

10L		10L		10L ↓	-10	10
9L		9L		9L		9
8L		8L ↑	8	8L		8
7L		7L		7L		7
6L		6L		6L		6
5L		5L		5L		5 ↑
4L		4L		4L		4
3L ↑	3	3L		3L		3
2L		2L		2L		2
1L		1L		1L		1
1号梯到外呼距离 Z1=Y-X1	6-3=2	2号梯到外呼距离 Z2=Y-X2	6-8=-3+20=17	3号梯到外呼距离 Z3=Y-X3	6- (-10) =16	

P S F G

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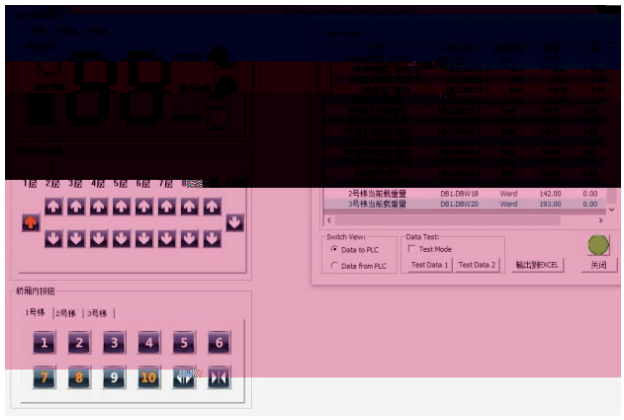

