Optimizing Scheduling Method for Distribution Network Considering Distributed Power Supply Flexibility

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Abstract. In the construction of distribution network, low voltage distribution can ensure the stability of the whole power transmission, but it will also lead to poor operation because of the low voltage. When the operation of the operation and inspection system is unstable, the processing function of the data will decrease, and when the power problem is encountered, it will not react at the first time, so that the operation of the whole system will produce certain danger. The high permeability distributed power supply is connected to the distribution network, which exacerbates the volatility and instability of the distribution network. Therefore, it is necessary to improve the immunity of the distribution network while ensuring the function of the high permeability distributed power supply.

Keywords: High-permeability distributed power distribution network flexibility optimization.

1. Distributed Power
Distributed DC power supply device refers to a small modular power supply with a power of between kilowatts and 50MW, which is compatible with the environment. These are owned by the power sector, the power user or a third party to meet the specific requirements of the power system and the user. Such as peak-shaving, power supply for remote users or business districts and residential areas, saving investment in power transmission and transformation, and improving the reliability of power supply. Distributed power supply is the most concise meaning: 35KV and below voltage level power supply not directly connected to centralized transmission system, mainly including power generation equipment and energy storage device. Distributed energy system is not a simple use of traditional power generation technology, but based on automatic control system, cash material technology, flexible manufacturing technology and other new technologies, with low pollution emissions, flexible and convenient, high reliability and high efficiency of the new energy production system.

2. Impact of High Permeability Distributed Power on Distribution Network Operation
(1) Suppress voltage fluctuations
The larger the short circuit capacity of the power system, the stronger the power grid. After accessing the distributed power supply, the short circuit capacity of the distribution network system...
has changed, and the voltage change degree will be suppressed or weakened compared with the conventional distribution network in the event of impulse load switching or failure.

The voltage distribution in the relative voltage change rate network is related to the power flow. When the injection power and load change, the voltage quality of each node will decrease. The main reason for the influence of distributed power supply on voltage quality is the fluctuation of power generation. When the generation power of distributed power source changes, the line current will change.

3. Improvement of Voltage Quality of Distribution Network by Distributed Power

During the 10kv distribution live work, it is necessary to investigate the site in time to ensure the safety of the working environment. Through the surrounding environment and social conditions to determine whether the work is safe, detect the dangerous points in the work site, and carry out the provisions of the protection plan for the possible problems. Before work, scientific investigation of the site can not only ensure the safety of the operators, but also ensure the safety of the surrounding residents. If there is no detailed investigation before the operation, there is no reasonable analysis of the danger points, the final operation effect and the safety of the relevant personnel cannot be guaranteed. The actual maintenance equipment and tools are likely to lose their insulation and leakage due to moisture, corrosion and leakage. Therefore, the development and implementation of human current protection work is very important. It is necessary to install the relevant warning equipment for current leakage at the tail of the insulation equipment. Once a large number of current leaks occur, warning information will occur. Construction personnel can take appropriate measures. In addition, the water content in the air in the area where live construction is usually needed is more abundant, the humidity is higher, and the insulation degree of insulator is very easy to be greatly affected. In this way, the human body may suffer certain damage. Therefore, in the construction process, it is very important for the relevant personnel to wear insulation cap and protective clothing safely and normatively, which can effectively ensure the safety of the construction personnel.

4. Improving the Flexibility of Distribution Network

(1) Generation links

Compared with the traditional power grid, smart grid combines intelligent technology, strengthens the development of energy, reduces the use of energy in the construction of power grid, and ensures the sustainable development of economy. In order to improve the development of power grid, it is necessary to save resources and ensure the safety and stability of power grid. In power generation, solar power is used to introduce distributed power to reduce energy consumption. The substation operation and maintenance in solar photovoltaic grid-connected power generation is a systematic and complex work, which requires managers and related staff to have a comprehensive and systematic understanding of the actual operation of the substation. To improve the technical level of substation operation and maintenance. The relevant staff also need to use the past experience and excellent comprehensive quality to reduce the probability of failure in the process of substation operation and maintenance, strictly according to standardization and standardization, to minimize the risk of power grid operation, and to ensure the complete operation of the power grid.

(2) Transmission Link

With the continuous progress of power grid in China, the implementation policy of power grid is clarified in transmission link. In the operation of power grid, it is necessary to control the security, evaluate the risk and improve the operation safety of power grid. The power grid of our country develops to high voltage and large capacity, and the danger of high voltage increases in the whole operation process. On this basis, the introduction of distributed power supply, the strengthening of its control, to ensure that distance transmission can be well guaranteed, for high-power transmission, can ensure its security.

(3) Distribution links
The application of distributed power in the distribution link of smart grid is mainly the construction of energy storage technology, distribution automation and intelligent network, which urges it to play its due role in the distribution link. In addition, intelligent energy storage equipment and information acquisition system can be used in each distribution network to effectively promote the implementation of application and development work. Moreover, based on the research of liquid flow battery and superconducting energy storage technology, it can provide strong support for the construction of smart grid. Establishment of.

(4) Distribution Network Operation Inspection System

In the system construction of intelligent distribution transformer terminal, it is necessary to strengthen the training of its technical talents, introduce new technology, construct intelligent operation and inspection system, introduce new software, and strengthen the development and investment of new software. The intelligent distribution transformer terminal is designed reasonably, the running state of the whole equipment is analyzed, and the whole system is built by database management. It is necessary to strengthen the design management of intelligent distribution transformer terminal and integrate the preliminary design to ensure that the whole environment has a good operating environment. In the monitoring of the management system, it is necessary to continuously improve the control efficiency and reduce the overall monitoring difficulty. In the whole system construction, adopt intelligent construction, reduce the use of labor. The equipment needs to be improved when the whole equipment is tested.

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