Analysis of Energy Control Application Scheme Relying on Niagara Technology

Yanjie Zhang¹,*

¹Zhonghuan Information College, Tianjin University of Technology, Tianjin, China, 300380

*Corresponding author e-mail: 214432@tjzhic.edu.cn

Abstract. In the current energy management, the energy control management system closely integrates information and physical models and proposes new analysis methods for the system, which can make the system more sensitive to changes in the external environment and analyze the power grid more humanely control. The energy control management system is similar to the traditional control method and can solve the control of the target system under the condition of satisfying the system constraints. Under this framework, the constraints will focus on computing and network performance. Constraints mainly refer to the time complexity of the system algorithm and the information flow of the network, which are reflected in the organic integration of physics and information systems in the power grid and the information flow is restricted by controlling the energy transferred by the energy flow. For example, the transmission time of the system information transmission process can be optimized. To effectively control the system, specifically to solve the excessive dependence of NCS on the communication network, lies in how to solve the local control to coordinate the overall situation, so that the system reaches the optimum, this paper will study it.

Keywords: Energy Control, Technology, Application

1. Introduction
In the context of the continuous development of social economy, the level of mechanization and automation has been significantly improved and at the same time, there is an increasing demand for energy. In order to meet the energy needs of various industries, the construction of energy and power projects should be strengthened to ensure the country's economic development. At the same time, energy power engineering has a direct connection with people's lives. For example, agriculture. In order to protect people's lives, it is necessary to vigorously develop agriculture. The development of agriculture is inseparable from production. Agricultural production requires the use of electrified and mechanized equipment. It needs a lot of energy support. In addition, energy and power engineering also involves national security issues, such as national defense, national defense security needs to be equipped with various weapons and equipment and these equipment need to use energy. In short, energy power engineering affects the development of the country and people's lives, so we should pay
attention to the development of energy power engineering.

2. Current status of energy and power applications
Energy power engineering is the analysis and research of energy conversion between power and energy. Energy and power engineering is both complicated and cumbersome. Therefore, it is relatively difficult to analyze and study the engineering. From the current point of view, the engineering fluid mechanical engineering and engineering physics, power machinery and other related fields will be involved. Research and application of energy and power engineering mainly focus on the enhancement of automation\[1\]. Colleges and universities should focus on training comprehensive talents with a wide range of knowledge, a solid foundation and innovative capabilities.

In the actual development and innovation process, the important source of power energy is energy power engineering, which must be professional and the continuous development of energy power engineering can better protect the environment and to a large extent promote the sustainable development of our national economy.

3. Niagara control technology
Niagara is an application framework, or a software framework, specifically designed to deal with various challenges brought by smart devices, including devices connected to enterprise-level applications, Internet-enabled products and the development of Internet-based automation systems\[2\]. Application framework is a concept in software engineering. It is different from ordinary software. It is a low-level service used to realize a general and complete function in a certain application field. Programmers using this framework can start concretely based on the realization of a general function. Product and system development. The application framework emphasizes the design reusability of the software and the scalability of the system to shorten the development cycle of various application software and improve the quality of development. Niagara provides a unified, open platform with rich functions, which can simplify the development process, significantly reduce the development cost of products or systems and shorten the time for enterprises to enter the market or the construction period of projects. Niagara creates a universal environment that can be connected to almost any embedded device or system imaginable, without too much consideration of the manufacturers of these devices and the communication protocols they use. The key to all this is that Niagara can communicate with various devices and systems, convert their data and attributes into standard software components and provide enterprise-level applications with a large number of IP-based protocols, XML-based data processing and open APIs. Sewn, unified view of device data. The Niagara platform is a many-to-one architecture. By converting the data of various external devices and systems into standardized software components, Niagara has created a development architecture that is much better than the many-to-many complex architecture based on gateway integration. This advantage is reflected in the fact that any device and system can be compatible with other devices and systems connected to the application framework through the Niagara specification, providing enterprise-level applications with real interoperability within the system and unified data presentation. Developers no longer need to spend time creating, testing and repeatedly verifying various gateway facilities. The Niagara control technology is as shown.
4. Energy control application scheme based on Niagara technology

4.1. New algorithm for distributed dynamic optimization of energy-information flow
The new information energy system will improve energy utilization and realize the comprehensive utilization of energy. By combining information energy systems to optimize control algorithms, the requirements are as follows: use cloud computing in a new generation of information energy systems and optimize the performance of distributed computing systems through a large number of physical sensing devices, so that the system is conducive to control, dynamic and real-time. Through the mutual constraints of communication and computing networks, the required optimal control points are updated in real time. Real-time monitoring of current network failures, optimization of predictions and real-time troubleshooting[3]. The optimization of energy-information is as shown.

4.2. Mechanism guidance: users are deeply involved in decentralized optimization decision making
The new information energy system realizes the interaction and communication between users and energy producers and users will also participate in the optimization and decision-making of the energy system[4]. Use corresponding mechanisms to dispatch and control the energy system and use market mechanisms or social policies to guide system dispatch. Therefore, the establishment of energy prices and incentive mechanisms are implemented to guide in-depth research in the field of energy systems, so that users can be part of decision-makers and realize smart clusters[5].

5. Conclusion
At the same time, while developing new energy, more attention should be paid to the use of traditional energy and effective measures should be taken to improve its utilization efficiency and at
the same time reduce environmental pollution generated in the process of energy utilization[6]. In the utilization of coal resources, the capacity of industrial boilers should be appropriately expanded and thermal power units should be transformed and managed with the help of advanced technology to ensure the full combustion of coal and reduce pollutant emissions during the combustion process. In the utilization of petroleum resources, engine stratified lean burn technology, common rail electronically controlled high-pressure fuel injection technology, etc. can be used to improve petroleum combustion efficiency and reduce tail gas pollution.

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