Consumer Electricity Consumption Behavior Perception Technology Based On Vi Waveform Characteristics

Min He1,* Chenghuan Wu1, You Cui1, Guiping Wen2

1State Grid Zhejiang Electric Power Co., Ltd
2Zhejiang Huayun Information Technology Co., Ltd

*Corresponding author e-mail: hemin@sgep.org

Abstract: The power grid system includes various aspects and involves a wide range of aspects, which causes certain difficulties for the analysis of electricity consumption information. First, the amount of data is large. The data collected by the electricity consumption information collection system is huge every day and the data becomes more complicated in places with a larger population. Taking Henan Power Grid as an example, the data collected by the daily electricity consumption information system not only includes household electricity consumption data of tens of millions of users, but also electricity consumption data of various public facilities, large and small factories. Second, the diversified types of electricity consumption data. The implementation of more and more mobile phone software has generated unstructured data in addition to structured data such as user basic data. Finally, the electricity consumption information data continues to grow. The data will grow rapidly with the coverage of the system and the increment will be huge. In order to analyze it effectively, we adopt the technology of studying its characteristics to complete the perception of electricity consumption.

Keywords: Waveform, Features, Perception

1. Introduction
With the improvement of social and economic civilization and the quality of life, the coverage area of the electricity user information collection system has become more and more extensive, making the collection system more and more data resources and the requirements for data interfaces are also very rich. In the current power system, there are data interfaces between the power user information collection system and the marketing business application system of the power company, the power quality online monitoring system and the marketing remote real-time cost control system, etc., a variety of systems that ensure the normal use of power resources. With the application of the acquisition system, the various systems of the electric power enterprise can obtain more data and information and provide better services for the electric power users.

2. VI waveform analysis
According to the specific application of the power user information collection system interface in the...
social market, as well as the analysis and research of the development trend, it is found that various problems exist in the application of various collection systems and data service interfaces, but there are mainly The specific problems are as follows: ①The types of interfaces for connection between the acquisition system and various systems are very rich. For these systems with a large number and types, the electric power enterprise cannot manage them in a unified manner. The characteristics and actual needs adopt different management methods, which will bring a relatively large amount of work and difficulty, which will affect the quality and work efficiency of services to these interfaces. ②Under the common connection and work of many interfaces, the pressure on the acquisition system itself is relatively large. This situation cannot effectively realize the transmission and dissemination of the large amount of data generated by people in the process of electricity consumption. It can provide various data to power companies in a timely manner, but cannot effectively meet the real-time needs of various businesses in the process of deployment. ③Under the normal operation of the power system, various types of services are very rich. These different types of interfaces have a certain degree of intersectionality for some data requirements. However, in the case of a one-to-one correspondence between each interface and the collection system, these interfaces have relatively low flexibility and cannot realize the common use of some cross-cutting data, which will give the power user the normal power consumption information collection system. Maintenance and overhaul work brings great difficulty[1]. ④Some of the data collected by the collection system are sensitive. When the collection system provides various data information externally, due to this sensitivity, some data leakage may occur, which makes the data safe[2]. The electric system is shown below.

Figure 1. Electric system

3. User electricity consumption behavior management

3.1. Line loss management

The user information collection system is applied to the power system, which has an important effect on line loss management. Through the data information collected by the system, the line loss situation can be understood clearly, accurately and comprehensively to ensure that the true and effective line loss situation is grasped. At the same time, the information collected by the system comes from automatic meter reading at the same time, which largely avoids errors caused by different time periods. The data technology collected by the system meets the line loss calculation requirements, analyzes the causes of line loss and can also promote the automation of line loss management and improve the efficiency of line loss management. The consumption system is shown below.
3.2. Automatic meter reading and settlement

Adopt the electric power information collection system to collect various information of the target by time periods and collect the target's power supply information, electricity consumption information and electricity sales information. In the process of collecting information, it is necessary to ensure the authenticity and timeliness of the information, promote the efficiency of power marketing and reduce the consumption of corporate resources. The system can realize automatic meter reading and actual calculation of electricity, metering, electricity bill accounting and electricity bill notification and promote the management of electricity marketing\(^3\). The auto system is shown below.

4. User perception of electricity consumption

4.1. The main content of the unified interface construction of the acquisition system

Build a service platform with a unified interface and build an interactive channel through which a unified connection of data between the acquisition system and other systems can be effectively realized, which is convenient for timely sending and dissemination of various data information under the application of the acquisition system. The specific construction content is as follows: static data release. Collect various data types in the system, including statistical data, indicator data, frozen data, etc. and organize these data according to different attribution objects. In the unified interface service platform, flexible configuration is mainly based on the actual needs of the release, so Publish it regularly. Time data is released. For real-time acquisition of data in the collection system, combined with the different needs of other systems, when different businesses have specific requirements for them, real-time data is delivered to it. Acquisition of external data. The acquisition of external data is
mainly based on the different functional requirements of the collection system, obtaining corresponding data from different functional systems and saving it. Specific interactive interface. Among the different systems with which the collection system is connected, there will be data requirements for interaction with some related businesses. Then, you can combine the characteristics between them to formulate specific interactive interfaces and manage them on a unified interface service platform[4].

4.2. Establish a technical guarantee system for collecting electricity information
Strengthen the daily management and control of collection indicators, increase on-site technical support for construction, operation and maintenance, speed up the processing of difficult problems and provide on-site guidance and correction of typical problems encountered during the operation of the collection system of each power supply, such as the internal parameter setting of the concentrator and equipment failure processing. Collect error-prone points such as wiring technology and methods and carry out targeted training on the electricity consumption information collection system to improve the ability of the employees of the power supply station to analyze and process the data of the collection system and the marketing system and to further ensure the daily collection success rate The steady improvement[5].

4.3. The composition of the technical architecture of the unified interface service platform
The data layer is mainly to construct an interface database, with the help of other professional tools or related technologies, extract data from the database produced by the collection system and then use it for static data publishers. For the data in the interface library, the expired data should be processed according to the specific situation. As an important part of the technical framework of the unified interface service platform, the application layer mainly includes some actual demand management, function and configuration management and specific detection of expanded services. These application functions are the core component of the collection system and the collection system. The specific performance of various technologies, in the actual work process, the application layer plays a huge role. Service clusters can also be divided into file service clusters and interface service clusters. The interface service cluster mainly provides unified interface services to the outside world and this service mainly adopts distributed load balancing. When it is necessary to provide some big data information externally, the form of file service is mainly used to provide data download service for the demander. For static data computing clusters, the release of these static data is mainly applied through the combination of object-oriented models and Web-Service technologies. Under the application of the client, the composite object defined by the data model is mainly transferred to the interface service and then published and calculated, the object is parsed under the application of the interface service and the client needs are obtained from the interface database The data type[6].

5. Conclusion
With the continuous growth of the number of power users, the big data of the user power information collection system has played an important role. In the face of various power theft behaviors of users in the new era, while we attach importance to anti-power theft through technical means, we The frequency of manual surveys and inspections on the site should also be increased. Regarding the situation of breach of contract electricity, we need to take photos for evidence, conduct electricity usage inspections from time to time and effectively strengthen the special treatment of breach of contract electricity usage. For the inspected staff, we can check them according to the number of on-site inspections. Carry out assessments to improve the professionalism of inspectors and the management level of power use in breach of contract, strengthen personnel training and management for big data technology and strengthen the management level of power use in breach of contract from various aspects.
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