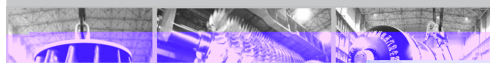




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(Quarterly, since 1987)

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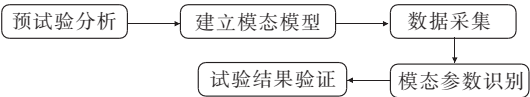
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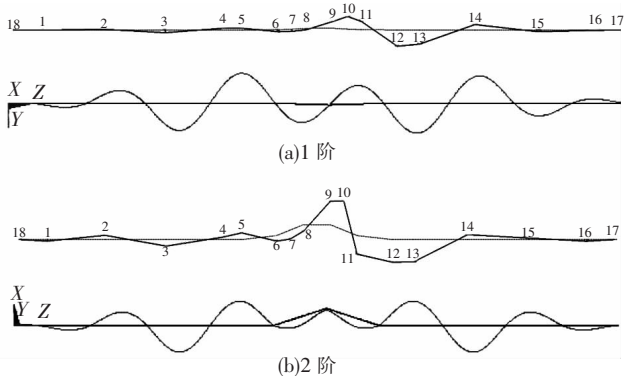
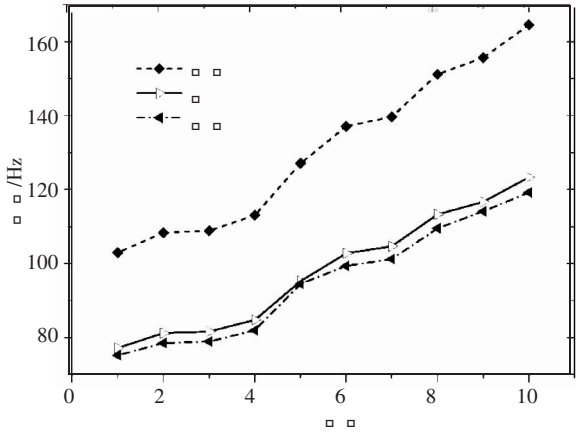
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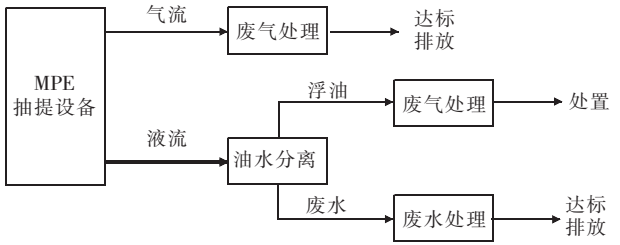
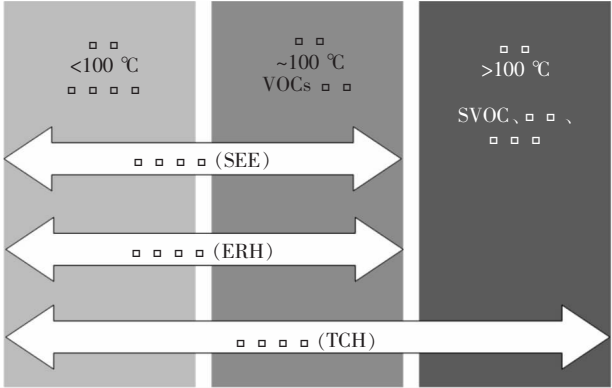
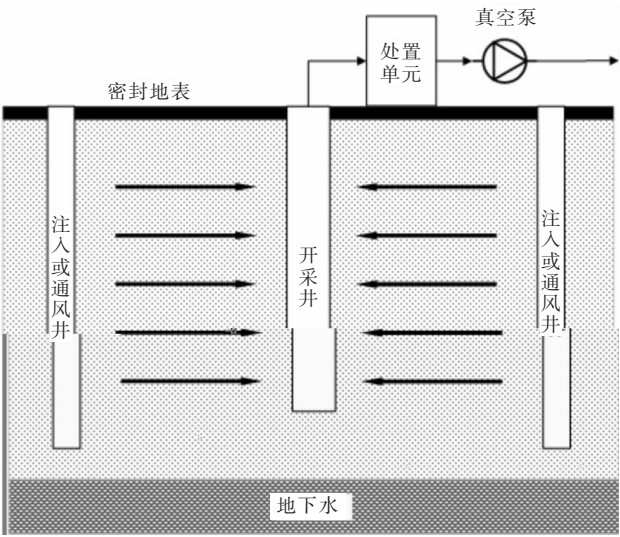
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Analysis of Soil Remediation Technology

TIAN Jian, WU Jiahua, HU Chunyun, XIE Fei, ZHANG Yuan

Abstract: This article mainly introduces the current situation of soil pollution and the market capacity of soil remediation in China, summarizes the main existing soil remediation technologies at home and abroad, and evaluates and compares these methods. The future development of soil remediation is also prospected in this article.

Key words: soil pollution; soil remediation; heavy metals; organic pollutants



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Study on the Effect of Cracks in Catalyst Layer on the Durability of PEMFC Membrane Electrode Assembly

XIE Guangyou , ZHU Leifeng , LI Ting

Abstract: Cracks are easily generated in catalyst layer due to the thermal stress between surface and inside during catalyst ink coated on membranes. Catalyst layer containing cracks in different degree of severity are prepared in this paper. The effect of cracks on the durability of membrane electrode assembly is studied by the accelerated durability test. After cycles of potential scanning between . . V, compared with CCM containing no cracks, the decay rate of the performance electrode with networked cracks increases by two times, and the decay rate of ECSA is double.

Key words: PEMFC membrane electrode assembly; catalyst layer; cracks; durability

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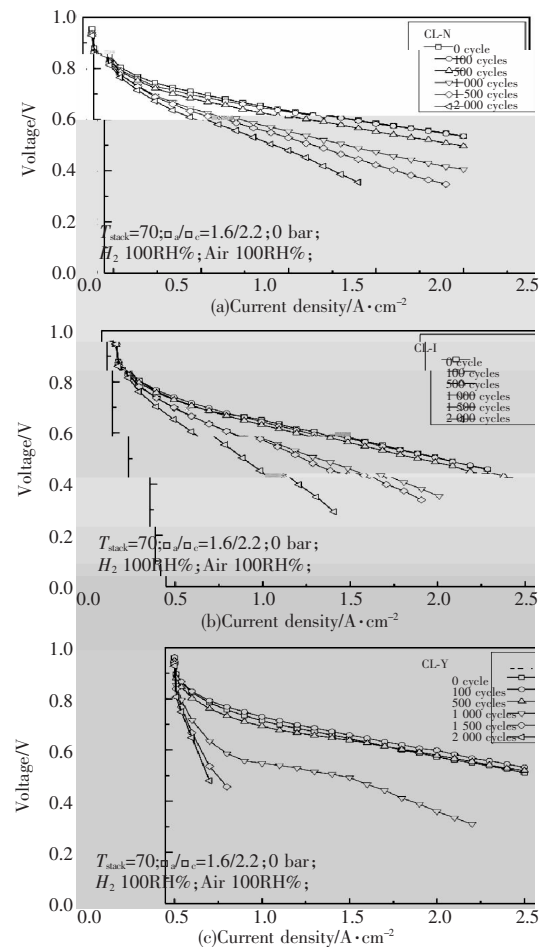
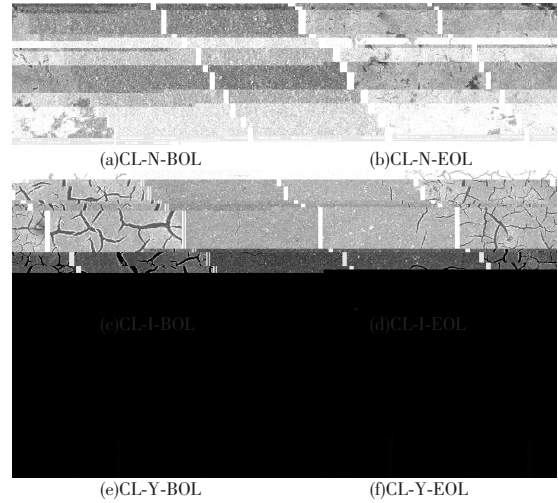
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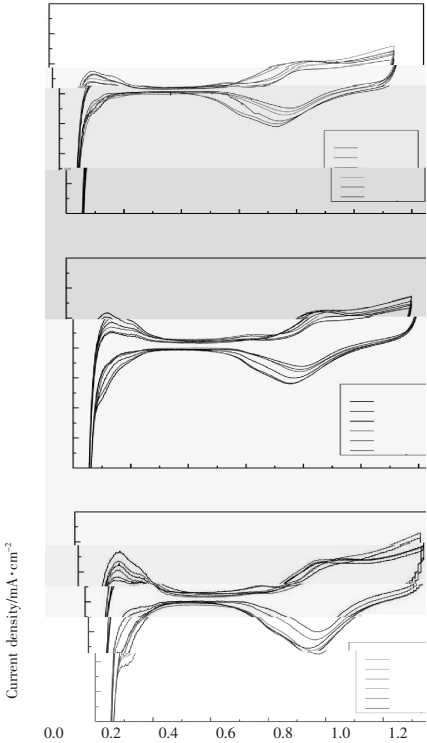
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Sample		CL-N		CL-I		CL-Y	
Cycle number		1 000	2 000	1 000	2 000	1 000	2 000
Degradation	0.1 A/cm ²	3.48	4.97	3.72	5.46	13.10	21.36
Rate/%	1.0 A/cm ²	13.57	25.27	17.99	52.67	23.72	>70