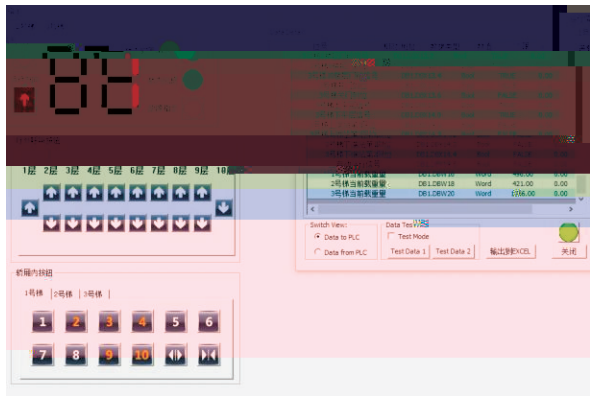

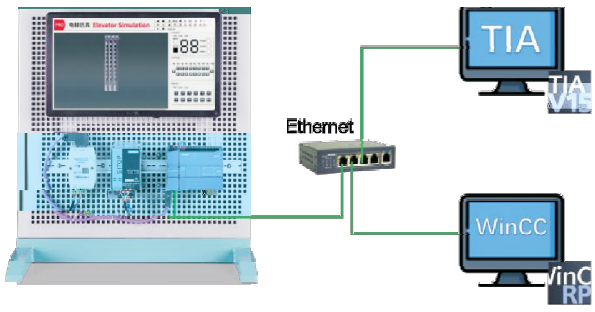

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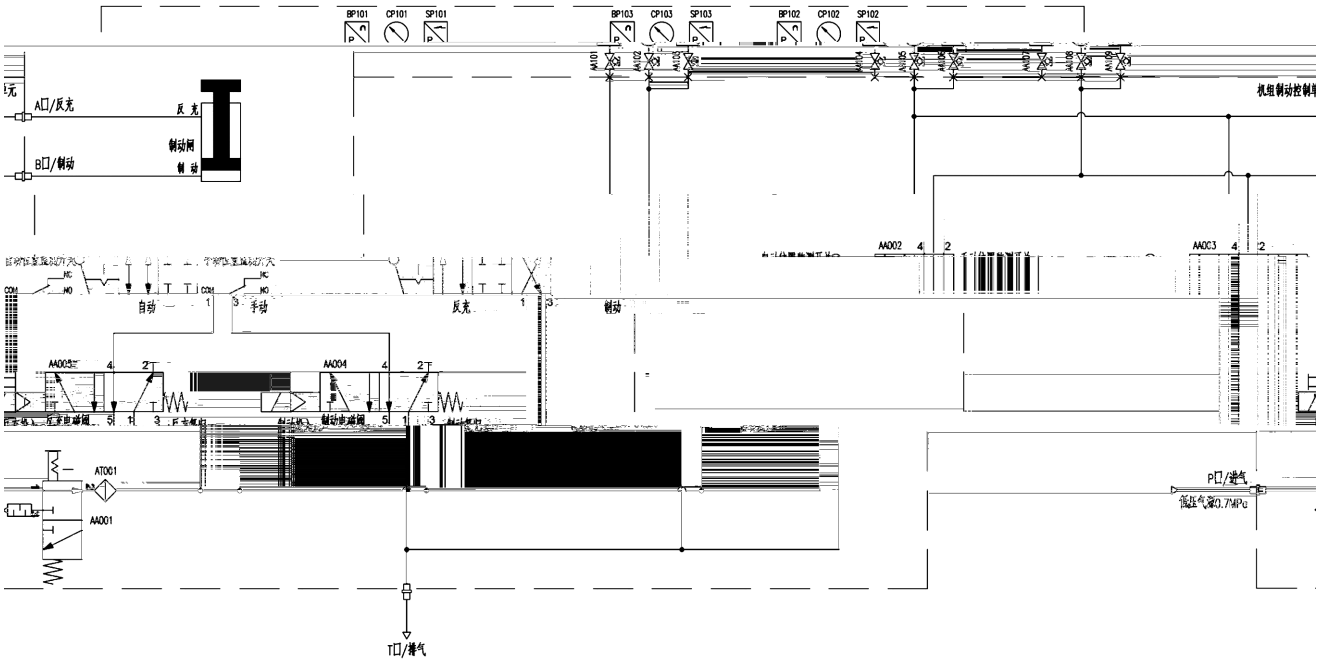
618000

Mechanical Braking Control System Design for Pumped Storage Unit

YAN Hao LI Jing

Abstract: The mechanical braking system of pumped storage units adopts a pneumatic brake system, which controls the compressed air entering and exiting the upper and lower chambers of the brake, and operates the brake to lift and lower, achieving the input and output functions of the unit s mechanical braking. The control air circuit mainly consists of an electromagnetic directional valve and pipelines. The control circuit switches the valve position air circuit by controlling the coil action of the electromagnetic directional valve, thereby controlling the on/off of the brake. The control circuit also needs to ensure the function of signal blocki


BP101
CP101
SP101
BP103
CP103
SP103
BP102
CP102
SP102
A口/反充
B口/制动
反充
制动阀
制动
自动
手动
反充
制动
AA002
AA003
AA005
AA004
AT001
AA001
P口/进气
T口/排气

