

PAPER • OPEN ACCESS

Analysis on Development and Application of Computer-based Electric Energy Saving Technology and New Power Energy

To cite this article: Yubing Chen and Fengrui Liu 2020 *J. Phys.: Conf. Ser.* **1574** 012082

View the [article online](#) for updates and enhancements.



240th ECS Meeting

Digital Meeting, Oct 10-14, 2021

We are going fully digital!

Attendees register for free!

REGISTER NOW



Analysis on Development and Application of Computer-based Electric Energy Saving Technology and New Power Energy

Yubing Chen^{1,*}, Fengrui Liu²

¹School of international education, north China electric power university, China, 102206

²School of electrical engineering, northeast dianli university, China, 132012

*E-mail: YL_2019123@outlook.com

Abstract. In recent years, the rapid development of China's social economy has significantly improved people's living standards, but it has also led to the increasing demand for electricity in the whole society. This situation has had a very negative impact on the steady development of the social economy. Therefore, it is imperative to strengthen the application of energy saving technology and new energy. At the same time, the increasingly mature computer technology has also given us more ideas in strengthening the energy conservation technology and the application of new energy. The purpose of this paper is to study how to strengthen the application of electricity energy saving technology and new energy in real life by combining computer technology with electricity energy saving technology.

Keywords: Development and Application, Electric Energy Saving, New Electric Energy

1. Introduction

EES Technology is Electric Energy Saving. In view of the large population of our country, the steady progress of social and economic development, and the continuous expansion of power demand of the whole society, in order to achieve the sustainable economic development goal and achieve the goal of energy conservation and environmental protection, our country has started to research and develop electrical energy-saving technology and solar energy, wind energy, geothermal energy, nuclear energy and other new electric energy, and has been promoted in some areas. The application can effectively reduce the power loss. In this paper, the measures of electrical energy-saving technology and the development and application of new electric energy are briefly analyzed.

At present, the large-scale use of electrical equipment will not only lead to huge energy consumption,



but also more or less lead to a certain degree of energy consumption aggravation in the application process of these electrical equipment. Therefore, explore new electrical energy-saving technology, carry out transformation treatment for electrical equipment, properly adjust the original unreasonable aspects, and then promote the utilization rate of electrical energy. The overall improvement, reduce power consumption. The implementation of optimization treatment for electrical equipment is mainly reflected in the following aspects.

2. Power grid configuration optimization

Power grid energy-saving technology is the fundamental of electrical energy-saving. To fully reduce the energy consumption of transmission and distribution network itself is the core task of smart grid^[1]. The optimization of power grid operation configuration can also reduce the power consumption to a large extent, because in the process of power grid operation, the power consumption caused by reactive current often occurs, and the optimization of power grid operation is reactive compensation. The application of energy-saving technology to reduce the power consumption can also realize the scientific distribution of power grid. It is helpful to ensure that the voltage of the transformer can be in a better stable state and to reduce the power consumption effectively.

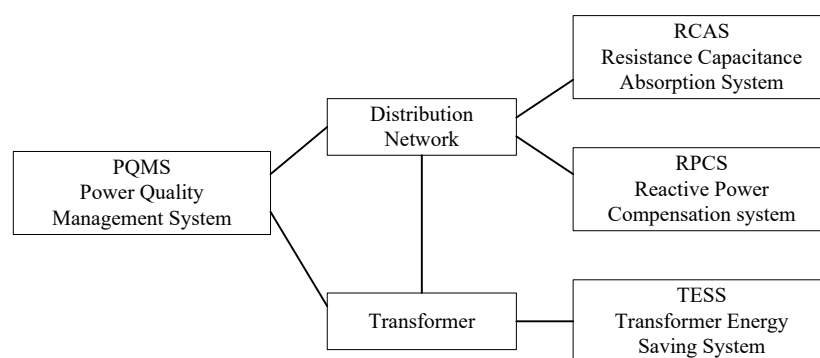


Figure 1. Schematic diagram of power grid configuration optimization

In the transportation system of power grid, transformer is the most critical component. Applying the energy-saving technology to the improvement of transformer equipment can realize the efficient regulation of voltage, promote the safe transmission of electric energy, and reduce the power consumption to the greatest extent^[2]. The implementation of energy-saving optimization design for transformer equipment is to promote the transformation of transformer into low loss equipment. The electric energy required by each user is also different, so the power transmission voltage faced by different users will also have great differences^[3]. When the voltage is regulated by the transformer, the electric energy will be damaged to a certain extent. Therefore, the research on the low loss transformer is of great significance to reduce the electric energy loss. Amorphous alloy iron can be used Xinlai transformer can achieve excellent energy conservation and environmental protection characteristics, not only can greatly reduce the power consumption, but also help to reduce the cost consumption, the promotion and application value is extremely excellent.

3. Energy saving design of lighting and air conditioning

In people's daily life, lighting fixture is an indispensable important tool, the application of lighting

fixture will also lead to huge power loss. In this regard, relevant researchers need to carry out energy-saving design for lighting fixtures, in order to ensure the quality of lighting on the basis of efficient application of power energy^[4].

(1) In the selection of lighting mode, it is necessary to apply the natural light conditions efficiently. The application of natural light is the most critical measure to reduce the energy consumption of lighting. When carrying out the design of lighting scheme, it is necessary to fully combine artificial lighting and natural light, so as to promote the effective saving of lighting energy.