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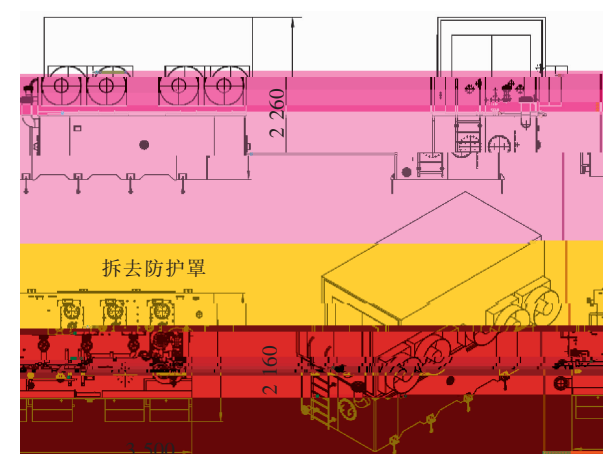
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The Design Research of 50 MVar Distributed Synchronous Compensator's Lubricating Oil System

HUANG Guowei, XUE Changkui, LI Yong

Abstract: According to the layout environment and safe operation requirements of the 50 MVar distributed synchronous compensator, this paper researches the design of synchronous compensator's lubricating oil system and calculates the tank capacity of the lubricating oil system, the flow and pressure of the lubricating oil pump, and the heat exchange area of the oil cooler, which provides a theoretical basis for the selection of system equipment.

Key words: distributed synchronous compensator; lubricating oil system; flow and pressure of the lubricating oil pump; tank capacity; exchange area



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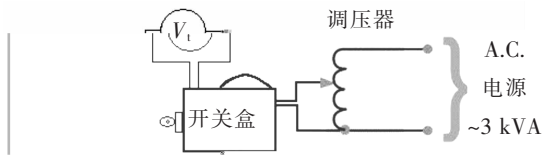
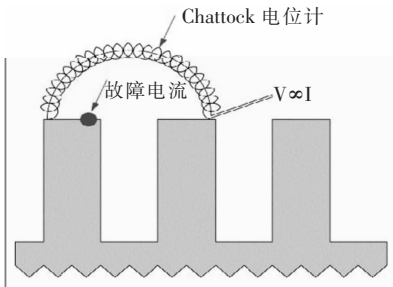
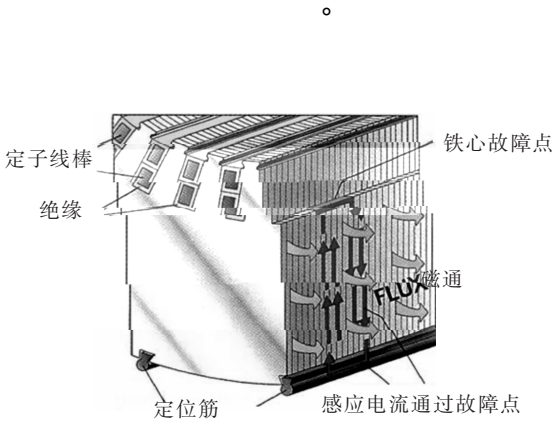
Application Research of Electromagnetic Core Imperfection Detection Test

CHEN Zhan, YU Hongbin, LIU Hang, LIU Xiao

Abstract: To inspect the stator core assembly of generator, it is imperative to conduct test for core in manufacture and power plant. At present, for stator core, we preferentially adopt routine test at home, but such routine core loss test requires equipments with large capacity and complex test circuit, which is less economical and inefficent. By contrast, EL-CID core test merely applies % of rated flux to diagnose the tested object, what's more, it equips with the power source with comparatively smaller capacity and portable advantage. In order to efficiently use EL-CID judgment method for core quality, this paper testified its usage condition and effecting factors through tests simulating multi-kinds of fault states, so as to provide EL-CID test with more robust references.

Key words: generator stator; EL-CID; core; fault; foreign matter; damage

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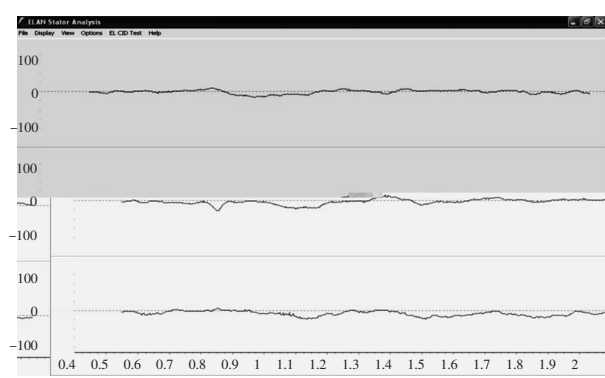
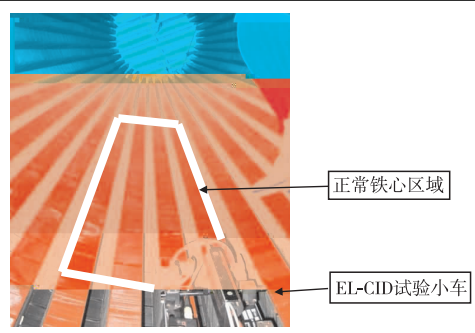
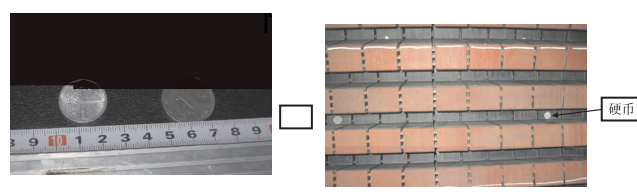
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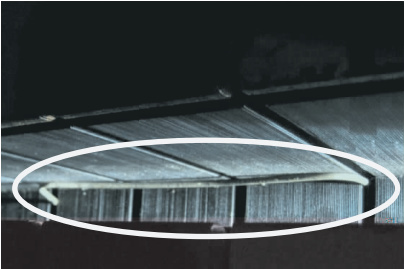
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Development Course and Experience of DEC Heavy Duty Gas Turbine

LI Jianhua , HU Weiwei , XU Bo

Abstract: This paper reviews the process from the technology introduction of gas turbine industry, the formation of manufacturing localization capacity, and the integration of innovation from the beginning to the final success, focusing on the practice and features of Dongfang Electric’s independent innovation, so as to provide a reference for the innovation work of the industry and enterprises.