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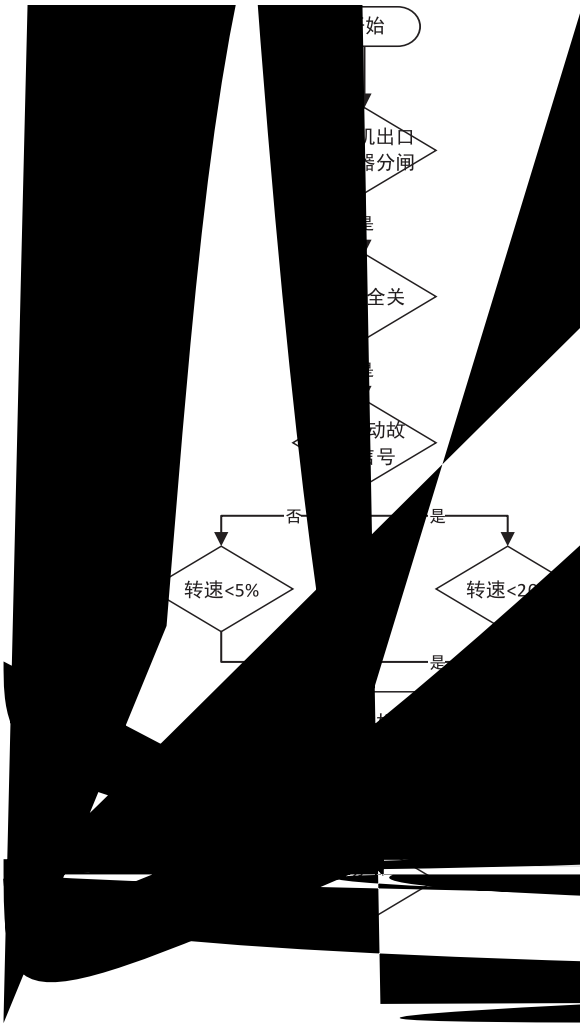
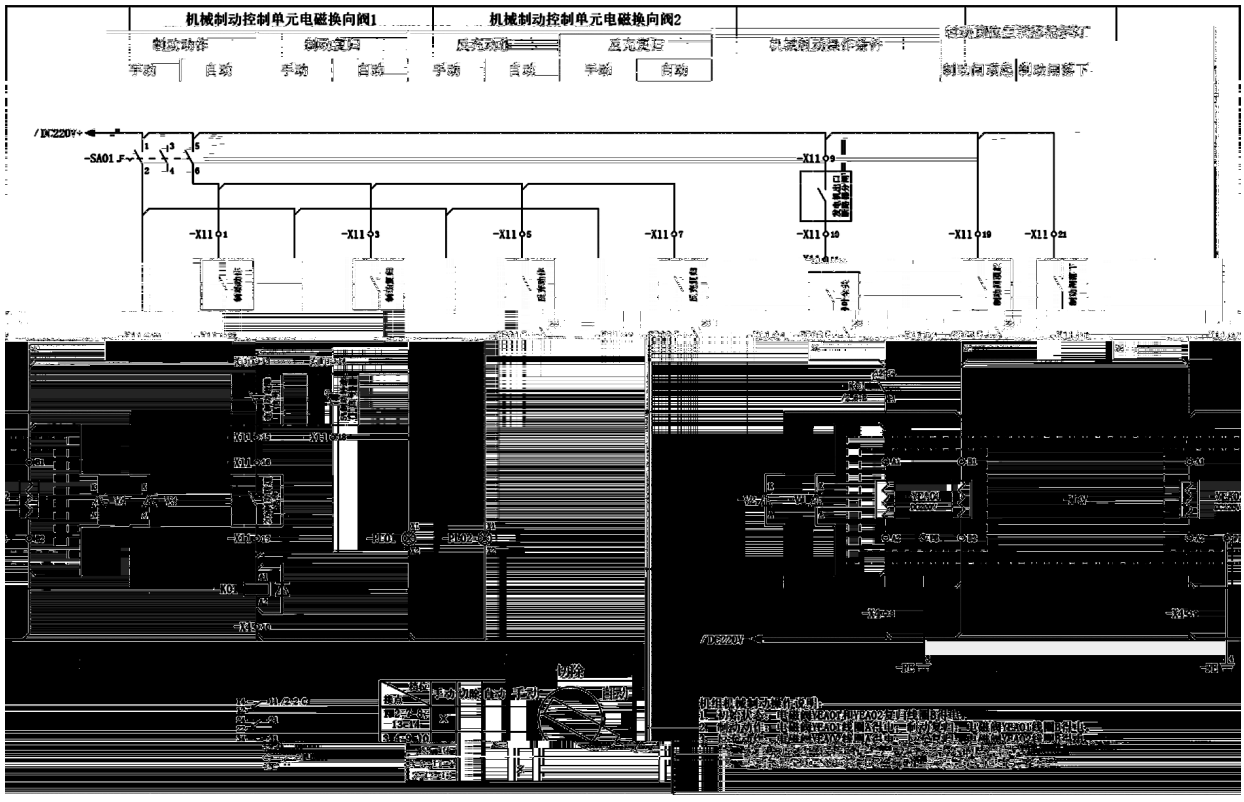