(2) According to the different lighting places, choose the appropriate light source, usually in the room can choose fluorescent lamp to level, in the occasions with high requirements for light color, you can choose rare earth energy-saving fluorescent lamp or three primary color fluorescent lamp, in addition, some high color sodium lamps with lower power are also good choices. In case of outdoor lighting conditions, high pressure sodium lamp shall be selected as far as possible. Such lamps are gas light sources with high durability^[5].

(3) Proper selection of lighting mode and installation location, according to the actual lighting needs to choose energy-saving switches, such as outdoor occasions or construction sites should try to choose voice lights and photoelectric, etc., from the above aspects to promote the effective saving of power energy.

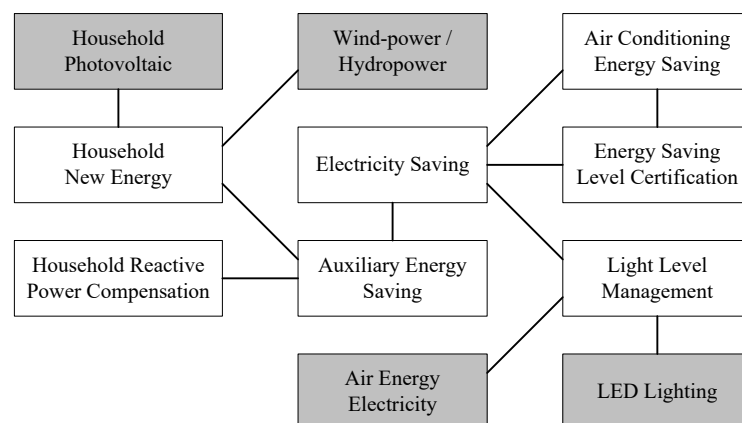


Figure 2. Module diagram of household energy saving system

In terms of air conditioning energy saving, air conditioning system is usually used to control the indoor temperature in the building. However, the application of air conditioning will lead to huge power consumption. Therefore, how to strengthen the environmental protection of air conditioning system has become a key objective of electrical energy saving design. When optimizing the configuration of air conditioning system, the parameters of air conditioning system must be taken into account. The air conditioning equipment with lower power consumption shall be set up in advance to achieve the energy saving goal effectively^[6].

In the current energy-saving design of air conditioning, the application of ice storage technology can effectively improve its energy-saving effect. This technology is based on the time wind energy at night when the power grid is low, through low-cost electricity to make ice storage and save it, dissolving the ice saved at night during the peak period of power consumption in the daytime to meet the cooling load

demand during the peak period of power consumption. From the perspective of rational allocation of energy, we can know that ice storage technology can realize efficient energy saving, greatly reduce the cost of air conditioning equipment, reduce the power and installed capacity of refrigeration equipment, and use the low price in peak and valley period to significantly reduce the cost of refrigeration, at the same time, it can also reduce the overall power load, reduce the power demand and reduce the power plant unit in use Operating pressure during peak hours.

4. Summary

Vigorously developing the development and application of new energy of electric power has a broad market prospect, which can promote the sustainability of economic development and construction to a large extent. With the help of research on the development of new energy of electric power, it can reduce the excessive consumption of non renewable resources to a large extent, and promote the effective achievement of resource conservation and environmental protection purposes. At the same time, the relative ratio of new energy and traditional energy should be It has higher use value and less pollution, so the research and application of new energy will be the general trend.

All in all, with the rapid development of social economy in China, the power demand of the whole society continues to expand, which to a certain extent leads to the shortage of power energy in China. In order to effectively deal with this problem, vigorously develop new energy and implement power saving technology will be an important means and measures to promote the development of China's power industry. In this paper, the electric energy-saving technology and the application of new energy of electric power are studied deeply, hoping to promote the overall improvement of the development efficiency of new energy of electric power, promote the full saving of electric energy, reduce energy consumption, and ultimately promote the positive and stable development of the electric power industry in China.

References

- [1] Hanjie Sun. Research on Electric Automation and Energy Saving Control Technology[P]. ,2018.
- [2] Xinran Li,Xuan Xu,Jia Li,Ximei Liu. Investigation on the Application of Green Energy Resource and Energy Saving and Emission Reduction Technology in Beijing Colleges and Universities and Its Countermeasures and Suggestions Taking North China Electric Power University as an Example[P]. ,2019.
- [3] Community Energy Inc.; Study Finds Replacing 10% of Pennsylvania's Electric Generation with Solar Would Result in More Than \$300 Million Net Savings Annually and Create 65,000 Jobs[J]. Energy Weekly News,2019.
- [4] Electric and Other Services Combined; Duke Energy Corp. Files SEC Form 11-K, Annual Report of Employee Stock Purchase, Savings And Similar Plans: (Jun. 29, 2018)[J]. Energy Weekly News,2018,;.
- [5] Bo Zhu,Peng Zhang,JiuJian Chang,JinQiao Wang,YueZhong Wang. Electric Vehicle Energy Flow Analysis and Energy Saving Technology Research[P]. ,2018.

- [6] Li liang. Analysis of the development and application of electrical energy saving technology and electric new energy [J]. East China science and technology: academic edition, 2017 (3) : 267-267.