Key words: gas turbine; natural gas power generation; technology introduction; integration and innovation

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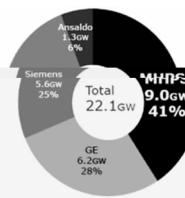
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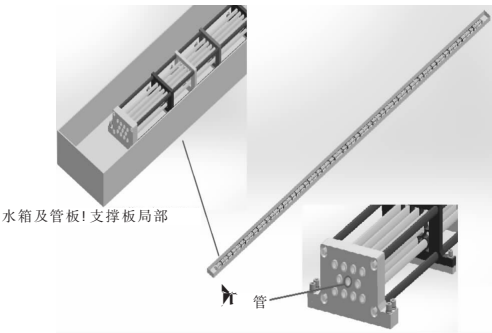
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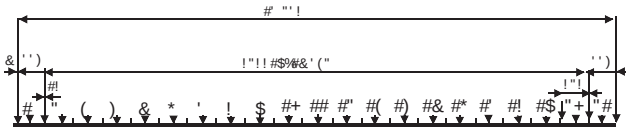
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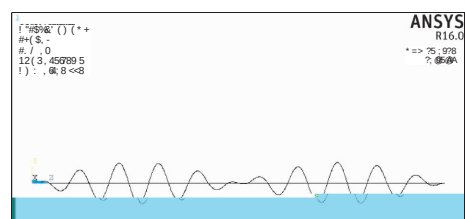
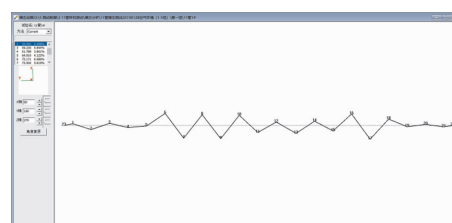
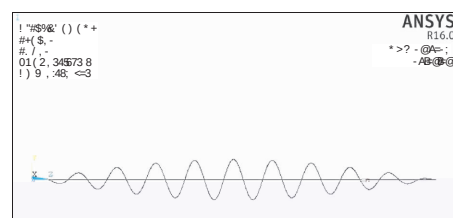
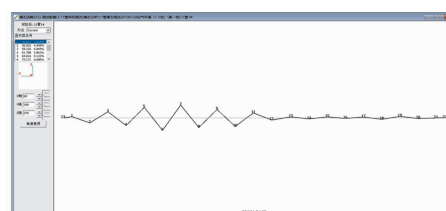
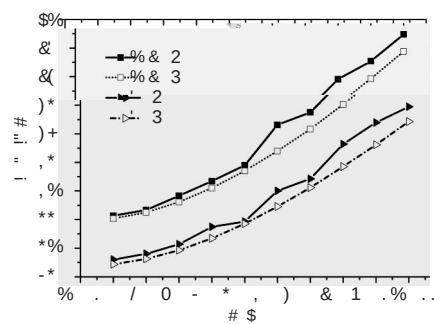
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Accuracy Analysis and Improvement Measures of
Gas Turbine Air Temperature Measurement

WU Zhifang

Abstract: The power of gas turbine has a great relationship with air temperature. When the control system controls the power of gas turbine, the measurement accuracy of input air temperature signal must be accurate enough to realize the accurate control of gas turbine power. In this paper, combined with a control system example, the accuracy of air temperature signal measurement loop is analyzed, and the improvement method to improve the measurement accuracy is given. By improving the measurement accuracy of the air temperature signal, the power of the gas turbine can be accurately controlled, and the efficiency of the gas turbine can be improved, which will bring higher economic benefits to the gas turbine power plant.

Key words: air temperature; measurement accuracy; improvement

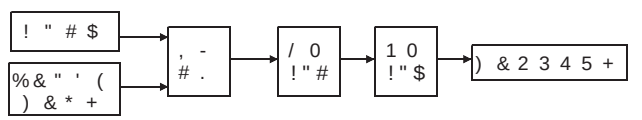
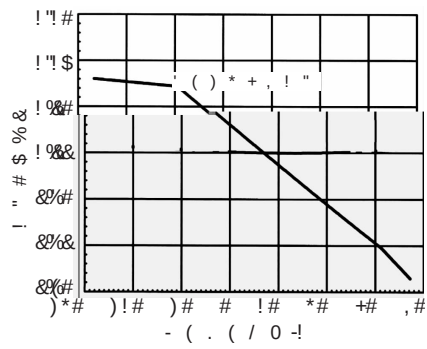
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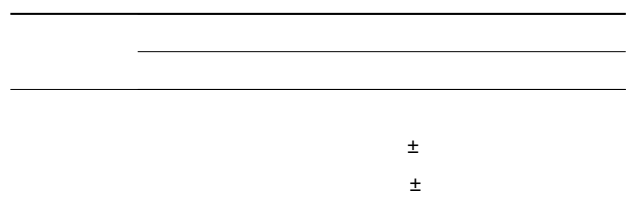
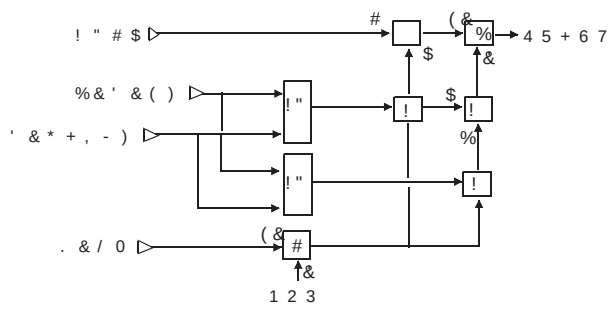
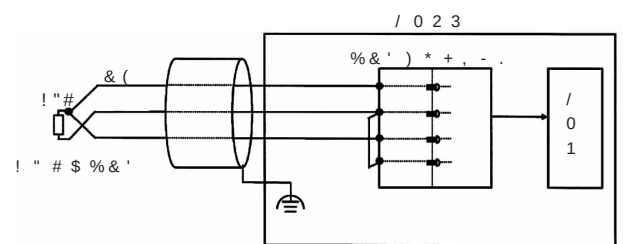
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Innovation and Development of Technologies for Advanced and
High-efficient Ultra-supercritical Coal-fired Boiler in China

LIU Yugang ' ' , LIU Yinhe , MO Chunhong ' , RAN Shenming ' , Pan Shaocheng ' , WANG Ting ' ,

Abstract: China developed the ultra-supercritical boiler technology to improve the efficiency of coal-fired power plant units in years. As the developing of localization of °C ultra-supercritical boiler, the development and batch application of °C high efficiency once-reheat and double-reheat boilers are carried out in China, and the technologies of wall temperature deviation fine control and double-reheat steam temperature regulation are successfully conquered, which creates foundation for the development of ultra-supercritical boiler with higher steam parameters, and helps to improve the technical level of ultra-supercritical boiler manufacturing in China.

