# Study on Development of Distribution Network Management Technology in Power System Automation

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**Keywords:** Power system, automation, distribution network management, development study.

**Abstract:** With continuous development and progress of times in recent years, each industry has gained great development. Especially in the 21st century, the coverage of informatization technology continues to expand, which drives rapid development of some industries. Power industry has been the main impetus supporting China's economic development. Besides, modern power system has positive significance for promoting the development of power industry. At present, power system has achieved automation. As long as its distribution network management technology further improves, it can better develop so as to achieve development and progress of power industry in China and continuously improve China's influence and international position.

## 1. Introduction

Under the guidance of "One Belt & Road" initiative, China gradually enhances the connection with other countries. In the process of economic and commercial intercourse, technical experience and experience exchange are also enhanced. For power industry, in the modern society, on the one hand, the speed of informatization technology update continues to accelerate; on the other hand, the demand for power becomes increasingly larger. Thus, higher requirements are put forward for the development of power industry. At present, the technological level of power industry continues to improve, and power system automation is further achieved. Besides, the formation and application of power system automation have achieved great effect. In power system automation, distribution network management technology as the core technology will generate great influence on the application of power system automation. Hence, it is required to enhance attention to it, actively discover problems and improve in time. Next, the author will combine the practical work experience for many years to set forth the study on the development of distribution network management technology in power system automation.

## 2. Research status of distribution network management technology development in power system automation

The status analysis of research on distribution network management technology development in power system automation will be introduced in detail from two aspects. On the one hand, power system automation is well applied in modern society. Relative to traditional power system, automation can improve power system application efficiency and level. Besides, with the achievement of power system automation, nationwide power grid can form a huge network system to supply power for some remote areas and achieve more all-round power system automation. On the other hand, although good application effect has been achieved in practical application, distribution network management technology fails to give play to its real effect due to the impacts of uncertain external factors, which to certain degree reduces application effect of power system automation and application range expansion. In practical application, since technical level of relevant personnel is not high, they will make mistakes in work, and the mistake in work will influence the application of the whole power system automation. Because the level of informatization technology in China is not high, distribution network management technology fails to be updated and improved in time.

  DOI: 10.25236/csam.2019.040

## 3. Problems existing in research on distribution network management technology development in power system automation

### 3.1 There is lack of innovation due to constraint of traditional power system development concept

Even in the modern society, some medium and small cities as well as remote areas will be restricted by traditional concept in the development process. The application of power system automation is still restricted by traditional power system development concept in some areas. They accept something new slowly, with low acceptance level, thus restricting economic development of some areas. Moreover, traditional development concept will generate adverse factors on the development of power industry. In practical application, the development level of medium and small cities is low, and the concept falls behind. Thus, there is lack of certain innovation in power system aspect. For some remote areas, the contact with the outside is less, and the innovation cycle of distribution network management technology is long. In addition, the technical level is low. Local development of power system automation will also influence the development level of power system automation in China, and the improvement of distribution network management technology.

### 3.2 Imperfect management system leads to poor application effect of power system automation

Secondly, since management system is not sound enough, the application effect of power system automation is not very good. The improvement of management system is a key to supporting the development of one industry. Because power industry is an important economic pillar of China, important influence on national economic development will be generated. In the 21$^{st}$ century, we have found that, due to the continuous rise of population size in China, the demand for electric quantity continues to increase. For remote areas, it is difficult to achieve power system automation. Because relevant management system is not perfect enough, there is no rational requirement for management system in different areas, thus affecting the practical application effect of power system automation. The imperfect management system leads to many problems in the design and application of power system automation. When the problem occurs, there is no rational system, which will influence research and development of automation technology.

### 3.3 Low working level of staffs influences application level of power system automation

Thirdly, since the working level of staffs is not high, this influences application level of power system automation. The staff is the core factor influencing the whole industry development. The working level and technical level of staffs will directly influence industry development level. Power industry belongs to a pillar industry in China, so technical staffs with high level are required. However, since the market has high requirements for technical workers, and there is lack of talent supply, technical staffs are also relatively scarce. Working competence and working level of staffs are low, thus affecting the application effect and level of power system automation. There are many factors influencing working competence and technical level of staffs. On the one hand, this is because there is lack of professional technical training; on the other hand, there are many uncertain factors in practical application, and professional knowledge of staffs is insufficient. Thus, it is required to actively improve problems and continuously enhance working competence of staffs.