机械制动控制单元电磁换向阀1
机械制动控制单元电磁换向阀2
制动动作
制动复归
反充动作
反充复归
手动
自动
手动
自动
手动
自动
手动
自动
-SA01
-X11:1
-X11:3
-X11:5
-X11:7
-X11:9
-X11:10
-X11:19
-X11:21

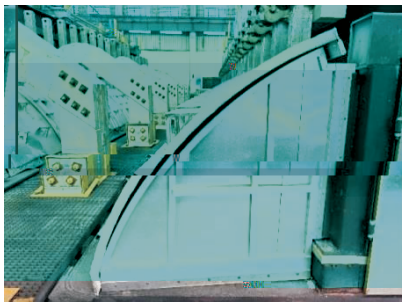
4

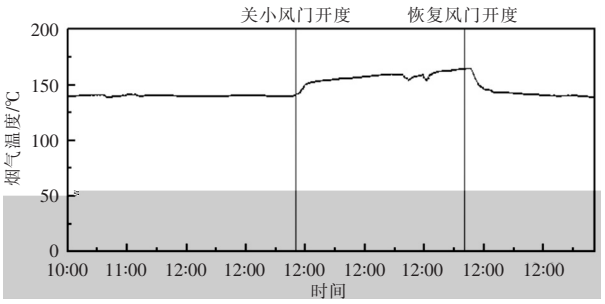
5

1. 643001 2. 611731

1

2




关小风门开度
恢复风门开度
200
150
100
50
0
烟气温度/℃
10:00
11:00
12:00
12:00
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12:00
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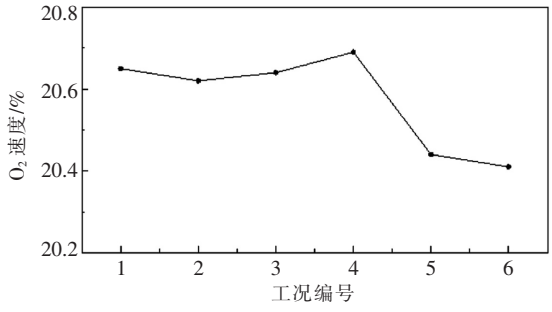
12:00
12:00
时间

3


20.8
20.6
20.4
20.2
O_2速度/%
1
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3
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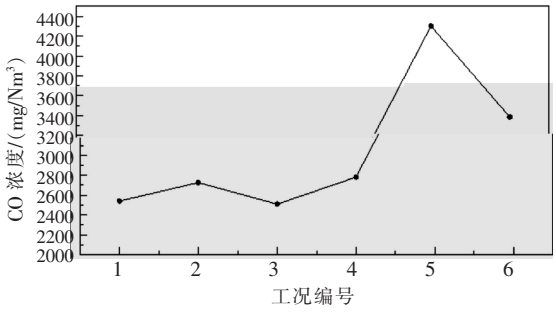
4400
4200
4000
3800
3600
3400
3200
3000
2800
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2400
2200
2000
CO 浓度/(mg/Nm³)
1
2
3
4
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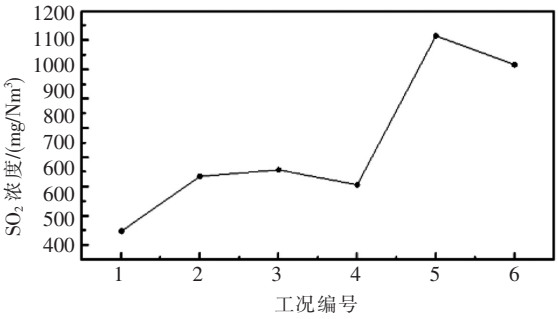
6
工况编号


1200
1100
1000
900
800
700
600
500
400
SO_2浓度/(mg/Nm³)
1
2
3
4
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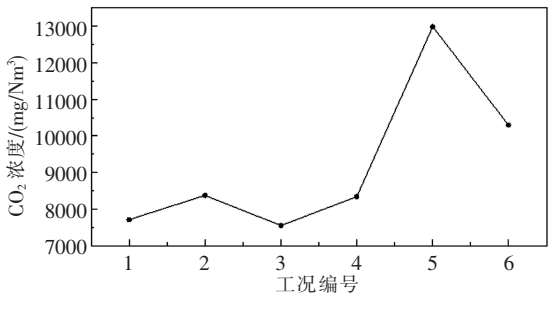
工况编号