Key words: ultra-supercritical boiler; wall temperature deviation; steam parameters

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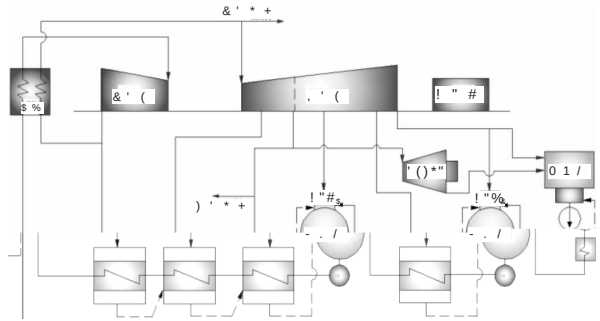
The Operation Strategy of Supercritical Reheating Double Extracting Back-pressure Turbine

LUO Fang , SONG Fengqiang , HOU Mingjun , HU Yizhang , WANG Yong , GONG Chuanyao

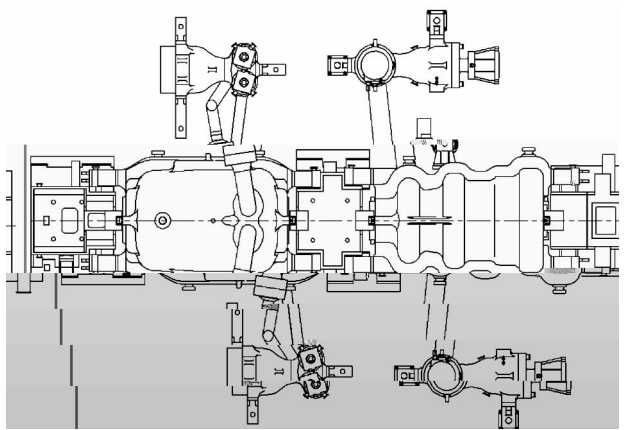
Abstract: It is one of the important directions to promote energy saving and emission reduction promoting the heating technology of back-pressure turbine continuously. Transferring the measures increasing efficiency, such as reheating, heat regenerative system optimization, graded regulation of heating, from large thermal turbine to back-pressure turbine can improve the energy efficiency furtherly. Furthermore, the energy saving measures above-mentioned increase the complexity of the system, but also increase the difficulty of unit operation. This paper takes the supercritical reheating double extracting back-pressure steam turbine for some project as an example to analyze its operation strategy for reference of similar units.

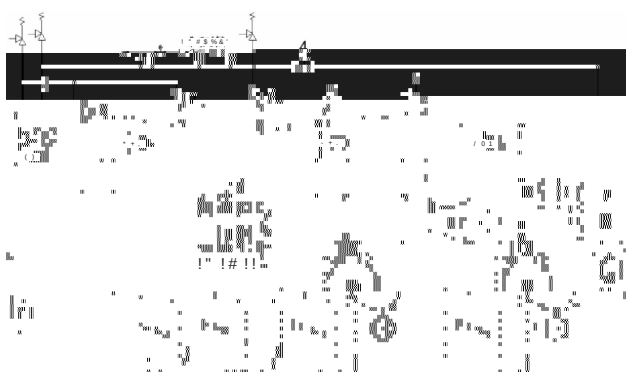
Key words: back pressure turbine; operation; startup

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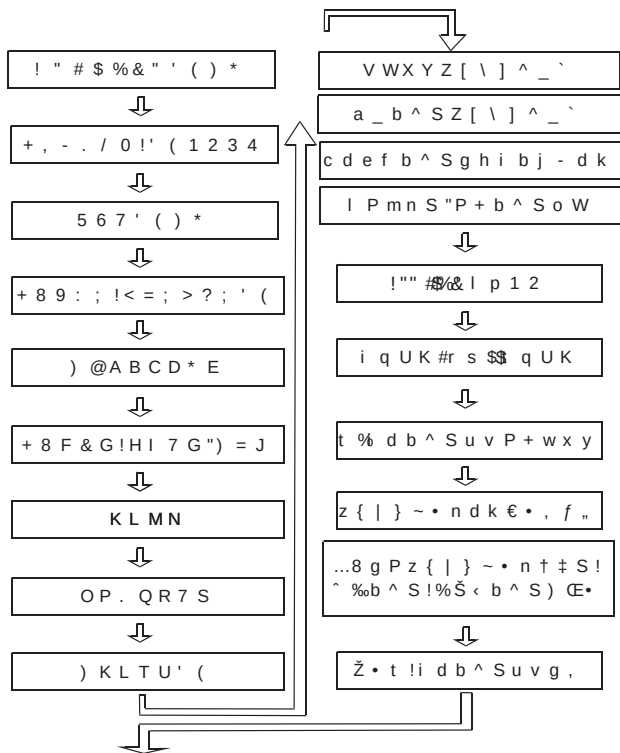


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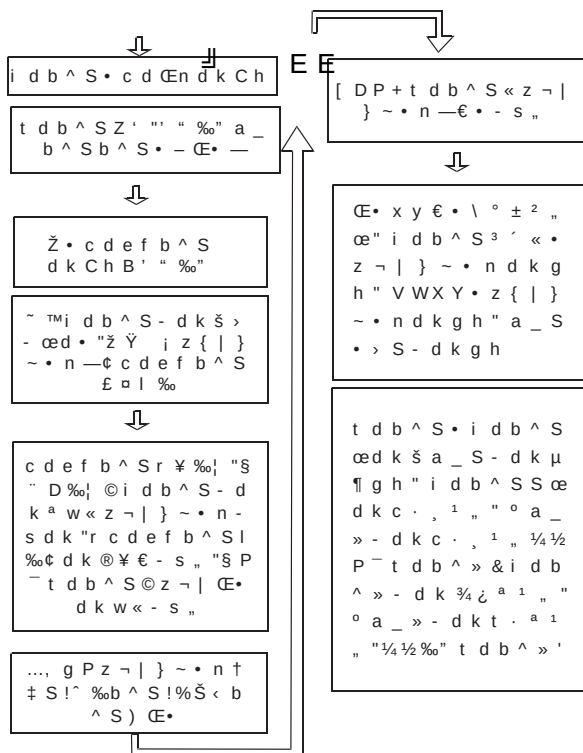
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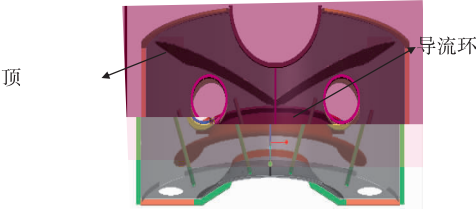
Effect of Guide Structre on Aerodynamic Performance of Exhaust Hood in Steam Turbine

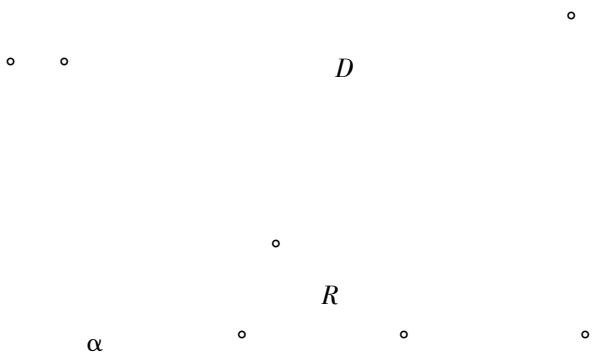
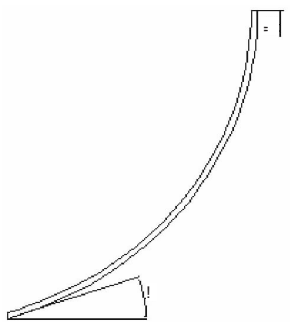
PENG Guowei, HUANG Yuandong

Abstract: Based on the background of a modified steam turbine, By using numerical simulation and theoretical calculation methods to study the exhaust steam passage of the low pressure cylinder, this paper analyzes the influence of the initial diffusion angle and outer diameter of the guide ring in the exhaust steam passage of the low pressure cylinder . The results show that as the initial diffusion angle of the diversion ring decreases and the outer diameter of the diversion ring increases, the static pressure recovery coefficient of the exhaust cylinder will increase. When the initial diffusion angle is $^{\circ}$, the outer diameter of the diversion ring The diameter is mm, the streamline fits better with the diversion ring, the flow field distribution is stable, and the static pressure recovery coefficient is the largest; the optimization of the diversion ring structure can increase the static pressure recovery coefficient of low pressure exhaust steam by . %, and the total pressure loss coefficient Reduced by %, the exhaust steam performance is better.