## 4. Research strategy of distribution network management technology development in power system automation

### 4.1 To actively innovate and continuously improve distribution network management technology level in power system automation

For the problems existing in practical application of distribution network management technology in power system automation, the improvement strategies will be proposed form three aspects. Firstly, it is required to actively innovate and continuously improve distribution network management

technology level in power system automation. In the 21st century, power industry has made great progress. Meanwhile, informatization technology is utilized to effectively change development status of traditional power industry. The traditional manual operation is transformed to automatic operation, which improves work efficiency and reduces the fault of manual operation. At present, social development speed continuously increases. Without active innovation, China's power industry will fall behind power industry of developed countries. So, the state should encourage power industry to innovate actively so as to continuously achieve improvement of distribution network management technology. In addition, it is also required to enhance learning of relevant theories, because theory study is the precondition of technology learning and also lays a foundation for technical progress.

### 4.2 To keep improving relevant management system and improve application effect

Secondly, it is required to keep improving relevant management system and improve application effect. The improvement of management system not just needs industry support, but also requires great improvement of the government. First of all, the government should actively improve the problems existing in practical application, and propose strict requirements for the defects of management system. Furthermore, the government should put forward positive improvement strategies for the defects in management technology and practical application, and enhance learning of some problems existing in management system. Secondly, for power industry or some enterprises, management will be more detailed, so the management system of details needs improvising so as to effectively avoid resource waste and staff casualties, drive the better application of distribution network management technology in power system automation and promote better development of power industry.

### 4.3 To enhance staff training and improve their working level and professional quality

Thirdly, it is required to strengthen staff training and improve their working level and professional quality. To further improve technical level of staffs, it is required to strengthen staff training. Based on enhancing regular training, the opportunity of going abroad for further education can be provided for staffs so that they can actively learn foreign advanced technical experience. Besides, enterprises also need to formulate advanced salary system and reward technical staffs so as to stimulate other staffs to better innovate technically. Secondly, the state should encourage colleges and universities to actively develop relevant professional courses or combine enterprises and schools to establish school-enterprise cooperation mode. The enterprises provide more technology-based teachers for schools, and continuously improve training base facility setting for colleges and universities to achieve cooperation. In this way, the students cultivated by colleges and universities can more contact the market, and colleges and universities can cultivate more technology-based and professional talents for power industry.

## 5. Research prospect of distribution network management technology development in power system automation

Research prospect of distribution network management technology development in power system automation will be analyzed from two aspects. On the one hand, the demand of various countries in the world for energy resources is on the rise. Because of this, energy crisis happens. Thus, new clean energy should be researched continuously, and the resources with low environmental pollution should be developed. In the 21st century, we need improving clean energy level of power system automation. In the meantime, the application of power system automation still needs to start from national level. The state should give policy encouragement to improve enterprises' scientific research innovation ability and level. Moreover, to further enhance distribution network management technology level of power system automation, it is required to continuously seek the defects, enhance learning of advanced technology and experience of other countries, and promote actively distribution network management technology level of China. The state should strengthen improvement of management system, actively encourage relevant industries to enhance technical improvement, seize

the opportunity of One Belt & Road, and skillfully cope with various challenges so as to improve power system automation and further enhance distribution network management technology level.

## 6. Summary

The research status and prospect of distribution network management technology development in power system automation are analyzed in detail. Besides, corresponding improvement strategies are proposed for the problems in the research on distribution network management technology development in power system automation. In conclusion, to drive better development and progress of Chinese society, the problems in power industry development should be improved actively. Power system automation technology is a new technical means, and plays a great role for the development of many industries. Hence, we must start from multiple aspects and improve actively so as to effectively drive development and progress of relevant industries and social economy. Currently, powerful competitions of various countries in the world are mainly reflected in informatization technology which influences many aspects including power industry. Thus, the development of power industry should keep pace with improvement of informatization technology, discover the shortcomings, seize the opportunity under the wave of informatization technology and lay a solid foundation for driving better development of power industry. The development of power industry is closely related to people's life. Both the state and enterprises should attach great importance to it.

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