13000
12000
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10000
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8000
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CO_2浓度/(mg/Nm³)
1
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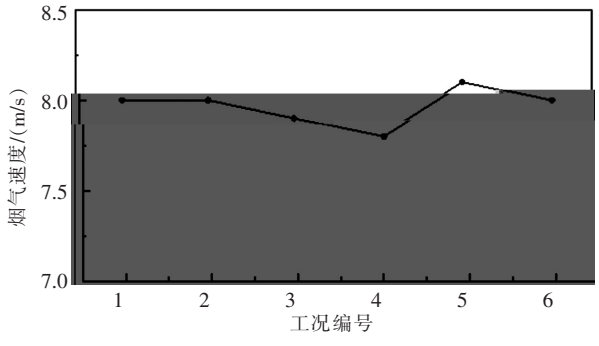
工况编号


8.5
8.0
7.5
7.0
烟气速度/(m/s)
1
2
3
4
5
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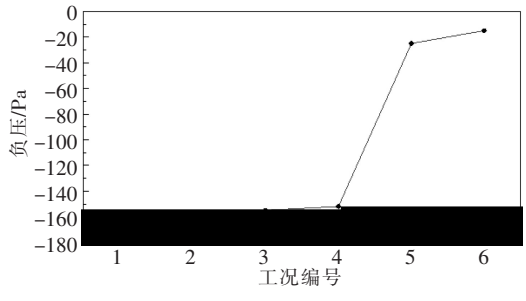
工况编号


0
−20
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负压/Pa
1
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工况编号

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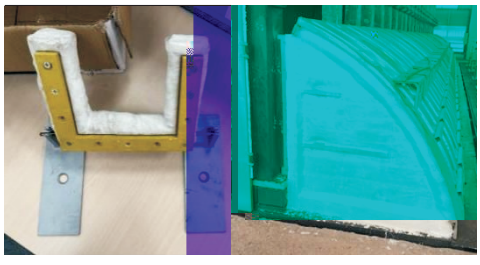

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Research on Welding Deformation of Wind Power Racks

LIU Mingchao XU Jian WANG Xiaoyu

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Abstract: Welding deformation not only affects the size of the wind power

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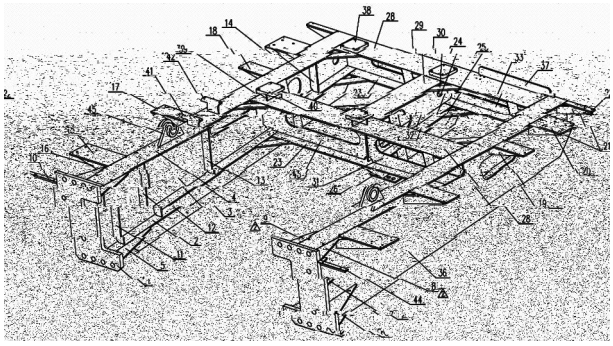

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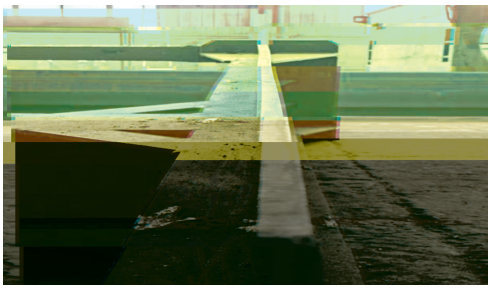

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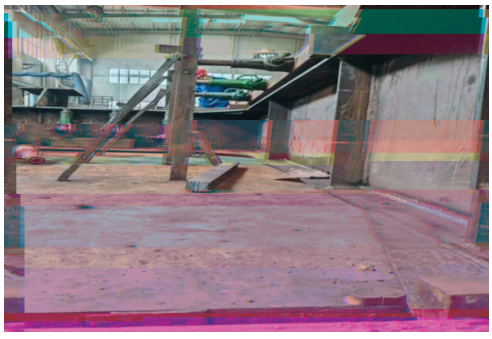