Key words: exhaust cylinder; guide ring; turbine; Finite Element

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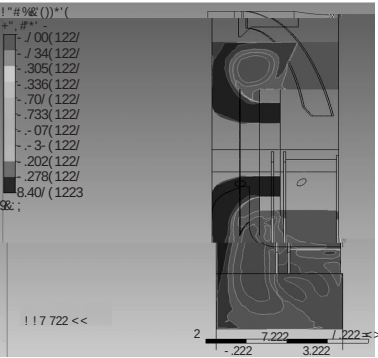
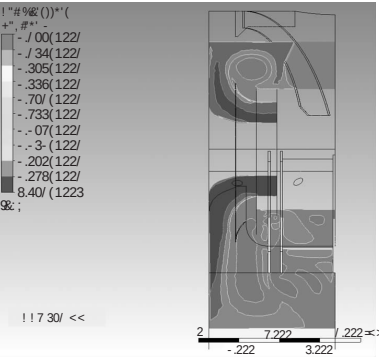
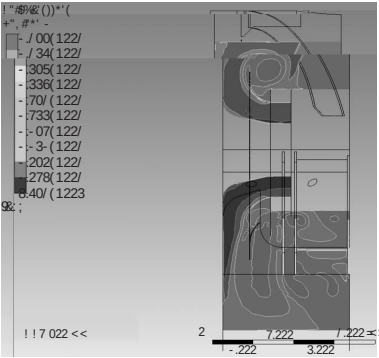
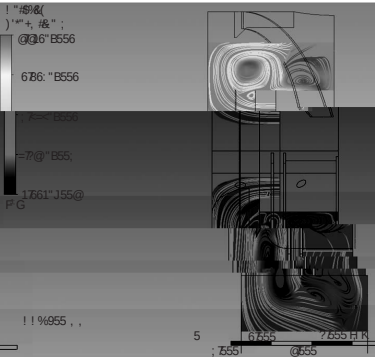
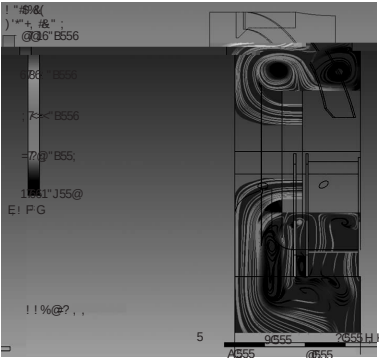
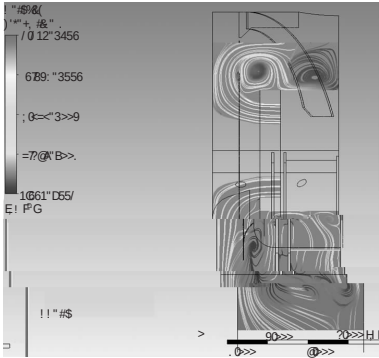
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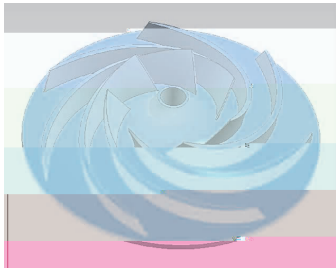
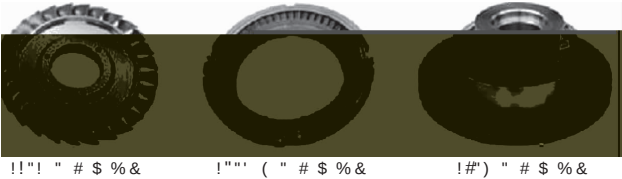
Research on Multi-axis N/C Machining Technology of Open-integrated Impeller

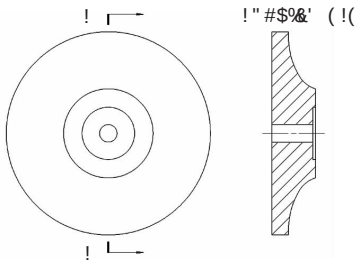
WU Zhongjing, DUAN Changde, QIAO Jie, WU Wei

Abstract: In this paper, for the NC programming of the open-integrated impeller, through the study of machining process, the processing procedure and the machining center, the tool selection strategy is determined. An efficient and optimal way of multi-axis NC programming is adopted based on the software of UG, and an experimental open-integrated impeller of high quality is produced, which proves the feasibility of the study.

Key words: integrated impeller; UG; multi-axis machining; NC programming

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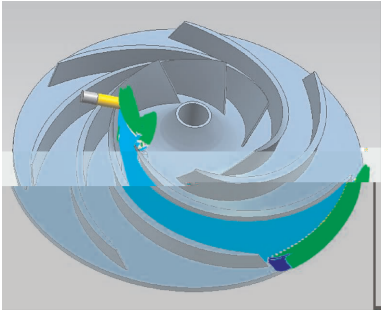
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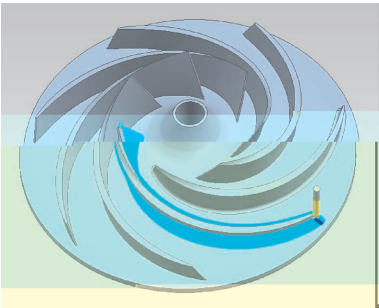
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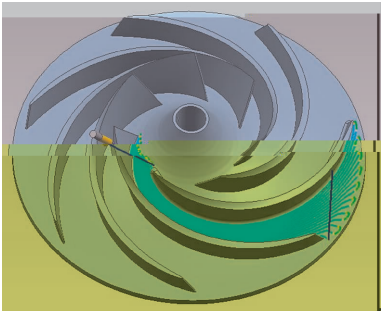
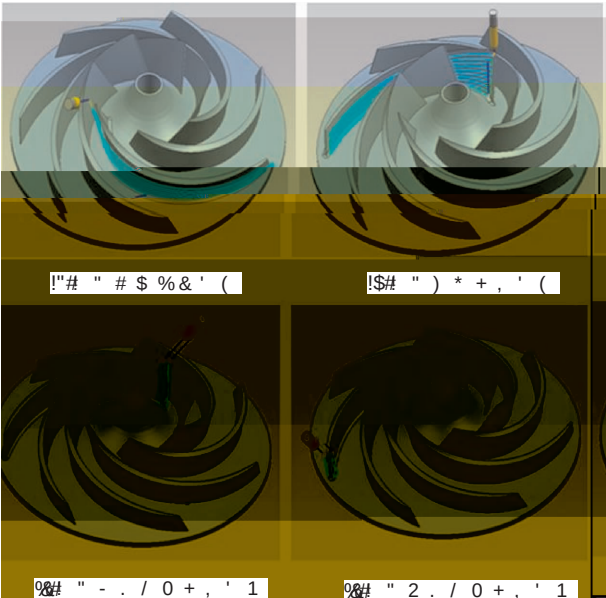


