Building Energy Saving Configuration Software Data Processing System

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ABSTRACT

In order to achieve accurate and efficient automated data processing, we propose a data processing system for energy-efficient building of configuration software, which can automatically realize historical data storage and management by standardizing the collected data. The client can dynamically show the warnings, energy consumption and making prediction according to the corresponding graphical configuration.

KEYWORDS

Configuration Software; Data Processing; Data Storage; Dynamic Display
INTRODUCTION

Due to the lack of monitoring of large buildings, people are not aware of the energy consumption problems of the equipment in the building, resulting in waste. In order to fully understand the energy consumption of equipment in large buildings, we can establish an energy management system to monitor the energy consumption data in the buildings in real time, handle the abnormal equipment in time and improve the energy utilization efficiency. Configuration software can easily realize the functions of process control [1], so the configuration technology based on building energy-saving management system is conducive to solving the problem of building energy consumption. According to the application environment of architecture configuration software and specific system functions, this paper presents a more efficient configuration software data processing system. The system is based on real-time database technology, by building the internal energy consumption equipment for the corresponding data acquisition, conversion into standard data processing, analysis and display.

CONFIGURATION SOFTWARE DATA PROCESSING

Data Processing Features

The data in the configuration software must be able to reflect the "current" state of the field device, and its data processing has three characteristics [2].

1. Real-time: this is the configuration software must meet the requirements, configuration software to monitor the device in a timely manner to deal with and transfer data.
2. Time characteristics: the configuration software to deal with the data must be in a certain period of time to complete the data processing.
3. Real-time interruption: the newly transmitted data is the main data that needs to be processed in the configuration software. The current data processing should be interrupted. Otherwise, all data will be delayed.

Data Processing Module

Data processing is the fundamental purpose of software design, but also software to achieve the basis of other functions. The main task of the configuration software in the data processing module is to realize the real-time processing of the data. Since the data comes from different types of devices, all we need to do is to standardize the data first and then use it for the next phase, such as the operation of the system variables, historical data query, prediction data, and then realize the function of other software.
For the data processing module, its main task is to achieve the data processing, dynamic display, alarm processing, and generate reports and other functions. In the data processing of this module, the main realization of the following functions:

1. After data processing can generate some of the required data.
2. Users can define some operations according to their own needs, statistics, statistical analysis, early warning and so on.
3. Users can use this module to extract the historical database.
4. Data processing can be used to achieve data recovery and backup, which has an important role in data security.

**Configuring the Software Real-time Database**

Building energy-saving configuration software data processing system, the need for a large number of real-time data processing, so there are high real-time requirements. The real-time database of software becomes the core of the whole system.

During the operation of the system will periodically collect building energy consumption information, all these data are in real time refresh. In order to make full use of the storage space, the system often opens up some public real-time data storage area in the storage device, that is, real-time database for data storage [3].

Real-time data monitoring is a dynamic environment, and the various data are constantly refreshed, and the system will continue to process and make decisions based on these changes [4].

**Data Processing and Display**

Data processing and display are important features of the configuration software, but also the most interactive part with the customer. Data processing system client has the advantages of convenient deployment and simple maintenance, with reports, trend charts, and other configuration functions to facilitate the dynamic display of data units and early warning display and analysis of building energy consumption and prediction [5]. Some of the system's features are as follows.

1. Data query: the user can obtain the data information through the inquiry and carry on the statistical analysis to it.
2. Intelligent early warning: the main functions are early warning configuration, early warning judgment, early warning sent.
3. Event record: it automatically records various system state information. If a failure occurs, it can be used as a basis for the analysis of the accident [6].

**Data Recovery and Backup**

Data recovery and backup are an important part of data processing. As long as there is the occurrence of data transmission, data storage, data exchange, hard disk damage may occur data failure. This has a big impact on data processing, so without
data backup and data recovery tools and measures, it will lead to data loss, so that not only the data will be lost, but also caused the lack of reference surface. In order to prevent data loss, we must do a good job of data backup. When data is lost, we can recover it, which can improve system high availability and disaster recovery.

CONFIGURATION SOFTWARE DATA PROCESSING MODULE IMPLEMENTATION

![Figure 1. Data query display.](image1)

![Figure 2. Comparison of data analysis.](image2)

The system is developed in C# language, developed with Microsoft Visual Studio 2013 as the development tool, combined with WINFORM and SQL Server database. The C/S model is used to create a simple and clear design to make the interactive interface more user-friendly. The following is the data processing module to achieve the results part of the show.

1. Data query: the user can choose to view a period of time different power consumption equipment, such as the total power consumption, the average current, voltage and some other data, the results shown in Figure 1.

2. Comparison of data analysis: Users can choose a period of time to analyze the power data acquisition. Figure 2 is the consumption data of 6 meter over a period of time.

CONCLUSIONS

This paper presents a more effective building energy saving configuration data processing system. The system to real-time database as the core, the collected data into the real-time database for preprocessing and processing, the processing system can also be used for dynamic display, intelligent early warning and other screen display. Through the integration of energy consumption data to achieve the dynamic display and monitoring of energy consumption data, improve the overall management level, timely access to inefficient operation and abnormal energy
consumption of the equipment to deal with it, reduce the level of energy consumption of large buildings, thereby reducing energy consumption, cost saving.

ACKNOWLEDGEMENTS

This research work is supported by the grant of Guangxi science and technology development project (No: 1598018-6), Guangxi Key Laboratory of Trusted Software (No kx201601), the grant of Guangxi Key Laboratory of Cryptography & Information Security of Guilin University of Electronic Technology (No: GCIS201601, GCIS201602, GCIS201603), the grant of Guangxi Cooperative Innovation Center of Cloud Computing and Big Data of Guilin University of Electronic Technology (No: YD16E11), the grant of Guangxi Key Laboratory of Trusted Software of Guilin University of Electronic Technology (No: KX201514), the grant of Guangxi Colleges and Universities Key Laboratory of Intelligent Processing of Computer Image and Graphics of Guilin University of Electronic Technology (No: GIIP201602), the grant of Guangxi Experiment Center of Information Science of Guilin University of Electronic Technology (No: 20140208), the grant of Guangxi Colleges and Universities Key Laboratory of Cloud Computing & Complex System of Guilin University of Electronic Technology (No: 14105), the grant of Innovation Project of GUET Graduate Education (No: 2017YJCX55).

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