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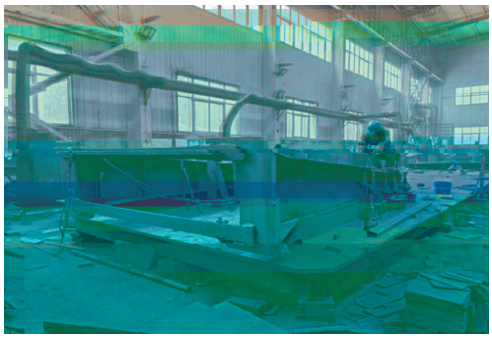

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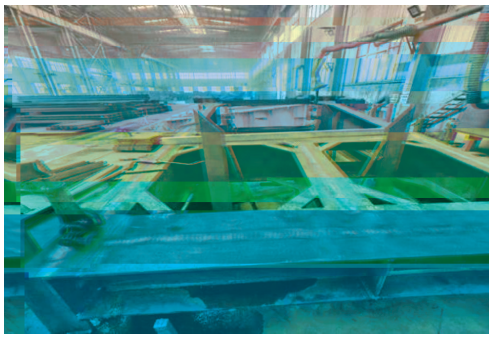

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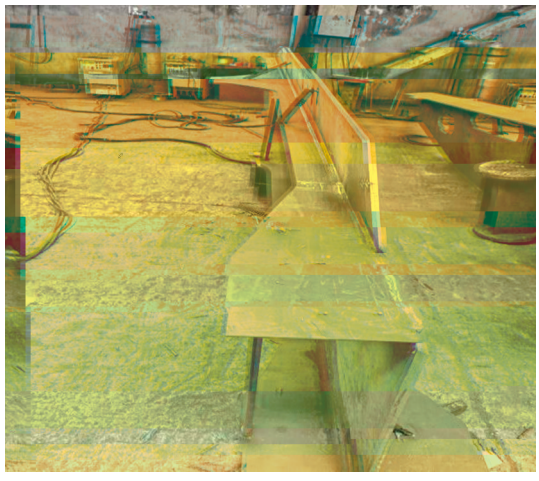

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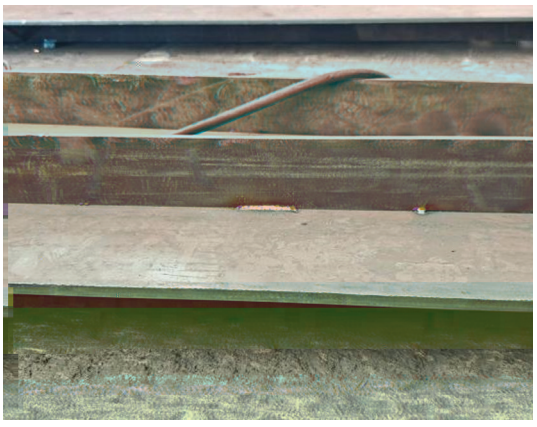

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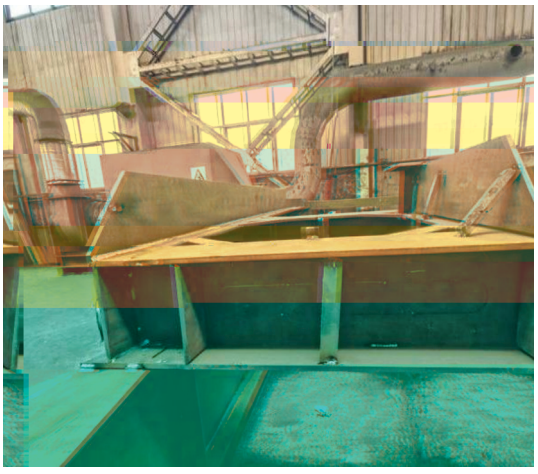

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