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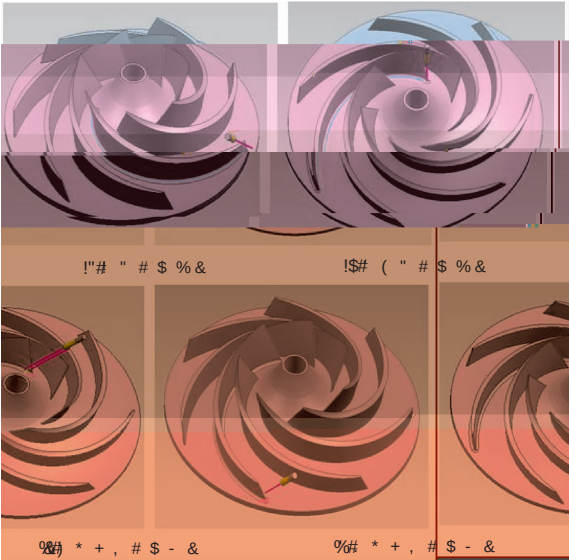
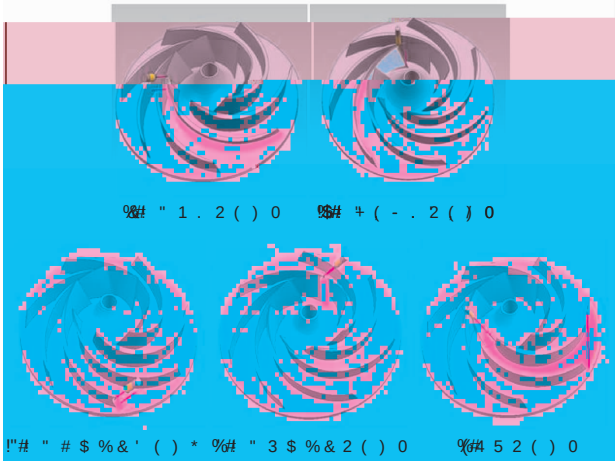
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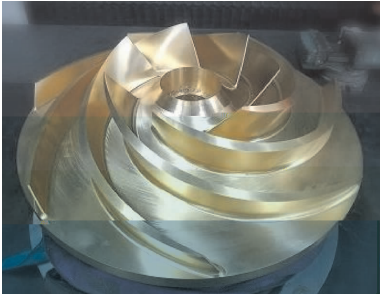
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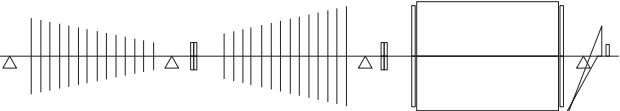
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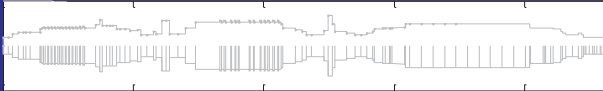
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Research on Acquiring Experimental Data Acquisition System for Wind Farms

XU Fuxia , LI Yuxia , CHEN Feng

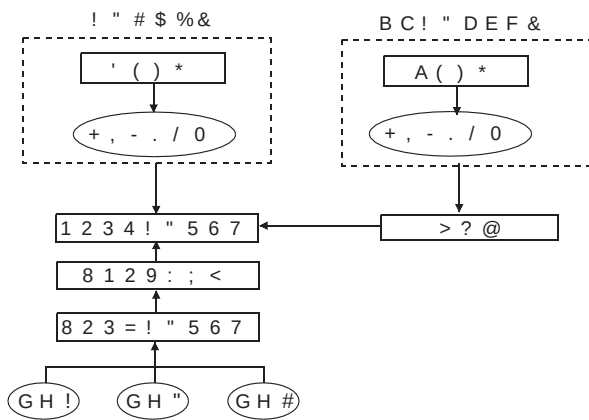
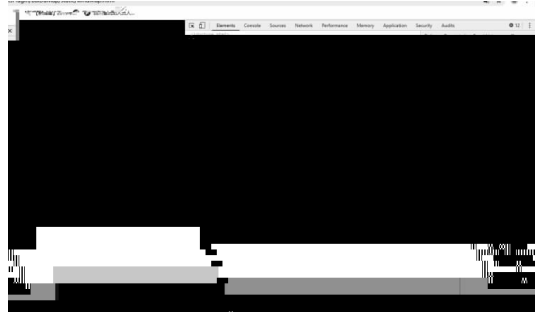
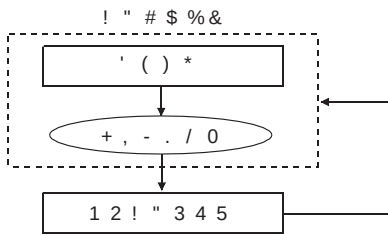
Abstract: Based on the needs of experimental data collection, an automated data collection tool is studied in this paper. Through experiment demand data collation, and relying on the demand on the collection tool, the relevant demand data is automatically obtained through the collection tool, including historical data, without human intervention. The results show that this automatic collection tool makes data collection more convenient, smarter and simpler. The data collection tool fully meets the laboratory s requirements for experimental data, and is configured and selected according to needs, which is important for the efficient acquisition of data.

Key words: experimental data; acquisition tool; automation; intelligence

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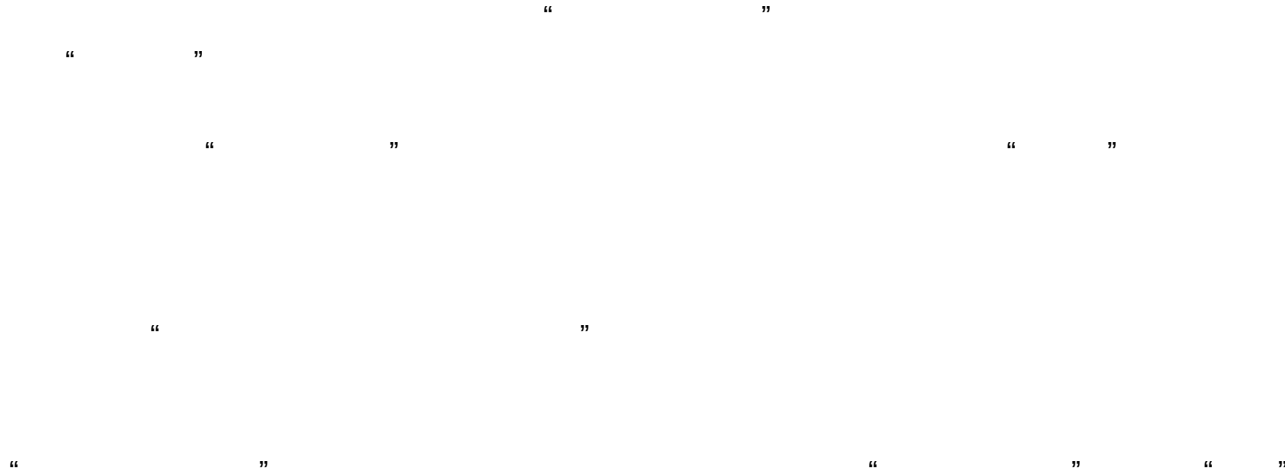
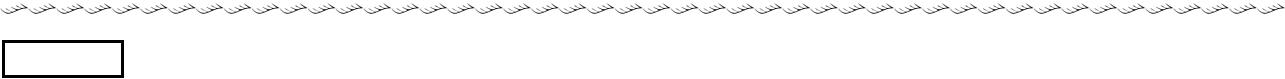
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Application and Discussion of TRIZ Theory in Improvement of Yaw System of Wind Turbine

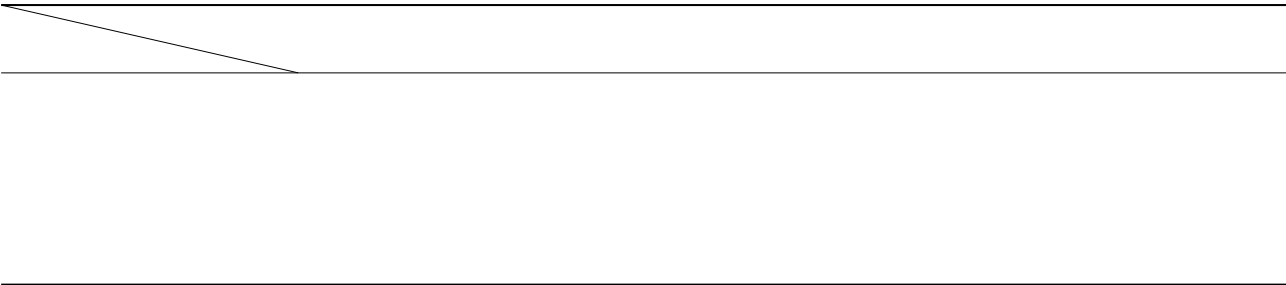
SUN Zhongze, SU Ninglie, YANG Xiaolin

Abstract: In the yaw system design of wind turbines, according to the design of driving load, the strength of outer teeth of bearing and driving teeth is often insufficient, especially for motor starting conditions. Therefore, it is often necessary to consider increasing the number of drivers, or increasing the tooth width, which increases the cost. Based on the innovative methodology of TRIZ, brainstorming is carried out to optimize and improve the driving structure in a directional way, and many new schemes are obtained for evaluation and verification by design engineers. In this paper, the yaw system of wind power is taken as the object to discuss the methodology for reference in other fields.

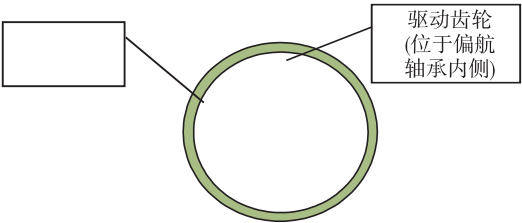
Key words: TRIZ; innovative method; wind turbine; yaw system; tooth surface

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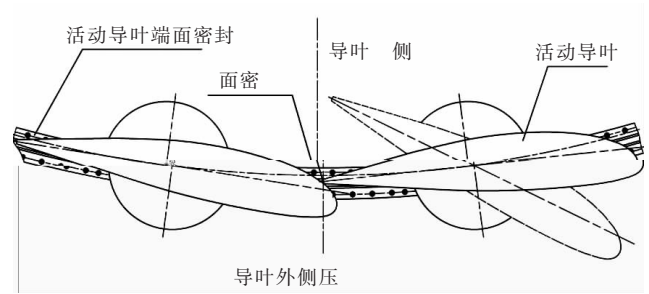
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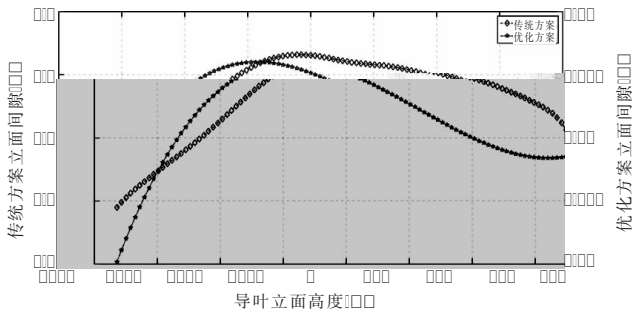
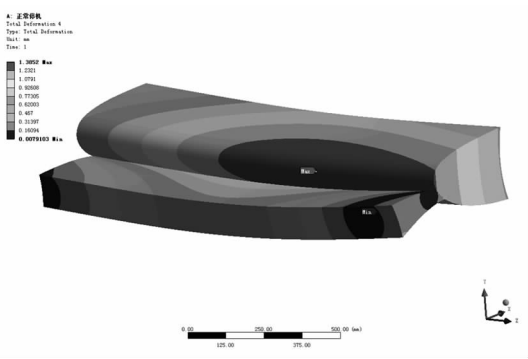
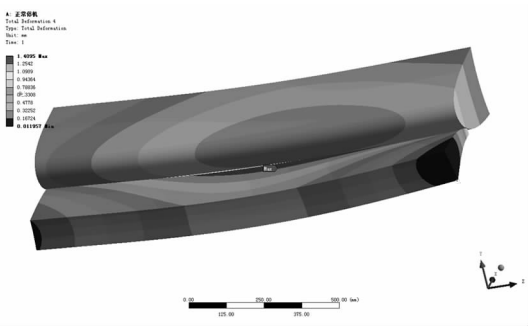
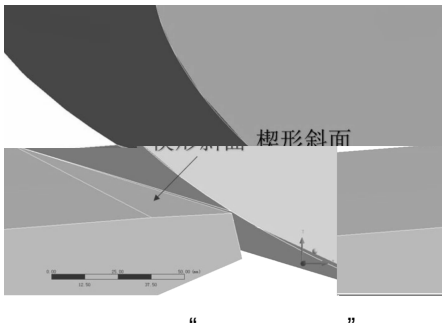
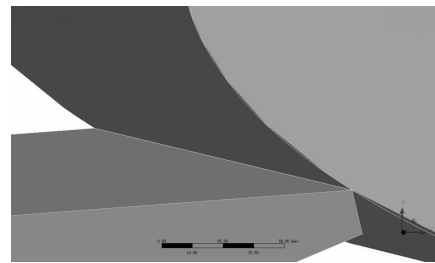


Analysis and Research on Guide Vane Water Leakage in Large Francis Hydro-turbine Unit

SONG Min, LI Haoliang, ZHANG Hong

Abstract: The guide vane water leakage strongly influenced the water energy utilization, effective operation, material damage and other issues of hydro-turbine. Thus, the guide vane water leakage is an important factor for hydro-turbine, which is usually measured in prototype tests but lack of prediction, analysis and optimization methods in design stage. Based on the structural statics and CFD finite element analysis (FEA) method and theoretical computation, this study analyzes the water leakage at guide vane vertical-surface gap with different trailing-edge shapes and the water leakages at flange plate gap. Results show that the optimum h t o y S





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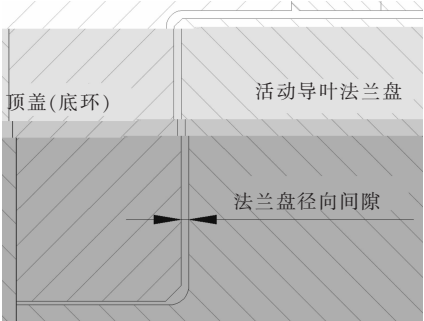
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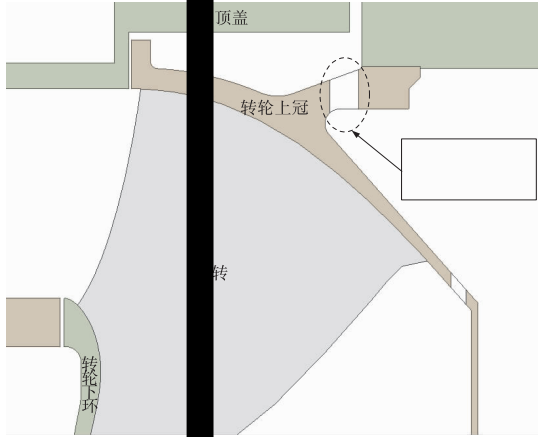
Optimum Design of Upper Cavity Pressure of the Runner of a Francis Turbine

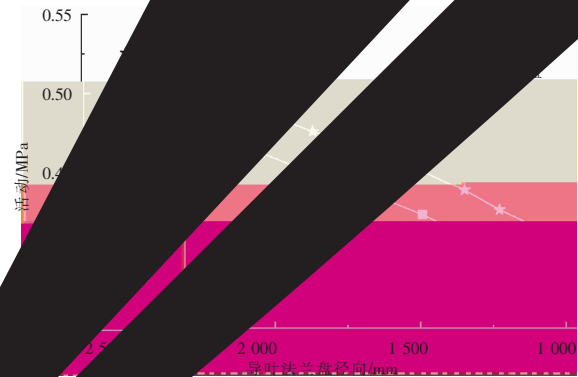
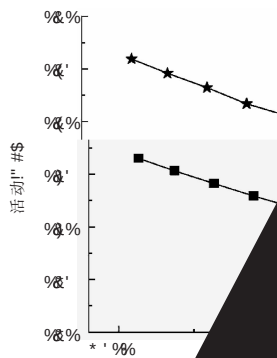
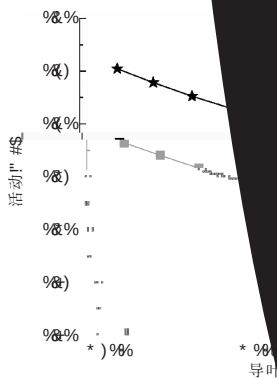
HUANG Shihai, DENG Xin, LI Haoliang, WU Xiaoli, SHAO Hexi

Abstract: In this paper, a retrofitted Francis turbine in China is studied by increasing the number of runner drain holes and the apertures, as well as punching holes on the runner cone to optimize the hydraulic characteristics and reduce upper cavity pressure of the runner. The comparative analysis and calculation of the hydraulic model before and after structural optimization are carried out with CFD software. The results show that, after the optimization of the structure, upper cavity pressure of the runner is reduced effectively, the leakage through the wearing ring is also decreased significantly. The research results have some engineering application value.

Key words: Francis turbine; upper cavity of the runner; optimum structure; CFD analysis

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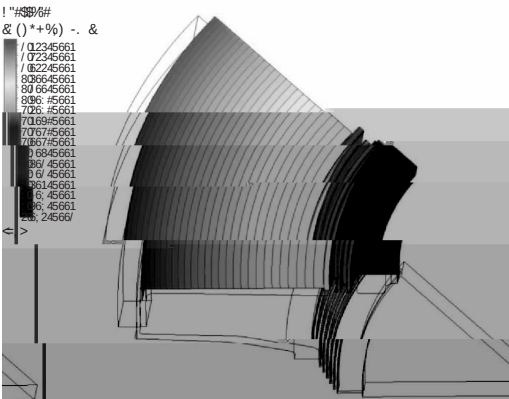
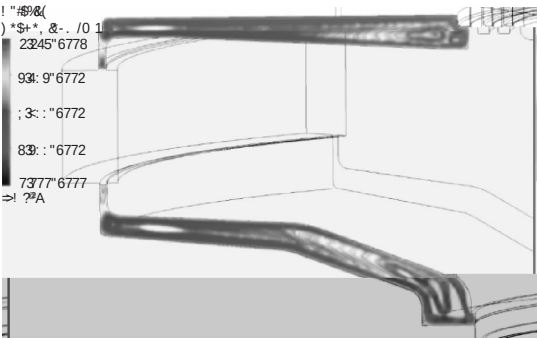
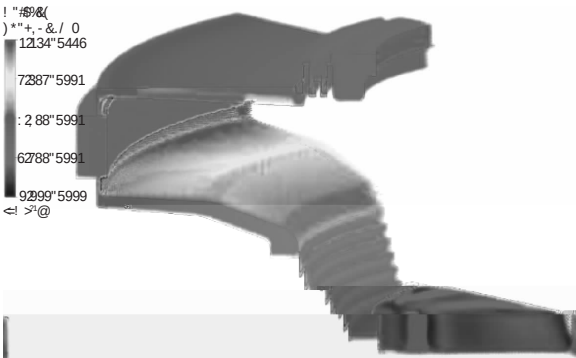


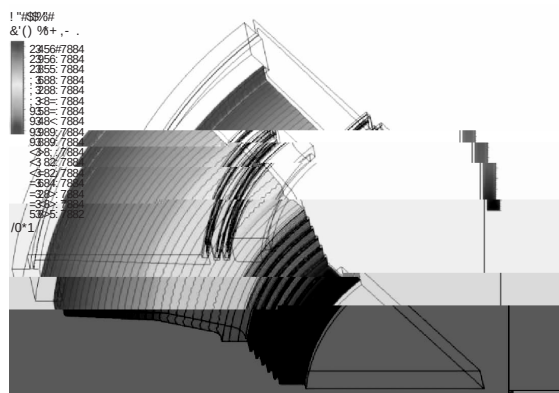


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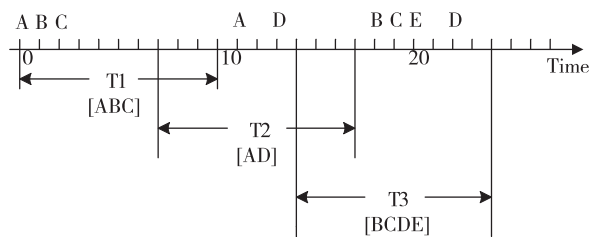
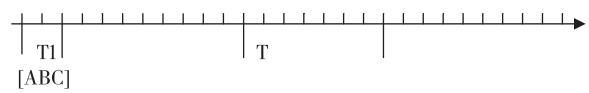
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Survey of Alarm Correlation Analysis for Communication Networks Based on Machine Learning

DING Hong , ZHOU Honglin

Abstract: Alarm correlation analysis is the main technology for fault management in telecommunication networks. By means of alarm correlation analysis, the network maintainer easily reduces the redundant alarms and locates the root alarm. It is also one of the key technologies for AIOps. Therefore, it is significant to summarize the procedure and algorithm for alarm correlation analysis. As a first step, this paper introduces the general procedure for machine learning-based alarm correlation analysis in telecommunication network. In the following, the current research status for several key steps like alarm preprocessing, correlation analysis algorithm, and correlation rule generation are introduced and compared in detail. Then, the implementation of alarm correlation analysis based on big data processing framework has been summarized. Finally, the conclusion is drawn and the future research direction of alarm correlation analysis is also proposed.

Key words: alarm correlation analysis; correlation rule mining; machine learning; data mining; fault management



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Application Research of Honest Risk Prevention and Control In Post Work Flow

JIANG Lina, CHEN Jian, ZHAO Xiaobo, LONG Yuting

Abstract: The discipline inspection has not been in a passive situation any more, when honest problems piled up and negative impact revealed. Nowadays, the honest risk prevention and control is more developed, getting on the root and concerning more on the prevention and long-acting. Sorting out the post work flow and rules and regulations process overall, investigating the potential honest risk, grading the honest risk and making prevention and control measures. Then the honest risk for each post and each work flow could be reduced to the low level with power exercised in the institutional cage and locked in the work process chain. The article describe this innovative working methods in detail, analyze, summarize and share the working experience.

Key words: honest risk; post work flow; rules and regulations process; prevention and control measure

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来源:东方电气网

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